



COMPLETE MASTER EDITION

BASIC MATH MCQs

PPSC, FPSC & ONE PAPER EXAMS

25 Topic Modules • 2,650 Fully Solved MCQs

For NTS, CSS MPT, PMS & Government Job Tests

Solved General Math, Maths & Mathematics MCQs

Arithmetic • Algebra • Geometry • Data • Probability • Reasoning

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The Science Academy - Chak No. 84 NB

COMPLETE BOOK ROADMAP

25 standalone topic modules retained inside one complete master edition

No.	Topic	MCQs	Main Coverage
01	Percentage	100	Percent of quantity; increase/decrease; reverse percentage; successive change; exam shortcuts.
02	Ratio & Proportion	100	Ratios; shares; direct/inverse proportion; scaling and comparison.
03	Average / Arithmetic Mean	100	Simple, combined and weighted averages; missing values; age/marks/speed patterns.
04	Fractions & Decimals	100	Fraction operations; mixed numbers; decimals; conversions; recurring decimals.
05	Number System	100	Number types; divisibility; primes; factors; HCF/LCM; remainders; unit digits.
06	Profit, Loss & Discount	100	Cost/selling/marked price; profit/loss percentage; discount chains; false weights.
07	Simple & Compound Interest	100	Principal, rate, time, amount; SI/CI comparison; compounding; growth/depreciation.
08	Time & Work	100	Work rate; combined work; efficiency; man-days-hours; joining/leaving; pipes/cisterns.
09	Speed, Distance & Time	100	Unit conversion; average/relative speed; trains; boats/streams; races; circular tracks.
10	Age Problems	100	Present/past/future ages; ratios; family relations; average age; algebraic age models.
11	Partnership & Profit Sharing	100	Capital-time ratio; joining/leaving partners; working-partner salary/commission; losses.
12	Unitary Method, Rates & Variation	100	One-unit method; rates; direct/inverse variation; fixed-work and combined variation.
13	Mixture & Alligation	100	Weighted mixtures; alligation; mean price; dilution; replacement; concentration.
14	Algebraic Expressions, Identities & Factorization	100	Substitution; simplification; identities; expansion; common/trinomial factorization.
15	Linear & Simultaneous Equations	100	Linear equations; fractional/bracket equations; simultaneous systems; word problems.
16	Quadratic Equations & Basic Inequalities	100	Factorization; quadratic formula; discriminant; roots; linear/quadratic inequalities.
17	Indices, Exponents, Roots & Surds	100	Index laws; powers; roots; surds; simplification; rationalization and conjugates.
18	Number Series, Sequences & Missing Number	100	Arithmetic/geometric patterns; differences; squares/cubes; alternating/interleaved series.
19	Geometry	100	Lines/angles; triangles; Pythagoras; quadrilaterals; polygons; circles; coordinates.
20	Mensuration	100	Perimeter/area; surface area/volume; cube/cuboid/cylinder/cone/sphere; reverse mensuration.
21	Sets, Venn Diagrams, Symbols, Rounding & Approximation	100	Set notation; union/intersection/complement; Venn diagrams; symbols; rounding/approximation.
22	Statistics & Data Interpretation	100	Mean/median/mode/range; frequency data; weighted/combined mean; tables/charts; sampling.
23	Probability, Permutations & Combinations	100	Probability; coins/dice/cards; permutations; combinations; repeated letters; selections.
24	Quantitative, Logical, Analytical & Mental Ability	100	Numerical logic; comparisons; matrices; clocks/calendars; direction; ordering; mental ability.
25	Mixed One-Paper Basic Math Mock Tests	250	Five full mixed one-paper mock tests covering all high-yield basic-math and reasoning areas.

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MASTER COVERAGE INDEX

Cluster	Included Modules
Arithmetic Core	Percentage; Ratio & Proportion; Average; Fractions & Decimals; Number System; Unitary Method.
Commercial Arithmetic	Profit/Loss/Discount; Simple & Compound Interest; Partnership; Mixture & Alligation.
Work & Motion	Time & Work; Speed/Distance/Time; Age Problems.
Algebra & Patterns	Expressions/Identities/Factorization; Linear/Simultaneous Equations; Quadratics/Inequalities; Indices/Roots/Surds; Series/Sequences.
Geometry & Measurement	Geometry; Mensuration.
Sets, Data & Chance	Sets/Venn/Rounding; Statistics/Data Interpretation; Probability/Permutation/Combination.
Reasoning & Exam Practice	Quantitative/Logical/Analytical/Mental Ability; five mixed one-paper mock tests.

2,650 fully solved MCQs • 25 topic modules • immediate mathematical solutions • exam-speed methods



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PART 1 - PERCENTAGE | 100 SOLVED MCQs**Fast Percentage Foundation****Core forms**

$$x\% = \frac{x}{100}$$

$$x\% \text{ of } N = \frac{x}{100}N$$

$$\text{Percentage} = \frac{\text{Part}}{\text{Whole}} \times 100$$

$$\% \text{ change} = \frac{\text{Change}}{\text{Original}} \times 100$$

Price-consumption shortcut

$$\text{Price } \uparrow r\% \Rightarrow \text{Consumption } \downarrow \frac{100r}{100+r}\%$$

$$\text{Price } \downarrow r\% \Rightarrow \text{Consumption } \uparrow \frac{100r}{100-r}\%$$

Exam-speed mental route

$$10\% \text{ of } N = \frac{N}{10}$$

$$5\% \text{ of } N = \frac{1}{2}(10\% \text{ of } N)$$

$$15\% = 10\% + 5\%, \quad 35\% = 30\% + 5\%$$

$$2.5\% = \frac{1}{4}(10\%)$$

High-speed conversions

$$50\% = \frac{1}{2}, \quad 25\% = \frac{1}{4}, \quad 20\% = \frac{1}{5}$$

$$10\% = \frac{1}{10}, \quad 12.5\% = \frac{1}{8}, \quad 75\% = \frac{3}{4}$$

$$33\frac{1}{3}\% = \frac{1}{3}, \quad 66\frac{2}{3}\% = \frac{2}{3}$$

Exam-speed route

Pattern $\rightarrow$ Formula

Formula $\rightarrow$ Mental Simplification

Reverse percentage

$$\text{Original} = \frac{\text{Final} \times 100}{100 + r}$$

for an increase of $r\%$, and

$$\text{Original} = \frac{\text{Final} \times 100}{100 - r}$$

for a decrease of $r\%$.

Successive percentage change

$$\text{Net change} = a + b + \frac{ab}{100}$$

Use the sign of each change. For $+a\%$ followed by $-b\%$, take b as negative.

MCQ 1

What is 40% of 60?

- A. 12 B. 24
C. 16 D. None of these

FPSC Official Practice Paper (General Abilities)

Solution

$$40\% \text{ of } 60 = \frac{40}{100} \times 60$$

$$= \frac{2}{5} \times 60 = 2 \times 12 = 24$$

Final Answer**24** — Option B**MCQ 2**

A candidate answered all 50 questions and obtained 80%. How many answers were wrong?

- A. 40 B. 45
C. 10 D. None of these

FPSC Official Practice Paper (General Abilities), wording lightly standardized

Solution

$$\text{Correct} = \frac{80}{100} \times 50 = \frac{4}{5} \times 50 = 40$$

$$\text{Wrong} = 50 - 40 = 10$$

Final Answer**10** — Option C**MCQ 3**

\$7.32 is 10% of what amount?

- A. \$19.10 B. \$48.42
C. \$73.20 D. None of these

FPSC Official Practice Paper (General Abilities)

Solution

$$10\% \text{ of } x = 7.32$$

$$\frac{10}{100}x = 7.32$$

$$\frac{x}{10} = 7.32$$

$$x = 7.32 \times 10 = 73.20$$

Final Answer**\$73.20** — Option C**MCQ 4**

A coat marked at \$50 is sold at a 10% discount. How much is saved?

- A. \$5 B. \$10
C. \$15 D. None of these

FPSC Official Practice Paper (General Abilities), wording lightly standardized

Solution

$$\text{Saving} = 10\% \text{ of } 50$$

$$= \frac{10}{100} \times 50 = \frac{1}{10} \times 50 = 5$$

Final Answer**\$5** — Option A**MCQ 5**

Find 35% of 240.

- A. 72 B. 84
C. 96 D. 108

Solution

$$35\% = 30\% + 5\%$$

$$30\% \text{ of } 240 = \frac{30}{100} \times 240 = 72$$

$$5\% \text{ of } 240 = \frac{5}{100} \times 240 = 12$$

$$35\% \text{ of } 240 = 72 + 12 = 84$$

Final Answer**84** — Option B**MCQ 6**

20 is what percent of 80?

- A. 20% B. 25%
C. 30% D. 40%

Solution

$$\text{Percentage} = \frac{20}{80} \times 100$$

$$= \frac{1}{4} \times 100 = 25\%$$

Final Answer**25%** — Option B

MCQ 7

A number increases from 120 to 150. Find the percentage increase.

- A. 20% B. 25%
C. 30% D. 35%

Solution

$$\text{Increase} = 150 - 120 = 30$$

$$\% \text{ increase} = \frac{30}{120} \times 100$$

$$= \frac{1}{4} \times 100 = 25\%$$

Final Answer**25%** — Option B**MCQ 8**

A value falls from 500 to 425. Find the percentage decrease.

- A. 10% B. 12%
C. 15% D. 20%

Solution

$$\text{Decrease} = 500 - 425 = 75$$

$$\% \text{ decrease} = \frac{75}{500} \times 100$$

$$= \frac{3}{20} \times 100 = 15\%$$

Final Answer**15%** — Option C**MCQ 9**

72 is 120% of which number?

- A. 50 B. 60
C. 72 D. 86.4

Solution

$$120\% \text{ of } x = 72$$

$$\frac{120}{100}x = 72$$

$$\frac{6}{5}x = 72$$

$$x = 72 \times \frac{5}{6} = 12 \times 5 = 60$$

Final Answer**60** — Option B**MCQ 10**

A class has 40 students. If 65% are present, how many are absent?

- A. 12 B. 14
C. 16 D. 26

Solution

$$\text{Present} = \frac{65}{100} \times 40 = 26$$

$$\text{Absent} = 40 - 26 = 14$$

Final Answer**14** — Option B**MCQ 11**

A student obtains 360 marks out of 450. Find the percentage.

- A. 75% B. 80%
C. 82% D. 85%

Solution

$$\text{Percentage} = \frac{360}{450} \times 100$$

$$= \frac{4}{5} \times 100 = 80\%$$

Final Answer**80%** — Option B**MCQ 12**

Find 12.5% of 640.

- A. 64 B. 80
C. 96 D. 120

Solution

$$12.5\% = \frac{1}{8}$$

$$12.5\% \text{ of } 640 = \frac{1}{8} \times 640 = 80$$

Final Answer**80** — Option B

MCQ 13Find $33\frac{1}{3}\%$ of 270.

- A. 80 B. 90
C. 100 D. 120

Solution

$$33\frac{1}{3}\% = \frac{1}{3}$$

$$\frac{1}{3} \times 270 = 90$$

Final Answer

90 — Option B

MCQ 14Find $66\frac{2}{3}\%$ of 150.

- A. 75 B. 90
C. 100 D. 120

Solution

$$66\frac{2}{3}\% = \frac{2}{3}$$

$$\frac{2}{3} \times 150 = 2 \times 50 = 100$$

Final Answer

100 — Option C

MCQ 15Express $\frac{7}{8}$ as a percentage.

- A. 75% B. 80%
C. 87.5% D. 92.5%

Solution

$$\frac{7}{8} \times 100 = 7 \times 12.5 = 87.5\%$$

Final Answer

87.5% — Option C

MCQ 16

Express 0.375 as a percentage.

- A. 3.75% B. 37.5%
C. 375% D. 0.375%

Solution

$$0.375 \times 100 = 37.5\%$$

Final Answer

37.5% — Option B

MCQ 17

After a 20% increase, a salary becomes Rs. 48,000.
What was the original salary?

- A. Rs. 38,400 B. Rs. 40,000
C. Rs. 42,000 D. Rs. 44,000

Solution

120% of Original = 48,000

$$\text{Original} = 48,000 \times \frac{100}{120}$$

$$= 48,000 \times \frac{5}{6} = 8,000 \times 5 = 40,000$$

Final Answer

Rs. 40,000 — Option B

MCQ 18

After a 20% discount, an item costs Rs. 960. Find its marked price.

- A. Rs. 1,100 B. Rs. 1,150
C. Rs. 1,200 D. Rs. 1,250

Solution

80% of Marked Price = 960

$$\text{Marked Price} = 960 \times \frac{100}{80}$$

$$= 960 \times \frac{5}{4} = 240 \times 5 = 1,200$$

Final Answer

Rs. 1,200 — Option C

MCQ 19

A price is increased by 20% and then decreased by 20%. What is the net change?

- A. No change B. 4% increase
C. 4% decrease D. 8% decrease

Solution

Take initial price = 100

$$100 \times 1.20 = 120$$

$$120 \times 0.80 = 96$$

$$\text{Decrease} = 100 - 96 = 4$$

$$\text{Net decrease} = 4\%$$

Final Answer

4% decrease — Option C

MCQ 20

A number is increased by 10% and again by 10%. What is the total percentage increase?

- A. 20% B. 21%
C. 22% D. 25%

Solution

$$100 \times 1.10 \times 1.10 = 121$$

$$\text{Increase} = 121 - 100 = 21$$

$$\text{Increase} = 21\%$$

Final Answer

21% — Option B

MCQ 21

The price of a commodity rises by 25%. By what percentage must consumption fall so that expenditure remains unchanged?

- A. 15% B. 20%
C. 25% D. 30%

Solution

$$\text{Old Price} = 100, \quad \text{Old Quantity} = 100$$

$$\text{Old Expenditure} = 100 \times 100 = 10,000$$

$$\text{New Price} = 125$$

$$\text{New Quantity} = \frac{10,000}{125} = 80$$

$$\text{Decrease} = 100 - 80 = 20$$

20%

Final Answer

20% — Option B

MCQ 22

The price of an item falls by 20%. By what percentage may consumption rise so that total expenditure is unchanged?

- A. 20% B. 22.5%
C. 25% D. 30%

Solution

$$\text{Old Price} = 100, \quad \text{Old Quantity} = 100$$

$$\text{Old Expenditure} = 10,000$$

$$\text{New Price} = 80$$

$$\text{New Quantity} = \frac{10,000}{80} = 125$$

$$\text{Increase} = 125 - 100 = 25$$

Final Answer

25% — Option C

MCQ 23

If 30% of a number is 54, what is 70% of the same number?

- A. 108 B. 112
C. 126 D. 140

Solution

$$30\% \text{ of } x = 54$$

$$\frac{30}{100}x = 54$$

$$x = 54 \times \frac{100}{30} = 180$$

$$70\% \text{ of } 180 = \frac{70}{100} \times 180 = 126$$

Final Answer

126 — Option C

MCQ 24

In a group, boys and girls are in the ratio 2 : 3. What percentage of the group are girls?

- A. 40% B. 50%
C. 60% D. $66\frac{2}{3}\%$

Solution

$$\text{Total parts} = 2 + 3 = 5$$

$$\text{Girls fraction} = \frac{3}{5}$$

$$\frac{3}{5} \times 100 = 60\%$$

Final Answer

60% — Option C

MCQ 25

A candidate needs 40% marks to pass. He gets 144 marks and fails by 16 marks. What are the total marks?

- A. 360 B. 380
C. 400 D. 420

Solution

$$\text{Passing marks} = 144 + 16 = 160$$

$$40\% \text{ of Total} = 160$$

$$\text{Total} = 160 \times \frac{100}{40}$$

$$= 160 \times \frac{5}{2} = 80 \times 5 = 400$$

Final Answer

400 — Option C

MCQ 26

A shop gives successive discounts of 20% and 10%. What is the equivalent single discount?

- A. 28% B. 30%
C. 32% D. 35%

Solution

$$\text{Marked Price} = 100$$

$$100 \times 0.80 = 80$$

$$80 \times 0.90 = 72$$

$$\text{Discount} = 100 - 72 = 28$$

Final Answer

28% — Option A

MCQ 27

A population of 20,000 increases by 10% in one year and 10% again in the next year. What is the new population?

- A. 22,000 B. 23,000
C. 24,000 D. 24,200

Solution

$$20,000 \times 1.10 = 22,000$$

$$22,000 \times 1.10 = 24,200$$

Final Answer

24,200 — Option D

MCQ 28

A number is 25% more than 80. Find the number.

- A. 90 B. 95
C. 100 D. 105

Solution

$$25\% \text{ of } 80 = \frac{1}{4} \times 80 = 20$$

$$80 + 20 = 100$$

Final Answer

100 — Option C

MCQ 29

If A is 20% less than B, and B = 250, find A.

- A. 180 B. 190
C. 200 D. 225

Solution

$$20\% \text{ of } 250 = \frac{1}{5} \times 250 = 50$$

$$A = 250 - 50 = 200$$

Final Answer

200 — Option C

MCQ 30

A salary of Rs. 32,000 is increased by 12.5%. Find the new salary.

- A. Rs. 34,000 B. Rs. 35,000
C. Rs. 36,000 D. Rs. 36,500

Solution

$$12.5\% = \frac{1}{8}$$

$$\text{Increase} = \frac{1}{8} \times 32,000 = 4,000$$

$$\text{New Salary} = 32,000 + 4,000 = 36,000$$

Final Answer

Rs. 36,000 — Option C

MCQ 31

Find 18% of 350.

- A. 80.5 B. 45.5
C. 126 D. 63

Solution

$$18\% \text{ of } 350 = \frac{18}{100} \times 350 = 63$$

Final Answer

63 — Option D

MCQ 32

Find 22% of 450.

- A. 121.5 B. 76.5
C. 198 D. 99

Solution

$$22\% \text{ of } 450 = \frac{22}{100} \times 450 = 99$$

Final Answer

99 — Option D

MCQ 33

Find 7.5% of 960.

A. 120**B.** 24**C.** 72**D.** 144**Solution**

$$\begin{aligned} 7.5\% \text{ of } 960 &= \frac{7.5}{100} \times 960 \\ &= 72 \end{aligned}$$

Final Answer**72** — Option C**MCQ 34**

Find 62.5% of 320.

A. 200**B.** 216**C.** 184**D.** 400**Solution**

$$\begin{aligned} 62.5\% &= \frac{5}{8} \\ \frac{5}{8} \times 320 &= 200 \end{aligned}$$

Final Answer**200** — Option A**MCQ 35**

Find 16.6667% of 480.

A. 104**B.** 56**C.** 80**D.** 160**Solution**

$$\begin{aligned} 16\frac{2}{3}\% &= \frac{1}{6} \\ \frac{1}{6} \times 480 &= 80 \end{aligned}$$

Final Answer**80** — Option C**MCQ 36**

Find 8.33333% of 720.

A. 96**B.** 24**C.** 60**D.** 120**Solution**

$$\begin{aligned} 8\frac{1}{3}\% &= \frac{1}{12} \\ \frac{1}{12} \times 720 &= 60 \end{aligned}$$

Final Answer**60** — Option C**MCQ 37**

Find 2.5% of 1600.

A. 120**B.** 40**C.** 0**D.** 80**Solution**

$$\begin{aligned} 2.5\% &= \frac{1}{40} \\ \frac{1}{40} \times 1600 &= 40 \end{aligned}$$

Final Answer**40** — Option B**MCQ 38**

Find 45% of 760.

A. 380**B.** 304**C.** 342**D.** 684**Solution**

$$\begin{aligned} 45\% \text{ of } 760 &= \frac{45}{100} \times 760 \\ &= 342 \end{aligned}$$

Final Answer**342** — Option C**MCQ 39**

Find 55% of 840.

A. 462**B.** 504**C.** 420**D.** 924**Solution**

$$\begin{aligned} 55\% \text{ of } 840 &= \frac{55}{100} \times 840 \\ &= 462 \end{aligned}$$

Final Answer**462** — Option A**MCQ 40**

Find 125% of 144.

A. 187.2**B.** 172.8**C.** 180**D.** 360**Solution**

$$\begin{aligned} 125\% &= \frac{5}{4} \\ \frac{5}{4} \times 144 &= 180 \end{aligned}$$

Final Answer**180** — Option C

MCQ 41

If 30% of a number is 24, find the number.

- A. 100 B. 80
C. 60 D. 24

Solution

$$30\% \text{ of } x = 24$$

$$\frac{30}{100}x = 24$$

$$x = 24 \times \frac{100}{30} = 80$$

Final Answer

80 — Option B

MCQ 42

If 35% of a number is 84, find the number.

- A. 260 B. 220
C. 240 D. 84

Solution

$$35\% \text{ of } x = 84$$

$$\frac{35}{100}x = 84$$

$$x = 84 \times \frac{100}{35} = 240$$

Final Answer

240 — Option C

MCQ 43

If 40% of a number is 96, find the number.

- A. 260 B. 240
C. 220 D. 96

Solution

$$40\% \text{ of } x = 96$$

$$\frac{40}{100}x = 96$$

$$x = 96 \times \frac{100}{40} = 240$$

Final Answer

240 — Option B

MCQ 44

If 75% of a number is 150, find the number.

- A. 200 B. 220
C. 180 D. 150

Solution

$$75\% \text{ of } x = 150$$

$$\frac{75}{100}x = 150$$

$$x = 150 \times \frac{100}{75} = 200$$

Final Answer

200 — Option A

MCQ 45

If 60% of a number is 72, find the number.

- A. 120 B. 140
C. 100 D. 72

Solution

$$60\% \text{ of } x = 72$$

$$\frac{60}{100}x = 72$$

$$x = 72 \times \frac{100}{60} = 120$$

Final Answer

120 — Option A

MCQ 46

If 55% of a number is 88, find the number.

- A. 180 B. 140
C. 160 D. 88

Solution

$$55\% \text{ of } x = 88$$

$$\frac{55}{100}x = 88$$

$$x = 88 \times \frac{100}{55} = 160$$

Final Answer

160 — Option C

MCQ 47

If 12.5% of a number is 45, find the number.

A. 380 B. 340

C. 360 D. 45

Solution

$$12.5\% \text{ of } x = 45$$

$$\frac{12.5}{100}x = 45$$

$$x = 45 \times \frac{100}{12.5} = 360$$

Final Answer

360 — Option C

MCQ 48

If 20% of a number is 160, find the number.

A. 820 B. 780

C. 160 D. 800

Solution

$$20\% \text{ of } x = 160$$

$$\frac{20}{100}x = 160$$

$$x = 160 \times \frac{100}{20} = 800$$

Final Answer

800 — Option D

MCQ 49

If 37.5% of a number is 225, find the number.

A. 620 B. 580

C. 225 D. 600

Solution

$$37.5\% \text{ of } x = 225$$

$$\frac{37.5}{100}x = 225$$

$$x = 225 \times \frac{100}{37.5} = 600$$

Final Answer

600 — Option D

MCQ 50

If 125% of a number is 300, find the number.

A. 240 B. 260

C. 220 D. 300

Solution

$$125\% \text{ of } x = 300$$

$$\frac{125}{100}x = 300$$

$$x = 300 \times \frac{100}{125} = 240$$

Final Answer

240 — Option A

MCQ 51

A value changes from 240 to 300. Find the percentage increase.

A. 30% B. 20%

C. 50% D. 25%

Solution

$$\text{Change} = |300 - 240| = 60$$

$$\begin{aligned} \% \text{ increase} &= \frac{60}{240} \times 100 \\ &= 25\% \end{aligned}$$

Final Answer

25% increase — Option D

MCQ 52

A value changes from 800 to 680. Find the percentage decrease.

A. 15% B. 20%

C. 10% D. 30%

Solution

$$\text{Change} = |680 - 800| = 120$$

$$\begin{aligned} \% \text{ decrease} &= \frac{120}{800} \times 100 \\ &= 15\% \end{aligned}$$

Final Answer

15% decrease — Option A

MCQ 53

A value changes from 1250 to 1500. Find the percentage increase.

- A. 25% B. 20%
C. 15% D. 40%

Solution

$$\text{Change} = |1500 - 1250| = 250$$

$$\begin{aligned}\% \text{ increase} &= \frac{250}{1250} \times 100 \\ &= 20\%\end{aligned}$$

Final Answer 20% increase — Option B

MCQ 54

A value changes from 960 to 720. Find the percentage decrease.

- A. 30% B. 20%
C. 25% D. 50%

Solution

$$\text{Change} = |720 - 960| = 240$$

$$\begin{aligned}\% \text{ decrease} &= \frac{240}{960} \times 100 \\ &= 25\%\end{aligned}$$

Final Answer 25% decrease — Option C

MCQ 55

A value changes from 72 to 90. Find the percentage increase.

- A. 30% B. 25%
C. 20% D. 50%

Solution

$$\text{Change} = |90 - 72| = 18$$

$$\begin{aligned}\% \text{ increase} &= \frac{18}{72} \times 100 \\ &= 25\%\end{aligned}$$

Final Answer 25% increase — Option B

MCQ 56

A value changes from 450 to 540. Find the percentage increase.

- A. 25% B. 15%
C. 40% D. 20%

Solution

$$\text{Change} = |540 - 450| = 90$$

$$\begin{aligned}\% \text{ increase} &= \frac{90}{450} \times 100 \\ &= 20\%\end{aligned}$$

Final Answer 20% increase — Option D

MCQ 57

A value changes from 150 to 120. Find the percentage decrease.

- A. 25% B. 20%
C. 15% D. 40%

Solution

$$\text{Change} = |120 - 150| = 30$$

$$\begin{aligned}\% \text{ decrease} &= \frac{30}{150} \times 100 \\ &= 20\%\end{aligned}$$

Final Answer 20% decrease — Option B

MCQ 58

A value changes from 640 to 704. Find the percentage increase.

- A. 15% B. 10%
C. 5% D. 20%

Solution

$$\text{Change} = |704 - 640| = 64$$

$$\begin{aligned}\% \text{ increase} &= \frac{64}{640} \times 100 \\ &= 10\%\end{aligned}$$

Final Answer 10% increase — Option B

MCQ 59

A value changes from 1000 to 850. Find the percentage decrease.

- A. 20% B. 10%
C. 15% D. 30%

Solution

$$\text{Change} = |850 - 1000| = 150$$

$$\begin{aligned}\% \text{ decrease} &= \frac{150}{1000} \times 100 \\ &= 15\%\end{aligned}$$

Final Answer

15% decrease — Option C

MCQ 60

A value changes from 84 to 63. Find the percentage decrease.

- A. 25% B. 30%
C. 20% D. 50%

Solution

$$\text{Change} = |63 - 84| = 21$$

$$\begin{aligned}\% \text{ decrease} &= \frac{21}{84} \times 100 \\ &= 25\%\end{aligned}$$

Final Answer

25% decrease — Option A

MCQ 61

After a 25% increase, a value becomes 1,000. Find the original value.

- A. 640 B. 960
C. 1,000 D. 800

Solution

$$125\% \text{ of Original} = 1,000$$

$$\begin{aligned}\text{Original} &= 1,000 \times \frac{100}{125} \\ &= 800\end{aligned}$$

Final Answer

800 — Option D

MCQ 62

After a 25% decrease, a value becomes 900. Find the original value.

- A. 960 B. 1,200
C. 1,440 D. 900

Solution

$$75\% \text{ of Original} = 900$$

$$\begin{aligned}\text{Original} &= 900 \times \frac{100}{75} \\ &= 1,200\end{aligned}$$

Final Answer

1,200 — Option B

MCQ 63

After a 10% increase, a value becomes 550. Find the original value.

- A. 400 B. 600
C. 550 D. 500

Solution

$$110\% \text{ of Original} = 550$$

$$\begin{aligned}\text{Original} &= 550 \times \frac{100}{110} \\ &= 500\end{aligned}$$

Final Answer

500 — Option D

MCQ 64

After a 10% decrease, a value becomes 990. Find the original value.

- A. 880 B. 1,320
C. 990 D. 1,100

Solution

$$90\% \text{ of Original} = 990$$

$$\begin{aligned}\text{Original} &= 990 \times \frac{100}{90} \\ &= 1,100\end{aligned}$$

Final Answer

1,100 — Option D

MCQ 65

After a 50% increase, a value becomes 2,400. Find the original value.

- A. 1,600 B. 1,280
C. 1,920 D. 2,400

Solution

$$150\% \text{ of Original} = 2,400$$

$$\begin{aligned}\text{Original} &= 2,400 \times \frac{100}{150} \\ &= 1,600\end{aligned}$$

Final Answer

1,600 — Option A

MCQ 66

After a 40% decrease, a value becomes 720. Find the original value.

- A. 1,200 B. 960
C. 1,440 D. 720

Solution

$$60\% \text{ of Original} = 720$$

$$\begin{aligned}\text{Original} &= 720 \times \frac{100}{60} \\ &= 1,200\end{aligned}$$

Final Answer

1,200 — Option A

MCQ 67

After a 12.5% increase, a value becomes 45,000. Find the original value.

- A. 32,000 B. 48,000
C. 45,000 D. 40,000

Solution

$$112.5\% \text{ of Original} = 45,000$$

$$\begin{aligned}\text{Original} &= 45,000 \times \frac{100}{112.5} \\ &= 40,000\end{aligned}$$

Final Answer

40,000 — Option D

MCQ 68

After a 37.5% decrease, a value becomes 500. Find the original value.

- A. 640 B. 960
C. 800 D. 500

Solution

$$62.5\% \text{ of Original} = 500$$

$$\begin{aligned}\text{Original} &= 500 \times \frac{100}{62.5} \\ &= 800\end{aligned}$$

Final Answer

800 — Option C

MCQ 69

After a 20% increase, a value becomes 1,440. Find the original value.

- A. 960 B. 1,440
C. 1,440 D. 1,200

Solution

$$120\% \text{ of Original} = 1,440$$

$$\begin{aligned}\text{Original} &= 1,440 \times \frac{100}{120} \\ &= 1,200\end{aligned}$$

Final Answer

1,200 — Option D

MCQ 70

After a 20% decrease, a value becomes 1,600. Find the original value.

- A. 1,600 B. 2,400
C. 2,000 D. 1,600

Solution

$$80\% \text{ of Original} = 1,600$$

$$\begin{aligned}\text{Original} &= 1,600 \times \frac{100}{80} \\ &= 2,000\end{aligned}$$

Final Answer

2,000 — Option C

MCQ 71

A value changes by +20% and then by +10%. Find the net percentage change.

- A. 30% B. 37%
C. 32% D. 27%

Solution

Take initial value = 100

$$100 \left(1 + \frac{20}{100} \right) = 120$$

$$120 \left(1 + \frac{10}{100} \right) = 132$$

$$\text{Net change} = 132 - 100 = 32$$

Final Answer 32% increase — Option C

MCQ 72

A value changes by +30% and then by -10%. Find the net percentage change.

- A. 17% B. 20%
C. 22% D. 12%

Solution

Take initial value = 100

$$100 \left(1 + \frac{30}{100} \right) = 130$$

$$130 \left(1 + \frac{-10}{100} \right) = 117$$

$$\text{Net change} = 117 - 100 = 17$$

Final Answer 17% increase — Option A

MCQ 73

A value changes by -20% and then by +25%. Find the net percentage change.

- A. 0% (no change) B. 5% increase
C. 5% decrease D. 10% decrease

Solution

Take initial value = 100

$$100 \left(1 - \frac{20}{100} \right) = 80$$

$$80 \left(1 + \frac{25}{100} \right) = 100$$

$$\text{Net change} = 100 - 100 = 0$$

Final Answer 0% (no change) — Option A

MCQ 74

A value changes by +50% and then by -20%. Find the net percentage change.

- A. 30% B. 25%
C. 15% D. 20%

Solution

Take initial value = 100

$$100 \left(1 + \frac{50}{100} \right) = 150$$

$$150 \left(1 + \frac{-20}{100} \right) = 120$$

$$\text{Net change} = 120 - 100 = 20$$

Final Answer 20% increase — Option D

MCQ 75

A value changes by -10% and then by -20%. Find the net percentage change.

- A. 28% B. 30%
C. 33% D. 23%

Solution

Take initial value = 100

$$100 \left(1 + \frac{-10}{100} \right) = 90$$

$$90 \left(1 + \frac{-20}{100} \right) = 72$$

$$\text{Net change} = 72 - 100 = -28$$

Final Answer 28% decrease — Option A

MCQ 76

A value changes by +25% and then by +25%. Find the net percentage change.

- A. 56.25% B. 50%
C. 61.25% D. 51.25%

Solution

Take initial value = 100

$$100 \left(1 + \frac{25}{100} \right) = 125$$

$$125 \left(1 + \frac{25}{100} \right) = 156.25$$

$$\text{Net change} = 156.25 - 100 = 56.25$$

Final Answer 56.25% increase — Option A

MCQ 77

A value changes by +40% and then by -25%. Find the net percentage change.

- A. 5% B. 15%
C. 10% D. 0%

Solution

Take initial value = 100

$$100 \left(1 + \frac{40}{100} \right) = 140$$

$$140 \left(1 + \frac{-25}{100} \right) = 105$$

$$\text{Net change} = 105 - 100 = 5$$

Final Answer

5% increase — Option A

MCQ 78

A value changes by +12.5% and then by +20%. Find the net percentage change.

- A. 32.5% B. 40%
C. 30% D. 35%

Solution

Take initial value = 100

$$100 \left(1 + \frac{12.5}{100} \right) = 112.5$$

$$112.5 \left(1 + \frac{20}{100} \right) = 135$$

$$\text{Net change} = 135 - 100 = 35$$

Final Answer

35% increase — Option D

MCQ 79

A value changes by +20% and then by -10%. Find the net percentage change.

- A. 8% B. 10%
C. 13% D. 3%

Solution

Take initial value = 100

$$100 \left(1 + \frac{20}{100} \right) = 120$$

$$120 \left(1 + \frac{-10}{100} \right) = 108$$

$$\text{Net change} = 108 - 100 = 8$$

Final Answer

8% increase — Option A

MCQ 80

A value changes by -25% and then by +50%. Find the net percentage change.

- A. 12.5% B. 25%
C. 17.5% D. 7.5%

Solution

Take initial value = 100

$$100 \left(1 + \frac{-25}{100} \right) = 75$$

$$75 \left(1 + \frac{50}{100} \right) = 112.5$$

$$\text{Net change} = 112.5 - 100 = 12.5$$

Final Answer

12.5% increase — Option A

MCQ 81

A candidate requires 45% marks to pass. He obtains 162 marks and fails by 18 marks. Find the total marks.

- A. 360 B. 380
C. 400 D. 420

Solution

$$\text{Passing marks} = 162 + 18 = 180$$

$$45\% \text{ of Total} = 180$$

$$\text{Total} = 180 \times \frac{100}{45} = 400$$

Final Answer

400 — Option C

MCQ 82

In a class of 80 students, 15% are absent. How many are present?

- A. 64 B. 66
C. 68 D. 72

Solution

$$\text{Absent} = \frac{15}{100} \times 80 = 12$$

$$\text{Present} = 80 - 12 = 68$$

Final Answer

68 — Option C

MCQ 83

A student scores 72% of 625 marks. Find the score.

- A. 425 B. 440
C. 450 D. 475

Solution

$$\begin{aligned}\text{Score} &= \frac{72}{100} \times 625 \\ &= 72 \times 6.25 = 450\end{aligned}$$

Final Answer

450 — Option C

MCQ 84

Out of 3,200 voters, 12.5% did not vote. How many votes were cast?

- A. 2,600 B. 2,700
C. 2,800 D. 2,900

Solution

$$\begin{aligned}12.5\% &= \frac{1}{8} \\ \text{Did not vote} &= \frac{1}{8} \times 3,200 = 400 \\ \text{Votes cast} &= 3,200 - 400 = 2,800\end{aligned}$$

Final Answer

2,800 — Option C

MCQ 85

A town has 25,000 people. Its population increases by 12%. Find the new population.

- A. 27,000 B. 27,500
C. 28,000 D. 28,500

Solution

$$\begin{aligned}\text{Increase} &= \frac{12}{100} \times 25,000 = 3,000 \\ \text{New population} &= 25,000 + 3,000 = 28,000\end{aligned}$$

Final Answer

28,000 — Option C

MCQ 86

A school has 1,500 students. If 48% are girls, how many are boys?

- A. 720 B. 750
C. 780 D. 820

Solution

$$\begin{aligned}\text{Girls} &= \frac{48}{100} \times 1,500 = 720 \\ \text{Boys} &= 1,500 - 720 = 780\end{aligned}$$

Final Answer

780 — Option C

MCQ 87

A candidate answers 126 out of 180 questions correctly. What percentage is correct?

- A. 65% B. 70%
C. 72% D. 75%

Solution

$$\begin{aligned}&\frac{126}{180} \times 100 \\ &= \frac{7}{10} \times 100 = 70\%\end{aligned}$$

Final Answer

70% — Option B

MCQ 88

A candidate scores 64%, which is 24 marks above the pass mark of 56%. Find the total marks.

- A. 250 B. 275
C. 300 D. 325

Solution

$$\begin{aligned}(64 - 56)\% &= 8\% \\ 8\% \text{ of Total} &= 24 \\ \text{Total} &= 24 \times \frac{100}{8} = 300\end{aligned}$$

Final Answer

300 — Option C

MCQ 89

In an election, a candidate receives 54% of 25,000 valid votes. How many votes does the candidate receive?

- A. 12,500 B. 13,000
C. 13,500 D. 14,000

Solution

$$\begin{aligned}\text{Votes} &= \frac{54}{100} \times 25,000 \\ &= 54 \times 250 = 13,500\end{aligned}$$

Final Answer

13,500 — Option C

MCQ 90

A class has 60 students. 40% are boys. How many girls are there?

- A. 24 B. 30
C. 36 D. 40

Solution

$$\begin{aligned}\text{Boys} &= \frac{40}{100} \times 60 = 24 \\ \text{Girls} &= 60 - 24 = 36\end{aligned}$$

Final Answer

36 — Option C

MCQ 91

If A is 25% more than B and B = 320, find A.

- A. 360 B. 380
C. 400 D. 420

Solution

$$\begin{aligned}A &= 320 \left(1 + \frac{25}{100}\right) \\ &= 320 \times \frac{5}{4} = 400\end{aligned}$$

Final Answer

400 — Option C

MCQ 92

If A is 40% less than B and B = 500, find A.

- A. 250 B. 280
C. 300 D. 320

Solution

$$\begin{aligned}A &= 500 \left(1 - \frac{40}{100}\right) \\ &= 500 \times \frac{6}{10} = 300\end{aligned}$$

Final Answer

300 — Option C

MCQ 93

A price rises by 20%. By what percentage must consumption fall so expenditure is unchanged?

- A. 15% B. $16\frac{2}{3}\%$
C. 20% D. 25%

Solution

$$\begin{aligned}\text{Old} &= 100 \times 100 = 10,000 \\ \text{New price} &= 120 \\ \text{New quantity} &= \frac{10,000}{120} = 83\frac{1}{3} \\ \text{Decrease} &= 100 - 83\frac{1}{3} = 16\frac{2}{3}\%\end{aligned}$$

Final Answer $16\frac{2}{3}\%$ — Option B**MCQ 94**

A price falls by 25%. By what percentage may consumption rise so expenditure is unchanged?

- A. 25% B. 30%
C. $33\frac{1}{3}\%$ D. 40%

Solution

$$\begin{aligned}\text{Old} &= 100 \times 100 = 10,000 \\ \text{New price} &= 75 \\ \text{New quantity} &= \frac{10,000}{75} = 133\frac{1}{3} \\ \text{Increase} &= 33\frac{1}{3}\%\end{aligned}$$

Final Answer $33\frac{1}{3}\%$ — Option C

MCQ 95

An item costs Rs. 3,600. Sales tax is 15%. Find the tax.

- A. Rs. 480 B. Rs. 500
C. Rs. 540 D. Rs. 600

Solution

$$\begin{aligned}\text{Tax} &= \frac{15}{100} \times 3,600 \\ &= 15 \times 36 = 540\end{aligned}$$

Final Answer

Rs. 540 — Option C

MCQ 96

A salesperson earns 8% commission on sales of Rs. 62,500. Find the commission.

- A. Rs. 4,000 B. Rs. 4,500
C. Rs. 5,000 D. Rs. 5,500

Solution

$$\begin{aligned}\text{Commission} &= \frac{8}{100} \times 62,500 \\ &= 8 \times 625 = 5,000\end{aligned}$$

Final Answer

Rs. 5,000 — Option C

MCQ 97

A salary of Rs. 48,000 is reduced by 12.5%. Find the new salary.

- A. Rs. 40,000 B. Rs. 41,000
C. Rs. 42,000 D. Rs. 44,000

Solution

$$\begin{aligned}12.5\% &= \frac{1}{8} \\ \text{Reduction} &= \frac{1}{8} \times 48,000 = 6,000 \\ \text{New salary} &= 48,000 - 6,000 = 42,000\end{aligned}$$

Final Answer

Rs. 42,000 — Option C

MCQ 98

A machine worth Rs. 120,000 depreciates by 10%. Find its new value.

- A. Rs. 106,000 B. Rs. 108,000
C. Rs. 110,000 D. Rs. 112,000

Solution

$$\begin{aligned}\text{Depreciation} &= \frac{10}{100} \times 120,000 = 12,000 \\ \text{New value} &= 120,000 - 12,000 = 108,000\end{aligned}$$

Final Answer

Rs. 108,000 — Option B

MCQ 99

If 30% of A equals 45% of B, then A is what percent of B?

- A. 125% B. 140%
C. 150% D. 160%

Solution

$$\begin{aligned}\frac{30}{100}A &= \frac{45}{100}B \\ 30A &= 45B \\ \frac{A}{B} &= \frac{45}{30} = \frac{3}{2} \\ \frac{A}{B} \times 100 &= 150\%\end{aligned}$$

Final Answer

150% — Option C

MCQ 100

A number is 80% of another number. The second is what percent of the first?

- A. 120% B. 125%
C. 130% D. 140%

Solution

$$\begin{aligned}A &= 80\% \text{ of } B = \frac{4}{5}B \\ \frac{B}{A} &= \frac{5}{4} \\ \frac{5}{4} \times 100 &= 125\%\end{aligned}$$

Final Answer

125% — Option B

Percentage - Rapid Revision Grid

Convert quickly

$$1\% = \frac{1}{100}, \quad 2\% = \frac{1}{50}, \quad 4\% = \frac{1}{25}, \quad 5\% = \frac{1}{20}$$

$$8\frac{1}{3}\% = \frac{1}{12}, \quad 12.5\% = \frac{1}{8}, \quad 16\frac{2}{3}\% = \frac{1}{6}$$

$$20\% = \frac{1}{5}, \quad 25\% = \frac{1}{4}, \quad 40\% = \frac{2}{5}, \quad 75\% = \frac{3}{4}$$

Fast percentage of a number

$$35\% \text{ of } 240 = (30\% + 5\%) \text{ of } 240 = 72 + 12 = 84$$

$$12.5\% \text{ of } 640 = \frac{1}{8}(640) = 80$$

$$75\% \text{ of } 360 = \frac{3}{4}(360) = 270$$

Accuracy check

$$\text{Part} < \text{Whole} \Rightarrow \% < 100\%$$

$$\text{Part} > \text{Whole} \Rightarrow \% > 100\%$$

$$+r\%, -r\% \Rightarrow -\frac{r^2}{100}\%$$

Reverse quickly

$$\text{After } 25\% \uparrow: \text{Original} = \text{Final} \times \frac{4}{5}$$

$$\text{After } 20\% \uparrow: \text{Original} = \text{Final} \times \frac{5}{6}$$

$$\text{After } 20\% \downarrow: \text{Original} = \text{Final} \times \frac{5}{4}$$

Successive change

$$+10\%, +10\% \Rightarrow +21\%$$

$$+20\%, -20\% \Rightarrow -4\%$$

$$-20\%, -10\% \Rightarrow -28\%$$



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PART 2 - RATIO & PROPORTION | 100 SOLVED MCQs**Fast Ratio and Proportion Foundation****Ratio reduction**

$$a : b = \frac{a}{b}$$

$$a : b = (a \div g) : (b \div g), \quad g = \gcd(a, b)$$

Proportion

$$a : b = c : d$$

$$\frac{a}{b} = \frac{c}{d}$$

$$ad = bc$$

Direct / inverse speed route

$$\frac{x_1}{y_1} = \frac{x_2}{y_2} \quad (\text{direct})$$

$$x_1 y_1 = x_2 y_2 \quad (\text{inverse})$$

Share from total

$$A : B = m : n$$

$$A = \frac{m}{m+n}T, \quad B = \frac{n}{m+n}T$$

MCQ 1

If 5 litres of paint cover $50 m^2$, how much area can 10 litres cover?

- A. 100 B. 115
C. 118 D. None of these

FPSC Official Practice Paper - General Abilities

Solution

$$\begin{aligned} 5 \text{ L} &\longrightarrow 50 m^2 \\ 1 \text{ L} &\longrightarrow \frac{50}{5} = 10 m^2 \\ 10 \text{ L} &\longrightarrow 10 \times 10 = 100 m^2 \end{aligned}$$

Final Answer $100 m^2$ — Option A

MCQ 2

Three dozen eggs cost Rs. 720. What is the cost of 5 eggs?

- A. Rs. 100 B. Rs. 150
C. Rs. 90 D. Rs. 120

FPSC Official Practice Paper - General Abilities

Solution

$$\begin{aligned} 3 \text{ dozen} &= 3 \times 12 = 36 \text{ eggs} \\ 36 \text{ eggs} &\longrightarrow 720 \\ 1 \text{ egg} &\longrightarrow \frac{720}{36} = 20 \\ 5 \text{ eggs} &\longrightarrow 5 \times 20 = 100 \end{aligned}$$

Final Answer Rs. 100 — Option A

MCQ 3

Simplify the ratio 24 : 36.

- A. 3:2 B. 3:3
C. 2:3 D. 2:4

Solution

$$\begin{aligned} 24 : 36 \\ = (24 \div 12) : (36 \div 12) \\ = 2 : 3 \end{aligned}$$

Final Answer 2 : 3 — Option C

MCQ 4

Simplify the ratio 45 : 60.

- A. 4:3 B. 4:4
C. 3:5 D. 3:4

Solution

$$\begin{aligned} 45 : 60 \\ = (45 \div 15) : (60 \div 15) \\ = 3 : 4 \end{aligned}$$

Final Answer 3 : 4 — Option D

MCQ 5

Simplify the ratio 84 : 126.

- A. 3:2 B. 3:3
C. 2:3 D. 2:4

Solution

$$\begin{aligned} 84 : 126 \\ = (84 \div 42) : (126 \div 42) \\ = 2 : 3 \end{aligned}$$

Final Answer 2 : 3 — Option C

MCQ 6

Simplify the ratio 150 : 225.

- A. 3:2 B. 3:3
C. 2:3 D. 2:4

Solution

$$\begin{aligned} 150 : 225 \\ = (150 \div 75) : (225 \div 75) \\ = 2 : 3 \end{aligned}$$

Final Answer 2 : 3 — Option C

MCQ 7

Simplify the ratio 72 : 96.

- A. 4:3 B. 4:4
C. 3:4 D. 3:5

Solution

$$\begin{aligned} &72 : 96 \\ &= (72 \div 24) : (96 \div 24) \\ &= 3 : 4 \end{aligned}$$

Final Answer**3 : 4** — Option C**MCQ 8**

Simplify the ratio 125 : 175.

- A. 7:5 B. 5:7
C. 6:7 D. 5:8

Solution

$$\begin{aligned} &125 : 175 \\ &= (125 \div 25) : (175 \div 25) \\ &= 5 : 7 \end{aligned}$$

Final Answer**5 : 7** — Option B**MCQ 9**

Simplify the ratio 144 : 216.

- A. 3:2 B. 3:3
C. 2:3 D. 2:4

Solution

$$\begin{aligned} &144 : 216 \\ &= (144 \div 72) : (216 \div 72) \\ &= 2 : 3 \end{aligned}$$

Final Answer**2 : 3** — Option C**MCQ 10**

Simplify the ratio 56 : 98.

- A. 7:4 B. 4:7
C. 5:7 D. 4:8

Solution

$$\begin{aligned} &56 : 98 \\ &= (56 \div 14) : (98 \div 14) \\ &= 4 : 7 \end{aligned}$$

Final Answer**4 : 7** — Option B**MCQ 11**

Simplify the ratio 320 : 480.

- A. 2:3 B. 3:2
C. 3:3 D. 2:4

Solution

$$\begin{aligned} &320 : 480 \\ &= (320 \div 160) : (480 \div 160) \\ &= 2 : 3 \end{aligned}$$

Final Answer**2 : 3** — Option A**MCQ 12**

Simplify the ratio 18 : 42.

- A. 7:3 B. 4:7
C. 3:7 D. 3:8

Solution

$$\begin{aligned} &18 : 42 \\ &= (18 \div 6) : (42 \div 6) \\ &= 3 : 7 \end{aligned}$$

Final Answer**3 : 7** — Option C

MCQ 13

Simplify the ratio 105 : 140.

- A. 4:3 B. 3:4
C. 4:4 D. 3:5

Solution

$$\begin{aligned} 105 : 140 \\ = (105 \div 35) : (140 \div 35) \\ = 3 : 4 \end{aligned}$$

Final Answer**3 : 4** — Option B**MCQ 14**

Simplify the ratio 96 : 160.

- A. 5:3 B. 4:5
C. 3:5 D. 3:6

Solution

$$\begin{aligned} 96 : 160 \\ = (96 \div 32) : (160 \div 32) \\ = 3 : 5 \end{aligned}$$

Final Answer**3 : 5** — Option C**MCQ 15**

Find the ratio of 3m to 75cm in simplest form.

- A. 1:4 B. 5:1
C. 4:2 D. 4:1

Solution

$$\begin{aligned} \text{Convert to same unit: } 3m &= 300 \\ 75cm &= 75 \\ 300 : 75 &= (300 \div 75) : (75 \div 75) = 4 : 1 \end{aligned}$$

Final Answer**4 : 1** — Option D**MCQ 16**

Find the ratio of 2kg to 500g in simplest form.

- A. 1:4 B. 5:1
C. 4:2 D. 4:1

Solution

$$\begin{aligned} \text{Convert to same unit: } 2kg &= 2000 \\ 500g &= 500 \\ 2000 : 500 &= (2000 \div 500) : (500 \div 500) = 4 : 1 \end{aligned}$$

Final Answer**4 : 1** — Option D**MCQ 17**

Find the ratio of 90min to 3h in simplest form.

- A. 2:1 B. 2:2
C. 1:2 D. 1:3

Solution

$$\begin{aligned} \text{Convert to same unit: } 90min &= 90 \\ 3h &= 180 \\ 90 : 180 &= (90 \div 90) : (180 \div 90) = 1 : 2 \end{aligned}$$

Final Answer**1 : 2** — Option C**MCQ 18**

Find the ratio of 250mL to 2L in simplest form.

- A. 8:1 B. 2:8
C. 1:8 D. 1:9

Solution

$$\begin{aligned} \text{Convert to same unit: } 250mL &= 250 \\ 2L &= 2000 \\ 250 : 2000 &= (250 \div 250) : (2000 \div 250) = 1 : 8 \end{aligned}$$

Final Answer**1 : 8** — Option C

MCQ 19

Find the ratio of 5dozen to 30items in simplest form.

- A. 1:2 B. 3:1
C. 2:2 D. 2:1

Solution

Convert to same unit: 5dozen = 60

$$30\text{items} = 30$$

$$60 : 30 = (60 \div 30) : (30 \div 30) = 2 : 1$$

Final Answer**2 : 1** — Option D**MCQ 20**

Find the ratio of 1.5kg to 750g in simplest form.

- A. 1:2 B. 3:1
C. 2:2 D. 2:1

Solution

Convert to same unit: 1.5kg = 1500

$$750\text{g} = 750$$

$$1500 : 750 = (1500 \div 750) : (750 \div 750) = 2 : 1$$

Final Answer**2 : 1** — Option D**MCQ 21**

Find the ratio of 45sec to 3min in simplest form.

- A. 4:1 B. 2:4
C. 1:4 D. 1:5

Solution

Convert to same unit: 45sec = 45

$$3\text{min} = 180$$

$$45 : 180 = (45 \div 45) : (180 \div 45) = 1 : 4$$

Final Answer**1 : 4** — Option C**MCQ 22**

Find the ratio of 2.5m to 125cm in simplest form.

- A. 1:2 B. 3:1
C. 2:2 D. 2:1

Solution

Convert to same unit: 2.5m = 250

$$125\text{cm} = 125$$

$$250 : 125 = (250 \div 125) : (125 \div 125) = 2 : 1$$

Final Answer**2 : 1** — Option D**MCQ 23**

Divide 360 in the ratio 2 : 3. Find the larger share.

- A. 144 B. 216
C. 288 D. 220

Solution

$$\text{Total parts} = 2 + 3 = 5$$

$$1 \text{ part} = \frac{360}{5} = 72$$

$$\text{Larger share} = 3 \times 72 = 216$$

Final Answer**216** — Option B**MCQ 24**

Divide 840 in the ratio 3 : 4. Find the larger share.

- A. 360 B. 480
C. 600 D. 484

Solution

$$\text{Total parts} = 3 + 4 = 7$$

$$1 \text{ part} = \frac{840}{7} = 120$$

$$\text{Larger share} = 4 \times 120 = 480$$

Final Answer**480** — Option B

MCQ 25

Divide 1200 in the ratio 5 : 7. Find the larger share.

- A. 700 B. 500
C. 800 D. 600

Solution

$$\text{Total parts} = 5 + 7 = 12$$

$$1 \text{ part} = \frac{1200}{12} = 100$$

$$\text{Larger share} = 7 \times 100 = 700$$

Final Answer**700** — Option A**MCQ 26**

Divide 450 in the ratio 4 : 5. Find the larger share.

- A. 200 B. 300
C. 254 D. 250

Solution

$$\text{Total parts} = 4 + 5 = 9$$

$$1 \text{ part} = \frac{450}{9} = 50$$

$$\text{Larger share} = 5 \times 50 = 250$$

Final Answer**250** — Option D**MCQ 27**

Divide 990 in the ratio 2 : 3. Find the larger share.

- A. 396 B. 792
C. 594 D. 598

Solution

$$\text{Total parts} = 2 + 3 = 5$$

$$1 \text{ part} = \frac{990}{5} = 198$$

$$\text{Larger share} = 3 \times 198 = 594$$

Final Answer**594** — Option C**MCQ 28**

Divide 1400 in the ratio 3 : 4. Find the larger share.

- A. 800 B. 600
C. 1,000 D. 804

Solution

$$\text{Total parts} = 3 + 4 = 7$$

$$1 \text{ part} = \frac{1400}{7} = 200$$

$$\text{Larger share} = 4 \times 200 = 800$$

Final Answer**800** — Option A**MCQ 29**

Divide 720 in the ratio 5 : 7. Find the larger share.

- A. 300 B. 480
C. 420 D. 360

Solution

$$\text{Total parts} = 5 + 7 = 12$$

$$1 \text{ part} = \frac{720}{12} = 60$$

$$\text{Larger share} = 7 \times 60 = 420$$

Final Answer**420** — Option C**MCQ 30**

Divide 1080 in the ratio 4 : 5. Find the larger share.

- A. 600 B. 480
C. 720 D. 604

Solution

$$\text{Total parts} = 4 + 5 = 9$$

$$1 \text{ part} = \frac{1080}{9} = 120$$

$$\text{Larger share} = 5 \times 120 = 600$$

Final Answer**600** — Option A

MCQ 31

Divide 600 in the ratio 1 : 2. Find the larger share.

- A. 400 B. 200
C. 600 D. 404

Solution

$$\text{Total parts} = 1 + 2 = 3$$

$$1 \text{ part} = \frac{600}{3} = 200$$

$$\text{Larger share} = 2 \times 200 = 400$$

Final Answer

400 — Option A

MCQ 32

Divide 2100 in the ratio 2 : 5. Find the larger share.

- A. 1,500 B. 600
C. 1,800 D. 1,200

Solution

$$\text{Total parts} = 2 + 5 = 7$$

$$1 \text{ part} = \frac{2100}{7} = 300$$

$$\text{Larger share} = 5 \times 300 = 1,500$$

Final Answer

1,500 — Option A

MCQ 33

Divide 960 in the ratio 3 : 5. Find the larger share.

- A. 360 B. 720
C. 480 D. 600

Solution

$$\text{Total parts} = 3 + 5 = 8$$

$$1 \text{ part} = \frac{960}{8} = 120$$

$$\text{Larger share} = 5 \times 120 = 600$$

Final Answer

600 — Option D

MCQ 34

Divide 1760 in the ratio 5 : 6. Find the larger share.

- A. 800 B. 1,120
C. 964 D. 960

Solution

$$\text{Total parts} = 5 + 6 = 11$$

$$1 \text{ part} = \frac{1760}{11} = 160$$

$$\text{Larger share} = 6 \times 160 = 960$$

Final Answer

960 — Option D

MCQ 35

Two numbers are in the ratio 3 : 5 and their sum is 64. Find the larger number.

- A. 40 B. 48
C. 32 D. 44

Solution

$$\text{Total parts} = 3 + 5 = 8$$

$$1 \text{ part} = \frac{64}{8} = 8$$

$$\text{Larger} = 5 \times 8 = 40$$

Final Answer

40 — Option A

MCQ 36

Two numbers are in the ratio 2 : 7 and their sum is 81. Find the larger number.

- A. 72 B. 54
C. 67 D. 63

Solution

$$\text{Total parts} = 2 + 7 = 9$$

$$1 \text{ part} = \frac{81}{9} = 9$$

$$\text{Larger} = 7 \times 9 = 63$$

Final Answer

63 — Option D

MCQ 37

Two numbers are in the ratio 4 : 9 and their sum is 130. Find the larger number.

- A. 100 B. 90
C. 80 D. 94

Solution

$$\text{Total parts} = 4 + 9 = 13$$

$$1 \text{ part} = \frac{130}{13} = 10$$

$$\text{Larger} = 9 \times 10 = 90$$

Final Answer

90 — Option B

MCQ 38

Two numbers are in the ratio 5 : 8 and their sum is 156. Find the larger number.

- A. 108 B. 96
C. 84 D. 100

Solution

$$\text{Total parts} = 5 + 8 = 13$$

$$1 \text{ part} = \frac{156}{13} = 12$$

$$\text{Larger} = 8 \times 12 = 96$$

Final Answer

96 — Option B

MCQ 39

Two numbers are in the ratio 4 : 7 and their sum is 143. Find the larger number.

- A. 104 B. 78
C. 95 D. 91

Solution

$$\text{Total parts} = 4 + 7 = 11$$

$$1 \text{ part} = \frac{143}{11} = 13$$

$$\text{Larger} = 7 \times 13 = 91$$

Final Answer

91 — Option D

MCQ 40

Two numbers are in the ratio 3 : 4 and their difference is 21. Find their sum.

- A. 168 B. 126
C. 147 D. 84

Solution

$$\text{Difference in parts} = 4 - 3 = 1$$

$$1 \text{ part} = \frac{21}{1} = 21$$

$$\text{Sum} = (3 + 4) \times 21 = 147$$

Final Answer

147 — Option C

MCQ 41

Two numbers are in the ratio 2 : 5 and their difference is 36. Find their sum.

- A. 84 B. 96
C. 72 D. 60

Solution

$$\text{Difference in parts} = 5 - 2 = 3$$

$$1 \text{ part} = \frac{36}{3} = 12$$

$$\text{Sum} = (2 + 5) \times 12 = 84$$

Final Answer

84 — Option A

MCQ 42

Two numbers are in the ratio 5 : 7 and their difference is 24. Find their sum.

- A. 156 B. 144
C. 132 D. 84

Solution

$$\text{Difference in parts} = 7 - 5 = 2$$

$$1 \text{ part} = \frac{24}{2} = 12$$

$$\text{Sum} = (5 + 7) \times 12 = 144$$

Final Answer

144 — Option B

MCQ 43

Two numbers are in the ratio 7 : 9 and their difference is 18. Find their sum.

- A. 144 B. 153
C. 135 D. 81

Solution

Difference in parts = $9 - 7 = 2$

$$1 \text{ part} = \frac{18}{2} = 9$$

$$\text{Sum} = (7 + 9) \times 9 = 144$$

Final Answer**144** — Option A**MCQ 44**

Two numbers are in the ratio 6 : 11 and their difference is 35. Find their sum.

- A. 126 B. 112
C. 119 D. 77

Solution

Difference in parts = $11 - 6 = 5$

$$1 \text{ part} = \frac{35}{5} = 7$$

$$\text{Sum} = (6 + 11) \times 7 = 119$$

Final Answer**119** — Option C**MCQ 45**

If $3 : 5 = 21 : x$, find x .

- A. 40 B. 30
C. 21 D. 35

Solution

$$3 : 5 = 21 : x$$

$$\frac{3}{5} = \frac{21}{x}$$

$$3x = 5 \times 21$$

$$x = \frac{5 \times 21}{3} = 35$$

Final Answer**35** — Option D**MCQ 46**

If $4 : 7 = 28 : x$, find x .

- A. 49 B. 56
C. 42 D. 28

Solution

$$4 : 7 = 28 : x$$

$$\frac{4}{7} = \frac{28}{x}$$

$$4x = 7 \times 28$$

$$x = \frac{7 \times 28}{4} = 49$$

Final Answer**49** — Option A**MCQ 47**

If $5 : 8 = 35 : x$, find x .

- A. 64 B. 48
C. 56 D. 35

Solution

$$5 : 8 = 35 : x$$

$$\frac{5}{8} = \frac{35}{x}$$

$$5x = 8 \times 35$$

$$x = \frac{8 \times 35}{5} = 56$$

Final Answer**56** — Option C**MCQ 48**

If $6 : 11 = 42 : x$, find x .

- A. 88 B. 77
C. 66 D. 42

Solution

$$6 : 11 = 42 : x$$

$$\frac{6}{11} = \frac{42}{x}$$

$$6x = 11 \times 42$$

$$x = \frac{11 \times 42}{6} = 77$$

Final Answer**77** — Option B

MCQ 49If $7 : 9 = 56 : x$, find x .

- A. 72 B. 81
C. 63 D. 56

Solution

$$\begin{aligned} 7 : 9 &= 56 : x \\ \frac{7}{9} &= \frac{56}{x} \\ 7x &= 9 \times 56 \\ x &= \frac{9 \times 56}{7} = 72 \end{aligned}$$

Final Answer**72** — Option A**MCQ 52**If $5 : 12 = 30 : x$, find x .

- A. 84 B. 60
C. 72 D. 30

Solution

$$\begin{aligned} 5 : 12 &= 30 : x \\ \frac{5}{12} &= \frac{30}{x} \\ 5x &= 12 \times 30 \\ x &= \frac{12 \times 30}{5} = 72 \end{aligned}$$

Final Answer**72** — Option C**MCQ 50**If $2 : 3 = 18 : x$, find x .

- A. 27 B. 30
C. 24 D. 18

Solution

$$\begin{aligned} 2 : 3 &= 18 : x \\ \frac{2}{3} &= \frac{18}{x} \\ 2x &= 3 \times 18 \\ x &= \frac{3 \times 18}{2} = 27 \end{aligned}$$

Final Answer**27** — Option A**MCQ 53**If $8 : 15 = 40 : x$, find x .

- A. 90 B. 60
C. 75 D. 40

Solution

$$\begin{aligned} 8 : 15 &= 40 : x \\ \frac{8}{15} &= \frac{40}{x} \\ 8x &= 15 \times 40 \\ x &= \frac{15 \times 40}{8} = 75 \end{aligned}$$

Final Answer**75** — Option C**MCQ 51**If $9 : 10 = 72 : x$, find x .

- A. 90 B. 80
C. 70 D. 72

Solution

$$\begin{aligned} 9 : 10 &= 72 : x \\ \frac{9}{10} &= \frac{72}{x} \\ 9x &= 10 \times 72 \\ x &= \frac{10 \times 72}{9} = 80 \end{aligned}$$

Final Answer**80** — Option B**MCQ 54**If $11 : 14 = 55 : x$, find x .

- A. 84 B. 56
C. 70 D. 55

Solution

$$\begin{aligned} 11 : 14 &= 55 : x \\ \frac{11}{14} &= \frac{55}{x} \\ 11x &= 14 \times 55 \\ x &= \frac{14 \times 55}{11} = 70 \end{aligned}$$

Final Answer**70** — Option C

MCQ 55If $12 : 17 = 60 : x$, find x .**A.** 102 **B.** 85**C.** 68 **D.** 60**Solution**

$$\begin{aligned}
 12 : 17 &= 60 : x \\
 \frac{12}{17} &= \frac{60}{x} \\
 12x &= 17 \times 60 \\
 x &= \frac{17 \times 60}{12} = 85
 \end{aligned}$$

Final Answer**85** — Option B**MCQ 58**If $4 : 9 = 32 : x$, find x .**A.** 81 **B.** 63**C.** 72 **D.** 32**Solution**

$$\begin{aligned}
 4 : 9 &= 32 : x \\
 \frac{4}{9} &= \frac{32}{x} \\
 4x &= 9 \times 32 \\
 x &= \frac{9 \times 32}{4} = 72
 \end{aligned}$$

Final Answer**72** — Option C**MCQ 56**If $3 : 8 = 27 : x$, find x .**A.** 80 **B.** 72**C.** 64 **D.** 27**Solution**

$$\begin{aligned}
 3 : 8 &= 27 : x \\
 \frac{3}{8} &= \frac{27}{x} \\
 3x &= 8 \times 27 \\
 x &= \frac{8 \times 27}{3} = 72
 \end{aligned}$$

Final Answer**72** — Option B**MCQ 59**

Find the mean proportional between 4 and 9.

A. 7 **B.** 5**C.** 13 **D.** 6**Solution**

$$\begin{aligned}
 a : m &= m : b \\
 m^2 &= 4 \times 9 = 36 \\
 m &= \sqrt{36} = 6
 \end{aligned}$$

Final Answer**6** — Option D**MCQ 57**If $7 : 12 = 49 : x$, find x .**A.** 84 **B.** 96**C.** 72 **D.** 49**Solution**

$$\begin{aligned}
 7 : 12 &= 49 : x \\
 \frac{7}{12} &= \frac{49}{x} \\
 7x &= 12 \times 49 \\
 x &= \frac{12 \times 49}{7} = 84
 \end{aligned}$$

Final Answer**84** — Option A**MCQ 60**

Find the mean proportional between 9 and 16.

A. 12 **B.** 13**C.** 11 **D.** 25**Solution**

$$\begin{aligned}
 a : m &= m : b \\
 m^2 &= 9 \times 16 = 144 \\
 m &= \sqrt{144} = 12
 \end{aligned}$$

Final Answer**12** — Option A

MCQ 61

Find the mean proportional between 16 and 25.

- A. 20 B. 21
C. 19 D. 41

Solution

$$a : m = m : b$$

$$m^2 = 16 \times 25 = 400$$

$$m = \sqrt{400} = 20$$

Final Answer

20 — Option A

MCQ 62

Find the mean proportional between 25 and 36.

- A. 31 B. 29
C. 30 D. 61

Solution

$$a : m = m : b$$

$$m^2 = 25 \times 36 = 900$$

$$m = \sqrt{900} = 30$$

Final Answer

30 — Option C

MCQ 63

Find the fourth proportional to 2, 3, 8.

- A. 14 B. 10
C. 8 D. 12

Solution

$$a : b = c : d$$

$$\frac{2}{3} = \frac{8}{d}$$

$$d = \frac{3 \times 8}{2} = 12$$

Final Answer

12 — Option D

MCQ 64

Find the fourth proportional to 3, 5, 12.

- A. 22 B. 18
C. 20 D. 12

Solution

$$a : b = c : d$$

$$\frac{3}{5} = \frac{12}{d}$$

$$d = \frac{5 \times 12}{3} = 20$$

Final Answer

20 — Option C

MCQ 65

Find the fourth proportional to 4, 7, 20.

- A. 37 B. 33
C. 20 D. 35

Solution

$$a : b = c : d$$

$$\frac{4}{7} = \frac{20}{d}$$

$$d = \frac{7 \times 20}{4} = 35$$

Final Answer

35 — Option D

MCQ 66

Find the fourth proportional to 5, 9, 25.

- A. 45 B. 47
C. 43 D. 25

Solution

$$a : b = c : d$$

$$\frac{5}{9} = \frac{25}{d}$$

$$d = \frac{9 \times 25}{5} = 45$$

Final Answer

45 — Option A

MCQ 67

If 5 books correspond to 750 units, what corresponds to 8 books at the same rate?

- A. 960 B. 1,200
C. 1,440 D. 750

Solution

$$\begin{aligned} 5 &\rightarrow 750 \\ 1 &\rightarrow \frac{750}{5} = 150 \\ 8 &\rightarrow 8 \times 150 = 1,200 \end{aligned}$$

Final Answer

1,200 — Option B

MCQ 68

If 12 metres of cloth correspond to 900 units, what corresponds to 20 metres of cloth at the same rate?

- A. 1,200 B. 1,800
C. 900 D. 1,500

Solution

$$\begin{aligned} 12 &\rightarrow 900 \\ 1 &\rightarrow \frac{900}{12} = 75 \\ 20 &\rightarrow 20 \times 75 = 1,500 \end{aligned}$$

Final Answer

1,500 — Option D

MCQ 69

If 7 kg of rice correspond to 1,260 units, what corresponds to 5 kg of rice at the same rate?

- A. 720 B. 1,080
C. 1,260 D. 900

Solution

$$\begin{aligned} 7 &\rightarrow 1,260 \\ 1 &\rightarrow \frac{1,260}{7} = 180 \\ 5 &\rightarrow 5 \times 180 = 900 \end{aligned}$$

Final Answer

900 — Option D

MCQ 70

If 8 litres of fuel correspond to 96 units, what corresponds to 15 litres of fuel at the same rate?

- A. 144 B. 180
C. 216 D. 96

Solution

$$\begin{aligned} 8 &\rightarrow 96 \\ 1 &\rightarrow \frac{96}{8} = 12 \\ 15 &\rightarrow 15 \times 12 = 180 \end{aligned}$$

Final Answer

180 — Option B

MCQ 71

If 4 machines correspond to 240 units, what corresponds to 7 machines at the same rate?

- A. 420 B. 336
C. 504 D. 240

Solution

$$\begin{aligned} 4 &\rightarrow 240 \\ 1 &\rightarrow \frac{240}{4} = 60 \\ 7 &\rightarrow 7 \times 60 = 420 \end{aligned}$$

Final Answer

420 — Option A

MCQ 72

If 3 hours correspond to 180 units, what corresponds to 5 hours at the same rate?

- A. 240 B. 360
C. 180 D. 300

Solution

$$\begin{aligned} 3 &\rightarrow 180 \\ 1 &\rightarrow \frac{180}{3} = 60 \\ 5 &\rightarrow 5 \times 60 = 300 \end{aligned}$$

Final Answer

300 — Option D

MCQ 73

If 9 shirts correspond to 4,050 units, what corresponds to 6 shirts at the same rate?

- A. 2,160 B. 3,240
C. 4,050 D. 2,700

Solution

$$\begin{aligned} 9 &\rightarrow 4,050 \\ 1 &\rightarrow \frac{4,050}{9} = 450 \\ 6 &\rightarrow 6 \times 450 = 2,700 \end{aligned}$$

Final Answer

2,700 — Option D

MCQ 74

If 25 pages correspond to 40 units, what corresponds to 60 pages at the same rate?

- A. 96 B. 76.8
C. 115.2 D. 40

Solution

$$\begin{aligned} 25 &\rightarrow 40 \\ 1 &\rightarrow \frac{40}{25} = 1.6 \\ 60 &\rightarrow 60 \times 1.6 = 96 \end{aligned}$$

Final Answer

96 — Option A

MCQ 75

If 12 bags correspond to 540 units, what corresponds to 20 bags at the same rate?

- A. 720 B. 900
C. 1,080 D. 540

Solution

$$\begin{aligned} 12 &\rightarrow 540 \\ 1 &\rightarrow \frac{540}{12} = 45 \\ 20 &\rightarrow 20 \times 45 = 900 \end{aligned}$$

Final Answer

900 — Option B

MCQ 76

If 15 notebooks correspond to 900 units, what corresponds to 22 notebooks at the same rate?

- A. 1,320 B. 1,056
C. 1,584 D. 900

Solution

$$\begin{aligned} 15 &\rightarrow 900 \\ 1 &\rightarrow \frac{900}{15} = 60 \\ 22 &\rightarrow 22 \times 60 = 1,320 \end{aligned}$$

Final Answer

1,320 — Option A

MCQ 77

If 6 workers complete a job in 12 days, in how many days will 9 equally efficient workers complete it?

- A. 10 B. 6
C. 8 D. 12

Solution

Total work = $6 \times 12 = 72$ worker-days

$$\begin{aligned} 9 \times d &= 72 \\ d &= \frac{72}{9} = 8 \end{aligned}$$

Final Answer

8 days — Option C

MCQ 78

If 8 workers complete a job in 15 days, in how many days will 12 equally efficient workers complete it?

- A. 12 B. 10
C. 8 D. 15

Solution

Total work = $8 \times 15 = 120$ worker-days

$$\begin{aligned} 12 \times d &= 120 \\ d &= \frac{120}{12} = 10 \end{aligned}$$

Final Answer

10 days — Option B

MCQ 79

If 10 workers complete a job in 18 days, in how many days will 15 equally efficient workers complete it?

- A. 14 B. 12
C. 10 D. 18

Solution

$$\text{Total work} = 10 \times 18 = 180 \text{ worker-days}$$

$$15 \times d = 180$$

$$d = \frac{180}{15} = 12$$

Final Answer

12 days — Option B

MCQ 80

If 12 workers complete a job in 20 days, in how many days will 16 equally efficient workers complete it?

- A. 17 B. 13
C. 20 D. 15

Solution

$$\text{Total work} = 12 \times 20 = 240 \text{ worker-days}$$

$$16 \times d = 240$$

$$d = \frac{240}{16} = 15$$

Final Answer

15 days — Option D

MCQ 81

If 5 workers complete a job in 24 days, in how many days will 8 equally efficient workers complete it?

- A. 15 B. 17
C. 13 D. 24

Solution

$$\text{Total work} = 5 \times 24 = 120 \text{ worker-days}$$

$$8 \times d = 120$$

$$d = \frac{120}{8} = 15$$

Final Answer

15 days — Option A

MCQ 82

If 15 workers complete a job in 8 days, in how many days will 10 equally efficient workers complete it?

- A. 14 B. 10
C. 8 D. 12

Solution

$$\text{Total work} = 15 \times 8 = 120 \text{ worker-days}$$

$$10 \times d = 120$$

$$d = \frac{120}{10} = 12$$

Final Answer

12 days — Option D

MCQ 83

If 20 workers complete a job in 6 days, in how many days will 12 equally efficient workers complete it?

- A. 12 B. 8
C. 6 D. 10

Solution

$$\text{Total work} = 20 \times 6 = 120 \text{ worker-days}$$

$$12 \times d = 120$$

$$d = \frac{120}{12} = 10$$

Final Answer

10 days — Option D

MCQ 84

If 9 workers complete a job in 16 days, in how many days will 18 equally efficient workers complete it?

- A. 8 B. 10
C. 6 D. 16

Solution

$$\text{Total work} = 9 \times 16 = 144 \text{ worker-days}$$

$$18 \times d = 144$$

$$d = \frac{144}{18} = 8$$

Final Answer

8 days — Option A

MCQ 85

Two numbers are in the ratio 3 : 4. If 3 is added to each, the ratio becomes 4 : 5. Find the difference between the original numbers.

- A. 2 B. 3
C. 6 D. 9

Solution

$$\text{Numbers} = 3x, 4x$$

$$\frac{3x+3}{4x+3} = \frac{4}{5}$$

$$15x + 15 = 16x + 12$$

$$x = 3$$

$$\text{Difference} = 4x - 3x = x = 3$$

Final Answer

3 — Option B

MCQ 86

Two numbers are in the ratio 2 : 5. If 6 is added to each, the ratio becomes 1 : 2. Find the smaller number.

- A. 8 B. 10
C. 12 D. 16

Solution

$$\text{Numbers} = 2x, 5x$$

$$\frac{2x+6}{5x+6} = \frac{1}{2}$$

$$4x + 12 = 5x + 6$$

$$x = 6$$

$$\text{Smaller} = 2x = 12$$

Final Answer

12 — Option C

MCQ 87

Two numbers are in the ratio 3 : 7. If 8 is added to each, the ratio becomes 1 : 2. Find the larger number.

- A. 40 B. 42
C. 48 D. 56

Solution

$$\text{Numbers} = 3x, 7x$$

$$\frac{3x+8}{7x+8} = \frac{1}{2}$$

$$6x + 16 = 7x + 8$$

$$x = 8$$

$$\text{Larger} = 7x = 56$$

Final Answer

56 — Option D

MCQ 88

Two numbers are in the ratio 5 : 8. If 6 is added to each, the ratio becomes 2 : 3. Find the smaller number.

- A. 20 B. 24
C. 30 D. 36

Solution

$$\text{Numbers} = 5x, 8x$$

$$\frac{5x+6}{8x+6} = \frac{2}{3}$$

$$15x + 18 = 16x + 12$$

$$x = 6$$

$$\text{Smaller} = 5x = 30$$

Final Answer

30 — Option C

MCQ 89

Two numbers are in the ratio 4 : 7. If 8 is subtracted from each, the ratio becomes 2 : 5. Find the smaller number.

- A. 12 B. 16
C. 20 D. 24

Solution

$$\text{Numbers} = 4x, 7x$$

$$\frac{4x - 8}{7x - 8} = \frac{2}{5}$$

$$20x - 40 = 14x - 16$$

$$6x = 24$$

$$x = 4$$

$$\text{Smaller} = 4x = 16$$

Final Answer 16 — Option B

MCQ 90

Two numbers are in the ratio 7 : 9. If 6 is added to each, the ratio becomes 4 : 5. Find their sum.

- A. 80 B. 84
C. 96 D. 100

Solution

$$\text{Numbers} = 7x, 9x$$

$$\frac{7x + 6}{9x + 6} = \frac{4}{5}$$

$$35x + 30 = 36x + 24$$

$$x = 6$$

$$\text{Sum} = 16x = 96$$

Final Answer 96 — Option C

MCQ 91

The ages of A and B are in the ratio 3 : 5 and their sum is 64. Find B's age.

- A. 24 B. 32
C. 40 D. 48

Solution

$$\text{Total parts} = 3 + 5 = 8$$

$$1 \text{ part} = \frac{64}{8} = 8$$

$$B = 5 \times 8 = 40$$

Final Answer 40 years — Option C

MCQ 92

Rs. 960 is divided between A and B in the ratio 3 : 5. Find A's share.

- A. Rs. 320 B. Rs. 360
C. Rs. 400 D. Rs. 600

Solution

$$\text{Total parts} = 3 + 5 = 8$$

$$1 \text{ part} = \frac{960}{8} = 120$$

$$A = 3 \times 120 = 360$$

Final Answer Rs. 360 — Option B

MCQ 93

If $A : B = 4 : 5$ and $B : C = 10 : 7$, find $A : B : C$.

- A. 4:5:7 B. 8:10:7
C. 8:5:7 D. 4:10:7

Solution

$$A : B = 4 : 5 = 8 : 10$$

$$B : C = 10 : 7$$

$$A : B : C = 8 : 10 : 7$$

Final Answer 8 : 10 : 7 — Option B

MCQ 94

If $x : y = 3 : 4$, find $(2x + y) : (x + 2y)$.

- A. 10:11 B. 10:12
C. 11:10 D. 12:11

Solution

$$x = 3k, y = 4k$$

$$2x + y = 6k + 4k = 10k$$

$$x + 2y = 3k + 8k = 11k$$

$$(2x + y) : (x + 2y) = 10 : 11$$

Final Answer 10 : 11 — Option A

MCQ 95

The ratio of boys to girls is 2 : 3. What percentage of the group are girls?

- A. 40% B. 50%
C. 60% D. $66\frac{2}{3}\%$

Solution

$$\text{Total parts} = 2 + 3 = 5$$

$$\text{Girls fraction} = \frac{3}{5}$$

$$\frac{3}{5} \times 100 = 60\%$$

Final Answer

60% — Option C

MCQ 96

If $a : b = 5 : 7$, find $\frac{a}{a+b}$.

- A. $\frac{5}{7}$ B. $\frac{5}{12}$
C. $\frac{7}{12}$ D. $\frac{5}{5}$

Solution

$$a = 5k, b = 7k$$

$$\frac{a}{a+b} = \frac{5k}{12k} = \frac{5}{12}$$

Final Answer $\frac{5}{12}$ — Option B**MCQ 97**

If $A : B = 3 : 4$ and $B : C = 2 : 5$, find $A : C$.

- A. 3:5 B. 3:10
C. 4:5 D. 6:20

Solution

$$A : B = 3 : 4$$

$$B : C = 2 : 5 = 4 : 10$$

$$A : C = 3 : 10$$

Final Answer

3 : 10 — Option B

MCQ 98

Two numbers are in the ratio 5 : 7. Their sum is 144. Find their difference.

- A. 12 B. 18
C. 24 D. 28

Solution

$$\text{Total parts} = 5 + 7 = 12$$

$$1 \text{ part} = \frac{144}{12} = 12$$

$$\text{Difference} = (7 - 5) \times 12 = 24$$

Final Answer

24 — Option C

MCQ 99

If 12 men can build a wall in 15 days, how many men are needed to build it in 9 days?

- A. 18 B. 20
C. 22 D. 24

Solution

$$\text{Work} = 12 \times 15 = 180 \text{ man-days}$$

$$m \times 9 = 180$$

$$m = \frac{180}{9} = 20$$

Final Answer

20 — Option B

MCQ 100

A recipe uses flour and sugar in the ratio 5 : 2. If flour is 750 g, how much sugar is required?

- A. 250 g B. 300 g
C. 320 g D. 350 g

Solution

$$5 \text{ parts} = 750$$

$$1 \text{ part} = 150$$

$$\text{Sugar} = 2 \times 150 = 300 \text{ g}$$

Final Answer

300 g — Option B

Ratio & Proportion - Rapid Revision Grid

Ratio

$$a : b = \frac{a}{b}$$

$$a : b = ka : kb$$

$$\text{Share} = \frac{\text{ratio part}}{\text{sum of parts}} \times \text{Total}$$

Direct proportion

$$x \uparrow \Rightarrow y \uparrow$$

$$\frac{x_1}{y_1} = \frac{x_2}{y_2}$$

Inverse proportion

$$x \uparrow \Rightarrow y \downarrow$$

$$x_1 y_1 = x_2 y_2$$

Proportion

$$a : b = c : d \Rightarrow ad = bc$$

$$\text{Missing term} = \frac{\text{product of cross terms}}{\text{remaining term}}$$



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Average / Arithmetic Mean MCQs

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MPhil Mathematics

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PART 3 - AVERAGE / ARITHMETIC MEAN | 100 SOLVED MCQs**Fast Average Foundation****Core formula**

$$\text{Average} = \frac{\text{Sum of values}}{\text{Number of values}}$$

$$\text{Sum} = \text{Average} \times \text{Number}$$

Missing value

$$\text{Missing} = \text{Required total} - \text{Known total}$$

Combined average

$$\bar{x} = \frac{n_1\bar{x}_1 + n_2\bar{x}_2}{n_1 + n_2}$$

Speed shortcuts For equally spaced values,

$$\text{Average} = \frac{\text{First} + \text{Last}}{2}$$

If every value changes by k , the average changes by k .

Replacement shortcut If one value a is replaced by b in n values,

$$\text{New average} = \text{Old average} + \frac{b - a}{n}$$

Exam timing Use totals only when necessary. For consecutive or equally spaced values, take the middle value or $\frac{\text{first} + \text{last}}{2}$ immediately.

Average / Arithmetic Mean - 100 Fully Solved MCQs

MCQ 1

Find the average of 12, 15, 18, 21, 24.

- A. 16 B. 18
C. 20 D. 22

Solution

$$\text{Sum} = 12 + 15 + 18 + 21 + 24 = 90$$

$$\text{Number of values} = 5$$

$$\text{Average} = \frac{90}{5} = 18$$

Final Answer

18 — Option B

MCQ 2

Find the average of 8, 10, 12, 14.

- A. 10 B. 11
C. 12 D. 13

Solution

$$\text{Sum} = 8 + 10 + 12 + 14 = 44$$

$$\text{Average} = \frac{44}{4} = 11$$

Final Answer

11 — Option B

MCQ 3

Find the average of 25, 30, 35.

- A. 28 B. 30
C. 32 D. 35

Solution

$$\text{Sum} = 25 + 30 + 35 = 90$$

$$\text{Average} = \frac{90}{3} = 30$$

Final Answer

30 — Option B

MCQ 4

Find the average of 7, 13, 19, 25, 31.

- A. 17 B. 18
C. 19 D. 20

Solution

$$\text{Sum} = 7 + 13 + 19 + 25 + 31 = 95$$

$$\text{Average} = \frac{95}{5} = 19$$

Final Answer

19 — Option C

MCQ 5

A student scores 65, 72, 80, 68, 75 in five tests. Find the average score.

- A. 70 B. 71
C. 72 D. 73

Common one-paper pattern; values independently constructed.

Solution

$$\text{Total} = 65 + 72 + 80 + 68 + 75 = 360$$

$$\text{Average} = \frac{360}{5} = 72$$

Final Answer

72 — Option C

MCQ 6

Find the average of 14, 16, 18, 20, 22, 24.

- A. 18 B. 19
C. 20 D. 21

Solution

$$\text{Sum} = 14 + 16 + 18 + 20 + 22 + 24 = 114$$

$$\text{Average} = \frac{114}{6} = 19$$

Final Answer

19 — Option B

MCQ 7

Find the average of 2.5, 3.5, 4.5, 5.5.

- A. 3.5 B. 4
C. 4.5 D. 5

Solution

$$\text{Sum} = 2.5 + 3.5 + 4.5 + 5.5 = 16$$

$$\text{Average} = \frac{16}{4} = 4$$

Final Answer

4 — Option B

MCQ 8Find the average of $\frac{1}{2}, \frac{3}{4}, 1$.

- A. $\frac{2}{3}$ B. $\frac{3}{4}$
C. $\frac{5}{6}$ D. 1

Solution

$$\frac{1}{2} + \frac{3}{4} + 1 = \frac{2}{4} + \frac{3}{4} + \frac{4}{4} = \frac{9}{4}$$

$$\text{Average} = \frac{\frac{9}{4}}{3} = \frac{9}{4} \times \frac{1}{3} = \frac{3}{4}$$

Final Answer $\frac{3}{4}$ — Option B**MCQ 9**

Find the average of the first five positive even numbers.

- A. 5 B. 6
C. 7 D. 8

Solution

$$2, 4, 6, 8, 10$$

$$\text{Sum} = 2 + 4 + 6 + 8 + 10 = 30$$

$$\text{Average} = \frac{30}{5} = 6$$

Final Answer

6 — Option B

MCQ 10

Find the average of 101, 103, 105, 107, 109.

- A. 103 B. 104
C. 105 D. 106

Solution

Equally spaced values

$$\text{Average} = \text{middle value} = 105$$

Final Answer

105 — Option C

MCQ 11

Find the average of 9, 12, 15, 18, 21, 24, 27.

- A. 17 B. 18
C. 19 D. 20

Solution

Equally spaced values

$$\text{Average} = \frac{9 + 27}{2} = \frac{36}{2} = 18$$

Final Answer

18 — Option B

MCQ 12

Find the average of the first ten natural numbers 1 to 10.

- A. 5 B. 5.5
C. 6 D. 6.5

Solution

$$\text{Sum} = \frac{10(10 + 1)}{2} = 55$$

$$\text{Average} = \frac{55}{10} = 5.5$$

Final Answer

5.5 — Option B

MCQ 13

Find the average of 21, 23, 25, 27, 29.

- A. 24 B. 25
C. 26 D. 27

Solution

Average = middle value = 25

Final Answer

25 — Option B

MCQ 14

Find the average of four consecutive integers 18, 19, 20, 21.

- A. 19 B. 19.5
C. 20 D. 20.5

Solution

$$\text{Sum} = 18 + 19 + 20 + 21 = 78$$

$$\text{Average} = \frac{78}{4} = 19.5$$

Final Answer

19.5 — Option B

MCQ 15

Find the average of the first five positive multiples of 7.

- A. 14 B. 18
C. 21 D. 28

Solution

$$7, 14, 21, 28, 35$$

$$\text{Average} = \frac{7 + 35}{2} = 21$$

Final Answer

21 — Option C

MCQ 16

The average of five numbers is 24. Four numbers are 20, 22, 25, 27. Find the fifth number.

- A. 24 B. 25
C. 26 D. 27

Solution

$$\text{Required total} = 5 \times 24 = 120$$

$$\text{Known total} = 20 + 22 + 25 + 27 = 94$$

$$x = 120 - 94 = 26$$

Final Answer

26 — Option C

MCQ 17

The average of six numbers is 18. Five are 10, 15, 17, 22, 24. Find the sixth.

- A. 18 B. 19
C. 20 D. 21

Solution

$$\text{Required total} = 6 \times 18 = 108$$

$$\text{Known total} = 10 + 15 + 17 + 22 + 24 = 88$$

$$x = 108 - 88 = 20$$

Final Answer

20 — Option C

MCQ 18

The average of four numbers is 35. Three are 28, 32, 40. Find the fourth.

- A. 36 B. 38
C. 40 D. 42

Solution

$$\text{Required total} = 4 \times 35 = 140$$

$$\text{Known total} = 28 + 32 + 40 = 100$$

$$x = 140 - 100 = 40$$

Final Answer

40 — Option C

MCQ 19

The average of eight numbers is 42. The sum of seven of them is 280. Find the eighth.

- A. 48 B. 52
C. 56 D. 60

Solution

$$\text{Required total} = 8 \times 42 = 336$$

$$x = 336 - 280 = 56$$

Final Answer

56 — Option C

MCQ 20

The average of four numbers is 30. Three are 25, 28, 31. Find the fourth.

- A. 34 B. 35
C. 36 D. 37

Solution

$$\text{Required total} = 4 \times 30 = 120$$

$$\text{Known total} = 25 + 28 + 31 = 84$$

$$x = 120 - 84 = 36$$

Final Answer

36 — Option C

MCQ 21

Four numbers have average 18. A fifth number is added and the average becomes 20. Find the fifth number.

- A. 24 B. 26
C. 28 D. 30

Solution

$$\text{Old total} = 4 \times 18 = 72$$

$$\text{New total} = 5 \times 20 = 100$$

$$x = 100 - 72 = 28$$

Final Answer

28 — Option C

MCQ 22

Five numbers have average 16. After adding one number, the average becomes 17. Find the added number.

- A. 20 B. 21
C. 22 D. 23

Solution

$$\text{Old total} = 5 \times 16 = 80$$

$$\text{New total} = 6 \times 17 = 102$$

$$x = 102 - 80 = 22$$

Final Answer

22 — Option C

MCQ 23

Eight observations have average 45. One more observation makes the average 47. Find the new observation.

- A. 59 B. 61
C. 63 D. 65

Solution

$$\text{Old total} = 8 \times 45 = 360$$

$$\text{New total} = 9 \times 47 = 423$$

$$x = 423 - 360 = 63$$

Final Answer

63 — Option C

MCQ 24

A batsman averages 42 runs in five innings. What must he score in the sixth inning to raise the average to 45?

- A. 54 B. 57
C. 60 D. 63

Reported past-paper type; wording and values independently prepared.

Solution

$$\text{Old runs} = 5 \times 42 = 210$$

$$\text{Required runs} = 6 \times 45 = 270$$

$$x = 270 - 210 = 60$$

Final Answer

60 — Option C

MCQ 25

A student averages 72 in four tests. What score is needed in the fifth test for an average of 75?

- A. 81 B. 84
C. 87 D. 90

Solution

$$\text{Old total} = 4 \times 72 = 288$$

$$\text{Required total} = 5 \times 75 = 375$$

$$x = 375 - 288 = 87$$

Final Answer

87 — Option C

MCQ 26

Ten workers have an average monthly salary of Rs. 30,000. If one worker joins and the average becomes Rs. 31,000, find the new worker's salary.

- A. Rs. 36,000 B. Rs. 38,000
C. Rs. 40,000 D. Rs. 41,000

Solution

$$\text{Old total} = 10 \times 30000 = 300000$$

$$\text{New total} = 11 \times 31000 = 341000$$

$$x = 341000 - 300000 = 41000$$

Final Answer

Rs. 41,000 — Option D

MCQ 27

Average daily sales for seven days are 120 units. What must the eighth day's sales be to make the average 125?

- A. 150 B. 155
C. 160 D. 165

Solution

$$\text{Old total} = 7 \times 120 = 840$$

$$\text{Required total} = 8 \times 125 = 1000$$

$$x = 1000 - 840 = 160$$

Final Answer

160 — Option C

MCQ 28

Nine observations have average 24. If one observation 36 is removed, find the new average.

- A. 21.5 B. 22
C. 22.5 D. 23

Solution

$$\text{Old total} = 9 \times 24 = 216$$

$$\text{New total} = 216 - 36 = 180$$

$$\text{New average} = \frac{180}{8} = 22.5$$

Final Answer

22.5 — Option C

MCQ 29

Twelve numbers have average 50. If the number 39 is removed, find the average of the remaining numbers.

- A. 50 B. 50.5
C. 51 D. 51.5

Solution

$$\text{Old total} = 12 \times 50 = 600$$

$$\text{New total} = 600 - 39 = 561$$

$$\text{New average} = \frac{561}{11} = 51$$

Final Answer

51 — Option C

MCQ 30

Six numbers have average 25. The number 40 is replaced by 28. Find the new average.

- A. 22 B. 23
C. 24 D. 25

Solution

$$\text{Old total} = 6 \times 25 = 150$$

$$\text{Change} = 28 - 40 = -12$$

$$\text{New total} = 150 - 12 = 138$$

$$\text{New average} = \frac{138}{6} = 23$$

Final Answer

23 — Option B

MCQ 31

The average marks of 20 students are 60. One new student joins and the average becomes 61. Find the new student's marks.

- A. 76 B. 79
C. 81 D. 84

Solution

$$\text{Old total} = 20 \times 60 = 1200$$

$$\text{New total} = 21 \times 61 = 1281$$

$$x = 1281 - 1200 = 81$$

Final Answer

81 — Option C

MCQ 32

A team of 11 players has average score 28. A player scoring 15 is replaced and the average rises by 2. Find the new player's score.

- A. 33 B. 35
C. 37 D. 39

Solution

$$\text{Increase in total} = 11 \times 2 = 22$$

$$\text{New score} = 15 + 22 = 37$$

Final Answer

37 — Option C

MCQ 33

The average age of 15 persons is 24 years. A child joins and the average becomes 23 years. Find the child's age.

- A. 6 B. 8
C. 10 D. 12

Common reported one-paper pattern; values adapted.

Solution

$$\text{Old total age} = 15 \times 24 = 360$$

$$\text{New total age} = 16 \times 23 = 368$$

$$x = 368 - 360 = 8$$

Final Answer

8 years — Option B

MCQ 34

The average marks of 25 students are 40. A teacher is included and the average becomes 42. Find the teacher's value in this numerical set.

- A. 82 B. 88
C. 92 D. 96

Solution

$$\text{Old total} = 25 \times 40 = 1000$$

$$\text{New total} = 26 \times 42 = 1092$$

$$x = 1092 - 1000 = 92$$

Final Answer

92 — Option C

MCQ 35

Ten persons have average weight 55 kg. A person weighing 64 kg leaves. Find the average weight of the remaining nine.

- A. 53 B. 54
C. 55 D. 56

Solution

$$\text{Old total} = 10 \times 55 = 550$$

$$\text{New total} = 550 - 64 = 486$$

$$\text{New average} = \frac{486}{9} = 54$$

Final Answer

54 kg — Option B

MCQ 36

Twelve numbers have average 48. If the number 37 is removed, what is the new average?

- A. 48 B. 49
C. 50 D. 51

Solution

$$\text{Old total} = 12 \times 48 = 576$$

$$\text{New total} = 576 - 37 = 539$$

$$\text{New average} = \frac{539}{11} = 49$$

Final Answer

49 — Option B

MCQ 37

Eight workers have an average salary of Rs. 25,000. Two new workers join and the new average becomes Rs. 26,000. Find the average salary of the two new workers.

- A. Rs. 28,000 B. Rs. 30,000
C. Rs. 32,000 D. Rs. 35,000

Solution

$$\text{Old total} = 8 \times 25000 = 200000$$

$$\text{New total} = 10 \times 26000 = 260000$$

$$\text{Two new salaries} = 260000 - 200000 = 60000$$

$$\text{Their average} = \frac{60000}{2} = 30000$$

Final Answer

Rs. 30,000 — Option B

MCQ 38

The average age of 30 students is 15 years. Their teacher joins and the average becomes 16 years. Find the teacher's age.

- A. 42 B. 44
C. 46 D. 48

Solution

$$\text{Students total} = 30 \times 15 = 450$$

$$\text{New total} = 31 \times 16 = 496$$

$$\text{Teacher age} = 496 - 450 = 46$$

Final Answer

46 years — Option C

MCQ 39

The average of 18 values is 24. A value 30 is replaced by 21. Find the new average.

- A. 23 B. 23.5
C. 24 D. 24.5

Solution

$$\text{Old total} = 18 \times 24 = 432$$

$$\text{New total} = 432 - 30 + 21 = 423$$

$$\text{New average} = \frac{423}{18} = 23.5$$

Final Answer

23.5 — Option B

MCQ 40

The average marks of 40 students were calculated as 68. A mark 80 was entered instead of 40. Find the correct average.

- A. 66 B. 67
C. 68 D. 69

Solution

$$\text{Wrong total} = 40 \times 68 = 2720$$

$$\text{Correct total} = 2720 - 80 + 40 = 2680$$

$$\text{Correct average} = \frac{2680}{40} = 67$$

Final Answer

67 — Option B

MCQ 41

The average of 20 numbers was calculated as 35. A value 48 was used instead of 84. Find the correct average.

- A. 35.8 B. 36.2
C. 36.8 D. 37.2

Solution

$$\text{Wrong total} = 20 \times 35 = 700$$

$$\text{Correction} = 84 - 48 = 36$$

$$\text{Correct total} = 700 + 36 = 736$$

$$\text{Correct average} = \frac{736}{20} = 36.8$$

Final Answer

36.8 — Option C

MCQ 42

The average of 10 values was found to be 24. Later, 16 was found to have been entered instead of 61. Find the correct average.

- A. 27.5 B. 28
C. 28.5 D. 29

Solution

$$\text{Wrong total} = 10 \times 24 = 240$$

$$\text{Correct total} = 240 - 16 + 61 = 285$$

$$\text{Correct average} = \frac{285}{10} = 28.5$$

Final Answer

28.5 — Option C

MCQ 43

The average of 25 values was calculated as 32. One value 25 should have been 50. Find the correct average.

- A. 32 B. 32.5
C. 33 D. 33.5

Solution

$$\text{Wrong total} = 25 \times 32 = 800$$

$$\text{Correct total} = 800 - 25 + 50 = 825$$

$$\text{Correct average} = \frac{825}{25} = 33$$

Final Answer

33 — Option C

MCQ 44

The average of 30 values was calculated as 42. One value 72 should have been 27. Find the correct average.

- A. 40 B. 40.5
C. 41 D. 41.5

Solution

$$\text{Wrong total} = 30 \times 42 = 1260$$

$$\text{Correct total} = 1260 - 72 + 27 = 1215$$

$$\text{Correct average} = \frac{1215}{30} = 40.5$$

Final Answer

40.5 — Option B

MCQ 45

The average of 50 values was calculated as 60. A value 86 should have been 68. Find the correct average.

- A. 59.36 B. 59.64
C. 60.36 D. 60.64

Solution

$$\text{Wrong total} = 50 \times 60 = 3000$$

$$\text{Correct total} = 3000 - 86 + 68 = 2982$$

$$\text{Correct average} = \frac{2982}{50} = 59.64$$

Final Answer

59.64 — Option B

MCQ 46

A group of 20 has average 50, and another group of 30 has average 60. Find the combined average.

- A. 54 B. 55
C. 56 D. 58

Solution

$$\text{Combined total} = 20(50) + 30(60) = 1000 + 1800 = 2800$$

$$\text{Total members} = 20 + 30 = 50$$

$$\text{Average} = \frac{2800}{50} = 56$$

Final Answer

56 — Option C

MCQ 47

A group of 15 has average 40, and a group of 25 has average 52. Find the combined average.

- A. 46 B. 47
C. 47.5 D. 48

Solution

$$\text{Combined total} = 15(40) + 25(52) = 600 + 1300 = 1900$$

$$\text{Members} = 40$$

$$\text{Average} = \frac{1900}{40} = 47.5$$

Final Answer

47.5 — Option C

MCQ 48

The average marks of 18 boys are 65, and those of 12 girls are 75. Find the class average.

- A. 67 B. 68
C. 69 D. 70

Solution

$$\text{Total marks} = 18(65) + 12(75) = 1170 + 900 = 2070$$

$$\text{Students} = 30$$

$$\text{Average} = \frac{2070}{30} = 69$$

Final Answer

69 — Option C

MCQ 49

Forty employees average Rs. 30,000 and sixty employees average Rs. 40,000. Find the combined average salary.

- A. Rs. 34,000 B. Rs. 35,000
C. Rs. 36,000 D. Rs. 38,000

Solution

$$\text{Total} = 40(30000) + 60(40000) = 1200000 + 2400000 = 3600000$$

$$\text{Employees} = 100$$

$$\text{Average} = \frac{3600000}{100} = 36000$$

Final Answer

Rs. 36,000 — Option C

MCQ 50

A class of 25 has average 70, and another class of 35 has average 80. Find the combined average.

- A. 74.50 B. 75.00
C. 75.83 D. 76.50

Solution

$$\text{Total} = 25(70) + 35(80) = 1750 + 2800 = 4550$$

$$\text{Students} = 60$$

$$\text{Average} = \frac{4550}{60} = 75.833 \dots$$

Final Answer 75.83 (approx.) — Option C

MCQ 51

Fifty students have average marks 70. Twenty of them average 76. Find the average of the remaining 30.

- A. 64 B. 65
C. 66 D. 68

Solution

$$\text{Whole total} = 50(70) = 3500$$

$$\text{First group total} = 20(76) = 1520$$

$$\text{Remaining total} = 3500 - 1520 = 1980$$

$$\text{Average} = \frac{1980}{30} = 66$$

Final Answer 66 — Option C

MCQ 52

Forty values have average 55. Fifteen of them have average 50. Find the average of the remaining 25.

- A. 56 B. 57
C. 58 D. 59

Solution

$$\text{Whole total} = 40(55) = 2200$$

$$\text{First total} = 15(50) = 750$$

$$\text{Remaining} = 2200 - 750 = 1450$$

$$\text{Average} = \frac{1450}{25} = 58$$

Final Answer 58 — Option C

MCQ 53

Sixty persons have average age 45. Thirty-six men have average age 50. Find the average age of the remaining 24 persons.

- A. 35 B. 36.5
C. 37.5 D. 40

Solution

$$\text{Whole total} = 60(45) = 2700$$

$$\text{Men total} = 36(50) = 1800$$

$$\text{Remaining total} = 2700 - 1800 = 900$$

$$\text{Average} = \frac{900}{24} = 37.5$$

Final Answer 37.5 — Option C

MCQ 54

Eighty students have average marks 65. Fifty of them average 68. Find the average of the remaining 30.

- A. 58 B. 59
C. 60 D. 61

Solution

$$\text{Whole total} = 80(65) = 5200$$

$$\text{First group} = 50(68) = 3400$$

$$\text{Remaining} = 1800$$

$$\text{Average} = \frac{1800}{30} = 60$$

Final Answer 60 — Option C

MCQ 55

Thirty students average 75. The top ten average 90. Find the average of the remaining twenty.

- A. 65 B. 67.5
C. 70 D. 72.5

Solution

$$\text{Whole total} = 30(75) = 2250$$

$$\text{Top ten} = 10(90) = 900$$

$$\text{Remaining total} = 2250 - 900 = 1350$$

$$\text{Average} = \frac{1350}{20} = 67.5$$

Final Answer 67.5 — Option B

MCQ 56

One hundred observations average 48. Forty of them average 60. Find the average of the remaining sixty.

- A. 38 B. 40
C. 42 D. 44

Solution

$$\text{Whole total} = 100(48) = 4800$$

$$\text{First group} = 40(60) = 2400$$

$$\text{Remaining} = 2400$$

$$\text{Average} = \frac{2400}{60} = 40$$

Final Answer

40 — Option B

MCQ 57

Twenty-four players average 30 runs. Eight batsmen average 45 runs. Find the average of the remaining sixteen players.

- A. 20 B. 22.5
C. 25 D. 27.5

Solution

$$\text{Whole total} = 24(30) = 720$$

$$\text{Batsmen} = 8(45) = 360$$

$$\text{Remaining} = 360$$

$$\text{Average} = \frac{360}{16} = 22.5$$

Final Answer

22.5 — Option B

MCQ 58

A family of six has average age 28. The two parents have average age 48. Find the average age of the four children.

- A. 16 B. 18
C. 20 D. 22

Solution

$$\text{Family total} = 6(28) = 168$$

$$\text{Parents total} = 2(48) = 96$$

$$\text{Children total} = 168 - 96 = 72$$

$$\text{Average} = \frac{72}{4} = 18$$

Final Answer

18 years — Option B

MCQ 59

A shop sells an average of 120 units per day for five days and 150 units per day for the next three days. Find the eight-day average.

- A. 128.75 B. 130
C. 131.25 D. 135

Solution

$$\text{Total} = 5(120) + 3(150) = 600 + 450 = 1050$$

$$\text{Average} = \frac{1050}{8} = 131.25$$

Final Answer

131.25 — Option C

MCQ 60

A factory averages 80 units for four months and 100 units for the next two months. Find the six-month average.

- A. 84 B. 85
C. 86.67 D. 90

Solution

$$\text{Total} = 4(80) + 2(100) = 320 + 200 = 520$$

$$\text{Average} = \frac{520}{6} = 86.666 \dots$$

Final Answer

86.67 (approx.) — Option C

MCQ 61

The ages of a father, mother and child are 40, 36, 8 years. Find their average age.

- A. 26 B. 28
C. 30 D. 32

Solution

$$\text{Total age} = 40 + 36 + 8 = 84$$

$$\text{Average} = \frac{84}{3} = 28$$

Final Answer

28 years — Option B

MCQ 62

A family of five has average age 26. The parents' ages total 70. Find the average age of the three children.

- A. 18 B. 20
C. 22 D. 24

Solution

$$\text{Family total} = 5(26) = 130$$

$$\text{Children total} = 130 - 70 = 60$$

$$\text{Children average} = \frac{60}{3} = 20$$

Final Answer

20 years — Option B

MCQ 63

Six students have average age 14. Their teacher joins and the average becomes 18. Find the teacher's age.

- A. 38 B. 40
C. 42 D. 44

Solution

$$\text{Students total} = 6(14) = 84$$

$$\text{New total} = 7(18) = 126$$

$$\text{Teacher age} = 126 - 84 = 42$$

Final Answer

42 years — Option C

MCQ 64

The average age of 11 players is 22 years. The captain is 32. Find the average age of the other ten players.

- A. 20 B. 21
C. 22 D. 23

Solution

$$\text{Whole total} = 11(22) = 242$$

$$\text{Others total} = 242 - 32 = 210$$

$$\text{Average} = \frac{210}{10} = 21$$

Final Answer

21 years — Option B

MCQ 65

A student has average marks 74 in six subjects. The total of five subject marks is 365. Find the sixth subject mark.

- A. 75 B. 77
C. 79 D. 81

Solution

$$\text{Required total} = 6(74) = 444$$

$$x = 444 - 365 = 79$$

Final Answer

79 — Option C

MCQ 66

Eight subjects have average marks 68. If one subject mark is 96, find the average of the remaining seven.

- A. 62 B. 64
C. 66 D. 68

Solution

$$\text{Whole total} = 8(68) = 544$$

$$\text{Remaining total} = 544 - 96 = 448$$

$$\text{Average} = \frac{448}{7} = 64$$

Final Answer

64 — Option B

MCQ 67

A player scores 45, 55, 65, 75, 85 in five matches. Find the average.

- A. 60 B. 62
C. 65 D. 68

Solution

$$\text{Total} = 45 + 55 + 65 + 75 + 85 = 325$$

$$\text{Average} = \frac{325}{5} = 65$$

Final Answer

65 — Option C

MCQ 68

A batsman averages 54 runs in five innings. His first four innings total 200. Find the fifth score.

- A. 60 B. 65
C. 70 D. 75

Solution

$$\text{Five-innings total} = 5(54) = 270$$

$$\text{Fifth score} = 270 - 200 = 70$$

Final Answer

70 — Option C

MCQ 69

A batsman averages 36 runs in ten matches. After the eleventh match, the average becomes 38. Find the eleventh score.

- A. 52 B. 56
C. 58 D. 60

Solution

$$\text{Old total} = 10(36) = 360$$

$$\text{New total} = 11(38) = 418$$

$$\text{Score} = 418 - 360 = 58$$

Final Answer

58 — Option C

MCQ 70

A player averages 50 in 20 innings. He scores 100 in the next inning. Find the new average.

- A. 51.50 B. 52.00
C. 52.38 D. 52.50

Solution

$$\text{Old total} = 20(50) = 1000$$

$$\text{New total} = 1000 + 100 = 1100$$

$$\text{Average} = \frac{1100}{21} = 52.3809 \dots$$

Final Answer

52.38 (approx.) — Option C

MCQ 71

Five employees earn 25, 30, 35, 40, 45 thousand rupees. Find the average salary in thousand rupees.

- A. 33 B. 34
C. 35 D. 36

Solution

$$\text{Total} = 25 + 30 + 35 + 40 + 45 = 175$$

$$\text{Average} = \frac{175}{5} = 35$$

Final Answer

35 thousand — Option C

MCQ 72

Nine employees have average salary Rs. 44,000. Eight of them average Rs. 40,000. Find the ninth employee's salary.

- A. Rs. 72,000 B. Rs. 74,000
C. Rs. 76,000 D. Rs. 78,000

Solution

$$\text{Nine total} = 9(44000) = 396000$$

$$\text{Eight total} = 8(40000) = 320000$$

$$x = 396000 - 320000 = 76000$$

Final Answer

Rs. 76,000 — Option C

MCQ 73

A factory produces an average of 140 units per day for seven days. The first six days total 810 units. Find the seventh day's production.

- A. 150 B. 160
C. 170 D. 180

Solution

$$\text{Seven-day total} = 7(140) = 980$$

$$x = 980 - 810 = 170$$

Final Answer

170 — Option C

MCQ 74

Monthly sales average 250 units for twelve months. The first ten months average 240. Find the average of the last two months.

- A. 280 B. 290
C. 300 D. 310

Solution

$$\text{Year total} = 12(250) = 3000$$

$$\text{First ten} = 10(240) = 2400$$

$$\text{Last two total} = 600$$

$$\text{Average} = \frac{600}{2} = 300$$

Final Answer 300 — Option C

MCQ 75

The average temperature for seven days is 28°C . The first three days average 30°C . Find the average for the last four days.

- A. 25.5°C B. 26°C
C. 26.5°C D. 27°C

Solution

$$\text{Seven-day total} = 7(28) = 196$$

$$\text{First three} = 3(30) = 90$$

$$\text{Last four total} = 196 - 90 = 106$$

$$\text{Average} = \frac{106}{4} = 26.5$$

Final Answer 26.5°C — Option C

MCQ 76

The average of five consecutive integers is 32. Find the smallest integer.

- A. 28 B. 29
C. 30 D. 31

Solution

$$x, x+1, x+2, x+3, x+4$$

$$\text{Average} = x+2 = 32$$

$$x = 30$$

Final Answer 30 — Option C

MCQ 77

Seven consecutive even integers have average 24. Find the smallest.

- A. 16 B. 18
C. 20 D. 22

Solution

$$\text{Middle number} = 24$$

$$\text{Three even steps below} = 24 - 3(2) = 18$$

Final Answer 18 — Option B

MCQ 78

Six consecutive odd integers have average 20. Find the largest.

- A. 23 B. 25
C. 27 D. 29

Solution

$$15, 17, 19, 21, 23, 25$$

$$\text{Average} = \frac{15+25}{2} = 20$$

$$\text{Largest} = 25$$

Final Answer 25 — Option B

MCQ 79

Four consecutive integers have average 11.5. Find the largest.

- A. 12 B. 13
C. 14 D. 15

Solution

$$10, 11, 12, 13$$

$$\text{Average} = \frac{10+13}{2} = 11.5$$

$$\text{Largest} = 13$$

Final Answer 13 — Option B

MCQ 80

Nine consecutive multiples of 3 have average 30. Find the smallest.

- A. 15 B. 18
C. 21 D. 24

Solution

Middle multiple = 30

Four steps below = $30 - 4(3) = 18$

Final Answer

18 — Option B

MCQ 81

The average of 11 consecutive integers is 50. Find the largest integer.

- A. 54 B. 55
C. 56 D. 60

Solution

Middle = 50

Five steps above = $50 + 5 = 55$

Final Answer

55 — Option B

MCQ 82

The average of five consecutive odd integers is 37. Find their sum.

- A. 175 B. 180
C. 185 D. 190

Solution

Sum = Average $\times$ Number

= $37 \times 5 = 185$

Final Answer

185 — Option C

MCQ 83

The average of seven consecutive multiples of 4 is 40. Find the largest.

- A. 48 B. 52
C. 56 D. 60

Solution

Middle = 40

Three steps above = $40 + 3(4) = 52$

Final Answer

52 — Option B

MCQ 84

If the average of $x, x + 5, x + 10$ is 25, find x .

- A. 15 B. 20
C. 25 D. 30

Solution

$$\frac{x + (x + 5) + (x + 10)}{3} = 25$$

$$\frac{3x + 15}{3} = 25$$

$$3x + 15 = 75$$

$$3x = 60$$

$$x = 20$$

Final Answer

20 — Option B

MCQ 85

If the average of $2x, 3x, 5x$ is 40, find x .

- A. 10 B. 12
C. 15 D. 20

Solution

$$\frac{2x + 3x + 5x}{3} = 40$$

$$\frac{10x}{3} = 40$$

$$10x = 120$$

$$x = 12$$

Final Answer

12 — Option B

MCQ 86

Twenty items cost an average of Rs. 10 each and thirty items cost an average of Rs. 20 each. Find the average cost per item.

- A. 14 B. 15
C. 16 D. 18

Solution

$$\text{Total cost} = 20(10) + 30(20) = 200 + 600 = 800$$

$$\text{Items} = 50$$

$$\text{Average} = \frac{800}{50} = 16$$

Final Answer

Rs. 16 — Option C

MCQ 87

Forty students average 60 marks and ten students average 80 marks. Find the combined average.

- A. 62 B. 64
C. 66 D. 68

Solution

$$\text{Total} = 40(60) + 10(80) = 2400 + 800 = 3200$$

$$\text{Students} = 50$$

$$\text{Average} = \frac{3200}{50} = 64$$

Final Answer

64 — Option B

MCQ 88

Three kilograms of an item cost Rs. 200 per kg and two kilograms cost Rs. 350 per kg. Find the average cost per kg.

- A. Rs. 240 B. Rs. 250
C. Rs. 260 D. Rs. 270

Solution

$$\text{Total cost} = 3(200) + 2(350) = 600 + 700 = 1300$$

$$\text{Total mass} = 5 \text{ kg}$$

$$\text{Average} = \frac{1300}{5} = 260$$

Final Answer

Rs. 260 — Option C

MCQ 89

A course has a 3-credit subject with score 80 and a 2-credit subject with score 70. Find the credit-weighted average.

- A. 74 B. 75
C. 76 D. 77

Solution

$$\text{Weighted total} = 3(80) + 2(70) = 240 + 140 = 380$$

$$\text{Credits} = 3 + 2 = 5$$

$$\text{Weighted average} = \frac{380}{5} = 76$$

Final Answer

76 — Option C

MCQ 90

A vehicle travels for one hour at 60 km/h and one hour at 40 km/h. Find the average speed.

- A. 45 km/h B. 48 km/h
C. 50 km/h D. 52 km/h

Solution

$$\text{Distance} = 60(1) + 40(1) = 100$$

$$\text{Time} = 1 + 1 = 2$$

$$\text{Average speed} = \frac{100}{2} = 50$$

Final Answer

50 km/h — Option C

MCQ 91

A vehicle covers equal distances at 60 km/h and 40 km/h. Find the average speed.

- A. 45 km/h B. 48 km/h
C. 50 km/h D. 52 km/h

Useful cross-topic average pattern; detailed speed treatment appears later.

Solution

$$\text{For equal distances: } v_{avg} = \frac{2ab}{a+b}$$

$$= \frac{2(60)(40)}{60+40}$$

$$= \frac{4800}{100} = 48$$

Final Answer

48 km/h — Option B

MCQ 92

Five litres of liquid cost Rs. 60 per litre and three litres cost Rs. 80 per litre. Find the average cost per litre.

- A. Rs. 65 B. Rs. 67.50
C. Rs. 70 D. Rs. 72.50

Solution

$$\text{Total cost} = 5(60) + 3(80) = 300 + 240 = 540$$

$$\text{Litres} = 8$$

$$\text{Average} = \frac{540}{8} = 67.5$$

Final Answer

Rs. 67.50 — Option B

MCQ 93

An investment has 70% of its amount earning 10% and 30% earning 20%. Find the weighted average return.

- A. 12% B. 13%
C. 14% D. 15%

Solution

$$\begin{aligned}\text{Weighted return} &= 0.70(10) + 0.30(20) \\ &= 7 + 6 = 13\%\end{aligned}$$

Final Answer

13% — Option B

MCQ 94

Find the average of all integers from 1 to 99.

- A. 49 B. 49.5
C. 50 D. 50.5

Solution

$$\begin{aligned}\text{Average} &= \frac{\text{first} + \text{last}}{2} \\ &= \frac{1 + 99}{2} = 50\end{aligned}$$

Final Answer

50 — Option C

MCQ 95

Find the average of the multiples of 5 from 5 to 50.

- A. 25 B. 27.5
C. 30 D. 32.5

Solution

$$\begin{aligned}5, 10, 15, \dots, 50 \\ \text{Average} &= \frac{5 + 50}{2} = 27.5\end{aligned}$$

Final Answer

27.5 — Option B

MCQ 96

The average of eight numbers is 15. If 3 is added to every number, what is the new average?

- A. 15 B. 16
C. 17 D. 18

Solution

$$\text{Old average} = 15$$

Each value increases by 3

$$\text{New average} = 15 + 3 = 18$$

Final Answer

18 — Option D

MCQ 97

The average of a set of numbers is 12. If every number is doubled, what is the new average?

- A. 18 B. 20
C. 24 D. 36

Solution

$$\begin{aligned}\text{New average} &= 2(\text{old average}) \\ &= 2(12) = 24\end{aligned}$$

Final Answer

24 — Option C

MCQ 98

The average of $x, x + 2, x + 4$ is 18. Find x .

- A. 14 B. 16
C. 18 D. 20

Solution

$$\frac{x + (x + 2) + (x + 4)}{3} = 18$$

$$\frac{3x + 6}{3} = 18$$

$$3x + 6 = 54$$

$$3x = 48$$

$$x = 16$$

Final Answer

16 — Option B

MCQ 99

Three numbers are in the ratio 2 : 3 : 4 and their average is 27. Find the largest number.

- A. 27 B. 30
C. 36 D. 45

Solution

$$\text{Total} = 3(27) = 81$$

$$\text{Ratio parts} = 2 + 3 + 4 = 9$$

$$1 \text{ part} = \frac{81}{9} = 9$$

$$\text{Largest} = 4(9) = 36$$

Final Answer**36** — Option C**MCQ 100**

The average of two numbers is 30 and their difference is 10. Find the larger number.

- A. 30 B. 35
C. 40 D. 45

Solution

$$x + y = 2(30) = 60$$

$$x - y = 10$$

$$2x = 70$$

$$x = 35$$

Final Answer**35** — Option B

Average / Arithmetic Mean - Rapid Revision Grid**Direct mean**

$$\bar{x} = \frac{\sum x}{n}$$
$$\sum x = n\bar{x}$$

New member

$$\text{New value} = (n + 1)\bar{x}_{\text{new}} - n\bar{x}_{\text{old}}$$

Combined groups

$$\bar{x} = \frac{n_1\bar{x}_1 + n_2\bar{x}_2}{n_1 + n_2}$$

Correction

$$\bar{x}_{\text{correct}} = \bar{x}_{\text{wrong}} + \frac{\text{correct value} - \text{wrong value}}{n}$$



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Fractions & Decimals MCQs

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PART 4 - FRACTIONS & DECIMALS | 100 SOLVED MCQs**Fast Fractions and Decimals Foundation****Equivalent fractions**

$$\frac{a}{b} = \frac{ak}{bk}, \quad k \neq 0$$

Reduce by dividing numerator and denominator by their HCF.

Addition / subtraction

$$\frac{a}{b} \pm \frac{c}{d} = \frac{ad \pm bc}{bd}$$

For speed, use the LCM of denominators instead of multiplying them blindly.

Multiplication

$$\frac{a}{b} \times \frac{c}{d} = \frac{ac}{bd}$$

Cancel common factors before multiplying.

Division

$$\frac{a}{b} \div \frac{c}{d} = \frac{a}{b} \times \frac{d}{c}$$

Keep the first fraction, multiply by the reciprocal of the second.

Fraction and decimal conversion

$$0.375 = \frac{375}{1000} = \frac{3}{8}$$

$$\frac{7}{20} = \frac{35}{100} = 0.35$$

Exam-speed facts

$$\frac{1}{2} = 0.5, \quad \frac{1}{4} = 0.25, \quad \frac{3}{4} = 0.75$$

$$\frac{1}{5} = 0.2, \quad \frac{1}{8} = 0.125, \quad \frac{3}{8} = 0.375$$

$$\frac{5}{8} = 0.625, \quad \frac{7}{8} = 0.875$$

Fractions and Decimals - 100 Fully Solved MCQs

MCQ 1

Simplify $\frac{18}{24}$.

- A. $\frac{2}{3}$
C. $\frac{4}{5}$

- B. $\frac{3}{4}$
D. $\frac{5}{6}$

Solution

$$\gcd(18, 24) = 6$$

$$\frac{18}{24} = \frac{18 \div 6}{24 \div 6} = \frac{3}{4}$$

Final Answer

 $\frac{3}{4}$ — Option B

MCQ 4

Simplify $\frac{84}{126}$.

- A. $\frac{1}{2}$
C. $\frac{3}{4}$

- B. $\frac{2}{3}$
D. $\frac{5}{6}$

Solution

$$\gcd(84, 126) = 42$$

$$\frac{84}{126} = \frac{84 \div 42}{126 \div 42} = \frac{2}{3}$$

Final Answer

 $\frac{2}{3}$ — Option B

MCQ 2

Simplify $\frac{28}{42}$.

- A. $\frac{2}{3}$
C. $\frac{4}{7}$

- B. $\frac{3}{4}$
D. $\frac{5}{7}$

Solution

$$\gcd(28, 42) = 14$$

$$\frac{28}{42} = \frac{28 \div 14}{42 \div 14} = \frac{2}{3}$$

Final Answer

 $\frac{2}{3}$ — Option A

MCQ 5

Simplify $\frac{96}{144}$.

- A. $\frac{2}{3}$
C. $\frac{4}{5}$

- B. $\frac{3}{4}$
D. $\frac{5}{8}$

Solution

$$\gcd(96, 144) = 48$$

$$\frac{96}{144} = \frac{2}{3}$$

Final Answer

 $\frac{2}{3}$ — Option A

MCQ 3

Simplify $\frac{63}{81}$.

- A. $\frac{5}{9}$
C. $\frac{7}{8}$

- B. $\frac{7}{9}$
D. $\frac{8}{9}$

Solution

$$\gcd(63, 81) = 9$$

$$\frac{63}{81} = \frac{7}{9}$$

Final Answer

 $\frac{7}{9}$ — Option B

MCQ 6

Which fraction is equivalent to $\frac{5}{7}$?

- A. $\frac{20}{28}$
C. $\frac{15}{28}$

- B. $\frac{25}{30}$
D. $\frac{30}{49}$

Common one-paper fraction pattern; values independently constructed.

Solution

$$\frac{5}{7} \times \frac{4}{4} = \frac{20}{28}$$

Final Answer

 $\frac{20}{28}$ — Option A

MCQ 7If $\frac{3}{5} = \frac{x}{40}$, find x .

- A. 18 B. 20
C. 24 D. 30

Solution

$$\frac{3}{5} = \frac{x}{40}$$

$$5x = 3(40) = 120$$

$$x = 24$$

Final Answer

24 — Option C

MCQ 8If $\frac{7}{9} = \frac{35}{x}$, find x .

- A. 40 B. 45
C. 50 D. 54

Solution

$$\frac{7}{9} = \frac{35}{x}$$

$$7x = 9(35) = 315$$

$$x = 45$$

Final Answer

45 — Option B

MCQ 9Convert $\frac{17}{5}$ to a mixed number.

- A. $2\frac{2}{5}$ B. $3\frac{2}{5}$
C. $3\frac{3}{5}$ D. $4\frac{1}{5}$

Solution

$$17 = 5(3) + 2$$

$$\frac{17}{5} = 3\frac{2}{5}$$

Final Answer $3\frac{2}{5}$ — Option B**MCQ 10**Convert $4\frac{3}{7}$ to an improper fraction.

- A. $\frac{24}{7}$ B. $\frac{28}{7}$
C. $\frac{31}{7}$ D. $\frac{35}{7}$

Solution

$$4\frac{3}{7} = \frac{4(7) + 3}{7}$$

$$= \frac{28 + 3}{7} = \frac{31}{7}$$

Final Answer $\frac{31}{7}$ — Option C**MCQ 11**Which is greater: $\frac{5}{8}$ or $\frac{3}{4}$?

- A. $\frac{5}{8}$ B. $\frac{3}{4}$
C. Equal D. Cannot be compared

Solution

$$\frac{5}{8} = \frac{5}{8}$$

$$\frac{3}{4} = \frac{6}{8}$$

$$\frac{6}{8} > \frac{5}{8}$$

Final Answer $\frac{3}{4}$ — Option B**MCQ 12**

Which is the smallest fraction?

- A. $\frac{2}{3}$ B. $\frac{3}{5}$
C. $\frac{5}{8}$ D. $\frac{7}{10}$

Solution

$$\frac{2}{3} \approx 0.667$$

$$\frac{3}{5} = 0.6$$

$$\frac{5}{8} = 0.625$$

$$\frac{7}{10} = 0.7$$

0.6 is smallest

Final Answer $\frac{3}{5}$ — Option B

MCQ 13

Which is the greatest fraction?

- A. $\frac{7}{12}$ B. $\frac{5}{8}$
 C. $\frac{2}{3}$ D. $\frac{3}{5}$

Solution

$$\frac{7}{12} \approx 0.583$$

$$\frac{5}{8} = 0.625$$

$$\frac{2}{3} \approx 0.667$$

$$\frac{3}{5} = 0.6$$

Final Answer
 $\frac{2}{3}$ — Option C
MCQ 14Which fraction lies between $\frac{1}{3}$ and $\frac{1}{2}$?

- A. $\frac{1}{4}$ B. $\frac{5}{12}$
 C. $\frac{1}{12}$ D. $\frac{2}{3}$

Solution

$$\frac{1}{3} = \frac{4}{12}$$

$$\frac{1}{2} = \frac{6}{12}$$

$$\frac{4}{12} < \frac{5}{12} < \frac{6}{12}$$

Final Answer
 $\frac{5}{12}$ — Option B
MCQ 15

Write 0.75 as a fraction in lowest terms.

- A. $\frac{1}{2}$ B. $\frac{2}{3}$
 C. $\frac{3}{4}$ D. $\frac{4}{5}$

Solution

$$\begin{aligned} 0.75 &= \frac{75}{100} \\ &= \frac{75 \div 25}{100 \div 25} = \frac{3}{4} \end{aligned}$$

Final Answer
 $\frac{3}{4}$ — Option C
MCQ 16

Write 0.125 as a fraction in lowest terms.

- A. $\frac{1}{8}$ B. $\frac{1}{6}$
 C. $\frac{1}{5}$ D. $\frac{1}{4}$

Solution

$$\begin{aligned} 0.125 &= \frac{125}{1000} \\ &= \frac{1}{8} \end{aligned}$$

Final Answer
 $\frac{1}{8}$ — Option A
MCQ 17

Write 0.375 as a fraction in lowest terms.

- A. $\frac{1}{4}$ B. $\frac{3}{8}$
 C. $\frac{2}{5}$ D. $\frac{5}{8}$

Solution

$$\begin{aligned} 0.375 &= \frac{375}{1000} \\ &= \frac{3}{8} \end{aligned}$$

Final Answer
 $\frac{3}{8}$ — Option B
MCQ 18

Write 0.625 as a fraction in lowest terms.

- A. $\frac{3}{8}$ B. $\frac{1}{2}$
 C. $\frac{5}{8}$ D. $\frac{3}{4}$

Solution

$$\begin{aligned} 0.625 &= \frac{625}{1000} \\ &= \frac{5}{8} \end{aligned}$$

Final Answer
 $\frac{5}{8}$ — Option C

MCQ 19

Write 1.25 as an improper fraction.

- A. $\frac{4}{5}$ B. $\frac{5}{4}$
 C. $\frac{6}{4}$ D. $\frac{7}{4}$

Solution

$$1.25 = \frac{125}{100}$$

$$= \frac{5}{4}$$

Final Answer

$\frac{5}{4}$

 — Option B
MCQ 20

Write 2.75 as an improper fraction.

- A. $\frac{9}{4}$ B. $\frac{10}{4}$
 C. $\frac{11}{4}$ D. $\frac{12}{4}$

Solution

$$2.75 = \frac{275}{100}$$

$$= \frac{11}{4}$$

Final Answer

$\frac{11}{4}$

 — Option C
MCQ 21Find $\frac{3}{4} + \frac{2}{5}$.

- A. $\frac{21}{20}$ B. $\frac{23}{20}$
 C. $\frac{25}{20}$ D. $\frac{27}{20}$

High-frequency one-paper addition pattern; values independently constructed.

Solution

$$\frac{3}{4} + \frac{2}{5} = \frac{15}{20} + \frac{8}{20}$$

$$= \frac{23}{20} = 1\frac{3}{20}$$

Final Answer

$\frac{23}{20}$

 — Option B
MCQ 22Find $\frac{5}{6} + \frac{7}{9}$.

- A. $\frac{25}{18}$ B. $\frac{27}{18}$
 C. $\frac{29}{18}$ D. $\frac{31}{18}$

Solution

$$\text{LCM}(6, 9) = 18$$

$$\frac{5}{6} = \frac{15}{18}, \quad \frac{7}{9} = \frac{14}{18}$$

$$\frac{15}{18} + \frac{14}{18} = \frac{29}{18}$$

Final Answer

$\frac{29}{18}$

 — Option C
MCQ 23Find $\frac{7}{8} + \frac{5}{12}$.

- A. $\frac{29}{24}$ B. $\frac{31}{24}$
 C. $\frac{33}{24}$ D. $\frac{35}{24}$

Solution

$$\text{LCM}(8, 12) = 24$$

$$\frac{7}{8} = \frac{21}{24}, \quad \frac{5}{12} = \frac{10}{24}$$

$$= \frac{31}{24}$$

Final Answer

$\frac{31}{24}$

 — Option B
MCQ 24Find $\frac{2}{3} + \frac{3}{10}$.

- A. $\frac{19}{30}$ B. $\frac{23}{30}$
 C. $\frac{29}{30}$ D. $\frac{31}{30}$

Solution

$$\frac{2}{3} = \frac{20}{30}$$

$$\frac{3}{10} = \frac{9}{30}$$

$$\frac{20}{30} + \frac{9}{30} = \frac{29}{30}$$

Final Answer

$\frac{29}{30}$

 — Option C

MCQ 25Find $\frac{11}{15} + \frac{2}{5}$.

A. $\frac{13}{15}$

B. $\frac{15}{15}$

C. $\frac{17}{15}$

D. $\frac{19}{15}$

Solution

$$\frac{2}{5} = \frac{6}{15}$$

$$\frac{11}{15} + \frac{6}{15} = \frac{17}{15}$$

Final Answer

$$\boxed{\frac{17}{15}} \text{ — Option C}$$

MCQ 26Find $\frac{7}{9} - \frac{1}{6}$.

A. $\frac{7}{18}$

B. $\frac{9}{18}$

C. $\frac{11}{18}$

D. $\frac{13}{18}$

Solution

$$\frac{7}{9} = \frac{14}{18}$$

$$\frac{1}{6} = \frac{3}{18}$$

$$\frac{14}{18} - \frac{3}{18} = \frac{11}{18}$$

Final Answer

$$\boxed{\frac{11}{18}} \text{ — Option C}$$

MCQ 27Find $\frac{5}{8} - \frac{1}{3}$.

A. $\frac{5}{24}$

B. $\frac{7}{24}$

C. $\frac{9}{24}$

D. $\frac{11}{24}$

Solution

$$\frac{5}{8} = \frac{15}{24}$$

$$\frac{1}{3} = \frac{8}{24}$$

$$\frac{15}{24} - \frac{8}{24} = \frac{7}{24}$$

Final Answer

$$\boxed{\frac{7}{24}} \text{ — Option B}$$

MCQ 28Find $\frac{13}{14} - \frac{3}{7}$.

A. $\frac{3}{7}$

B. $\frac{1}{2}$

C. $\frac{4}{7}$

D. $\frac{5}{7}$

Solution

$$\frac{3}{7} = \frac{6}{14}$$

$$\frac{13}{14} - \frac{6}{14} = \frac{7}{14} = \frac{1}{2}$$

Final Answer

$$\boxed{\frac{1}{2}} \text{ — Option B}$$

MCQ 29Find $\frac{4}{5} - \frac{7}{20}$.

A. $\frac{7}{20}$

B. $\frac{9}{20}$

C. $\frac{11}{20}$

D. $\frac{13}{20}$

Solution

$$\frac{4}{5} = \frac{16}{20}$$

$$\frac{16}{20} - \frac{7}{20} = \frac{9}{20}$$

Final Answer

$$\boxed{\frac{9}{20}} \text{ — Option B}$$

MCQ 30Find $1\frac{1}{2} + 2\frac{2}{3}$.

A. $3\frac{5}{6}$

B. $4\frac{1}{6}$

C. $4\frac{1}{3}$

D. $4\frac{5}{6}$

Solution

$$1\frac{1}{2} = \frac{3}{2}, \quad 2\frac{2}{3} = \frac{8}{3}$$

$$\frac{3}{2} + \frac{8}{3} = \frac{9}{6} + \frac{16}{6} = \frac{25}{6}$$

$$\frac{25}{6} = 4\frac{1}{6}$$

Final Answer

$$\boxed{4\frac{1}{6}} \text{ — Option B}$$

MCQ 31Find $3\frac{3}{4} - 1\frac{5}{8}$.

A. $1\frac{7}{8}$

B. $2\frac{1}{8}$

C. $2\frac{3}{8}$

D. $2\frac{5}{8}$

Solution

$$3\frac{3}{4} = \frac{15}{4} = \frac{30}{8}$$

$$1\frac{5}{8} = \frac{13}{8}$$

$$\frac{30}{8} - \frac{13}{8} = \frac{17}{8} = 2\frac{1}{8}$$

Final Answer

$$2\frac{1}{8} \text{ — Option B}$$

MCQ 32Find $2 - \frac{7}{12}$.

A. $1\frac{3}{12}$

B. $1\frac{5}{12}$

C. $1\frac{7}{12}$

D. $1\frac{9}{12}$

Solution

$$2 = \frac{24}{12}$$

$$\frac{24}{12} - \frac{7}{12} = \frac{17}{12} = 1\frac{5}{12}$$

Final Answer

$$1\frac{5}{12} \text{ — Option B}$$

MCQ 33Find $\frac{5}{6} + \frac{1}{4} - \frac{1}{3}$.

A. $\frac{7}{12}$

B. $\frac{2}{3}$

C. $\frac{3}{4}$

D. $\frac{5}{6}$

Solution

$$\frac{5}{6} = \frac{10}{12}, \quad \frac{1}{4} = \frac{3}{12}, \quad \frac{1}{3} = \frac{4}{12}$$

$$\frac{10 + 3 - 4}{12} = \frac{9}{12} = \frac{3}{4}$$

Final Answer

$$\frac{3}{4} \text{ — Option C}$$

MCQ 34Find $\frac{7}{10} - \frac{1}{5} + \frac{3}{20}$.

A. $\frac{9}{20}$

B. $\frac{11}{20}$

C. $\frac{13}{20}$

D. $\frac{15}{20}$

Solution

$$\frac{7}{10} = \frac{14}{20}, \quad \frac{1}{5} = \frac{4}{20}$$

$$\frac{14 - 4 + 3}{20} = \frac{13}{20}$$

Final Answer

$$\frac{13}{20} \text{ — Option C}$$

MCQ 35Find $\frac{1}{2} + \frac{1}{3}$.

A. $\frac{2}{3}$

B. $\frac{3}{4}$

C. $\frac{5}{6}$

D. 1

Solution

$$\frac{1}{2} = \frac{3}{6}, \quad \frac{1}{3} = \frac{2}{6}$$

$$\frac{3}{6} + \frac{2}{6} = \frac{5}{6}$$

Final Answer

$$\frac{5}{6} \text{ — Option C}$$

MCQ 36Find $\frac{3}{5} \times \frac{10}{21}$.

A. $\frac{1}{7}$

B. $\frac{2}{7}$

C. $\frac{3}{7}$

D. $\frac{4}{7}$

Solution

$$\frac{3}{5} \times \frac{10}{21}$$

$$= \frac{3 \times 2}{1 \times 21}$$

$$= \frac{6}{21} = \frac{2}{7}$$

Final Answer

$$\frac{2}{7} \text{ — Option B}$$

MCQ 37Find $\frac{7}{12} \times \frac{18}{35}$.

A. $\frac{1}{5}$
C. $\frac{2}{5}$

B. $\frac{3}{10}$
D. $\frac{1}{2}$

Solution

$$\begin{aligned}\frac{7}{12} \times \frac{18}{35} \\ \frac{7}{35} = \frac{1}{5}, \quad \frac{18}{12} = \frac{3}{2} \\ = \frac{3}{10}\end{aligned}$$

Final Answer

$\frac{3}{10}$ — Option B

MCQ 38Find $\frac{9}{14} \times \frac{7}{27}$.

A. $\frac{1}{6}$
C. $\frac{1}{4}$

B. $\frac{1}{5}$
D. $\frac{1}{3}$

Solution

$$\begin{aligned}\frac{9}{14} \times \frac{7}{27} \\ \frac{7}{14} = \frac{1}{2}, \quad \frac{9}{27} = \frac{1}{3} \\ = \frac{1}{2} \times \frac{1}{3} = \frac{1}{6}\end{aligned}$$

Final Answer

$\frac{1}{6}$ — Option A

MCQ 39Find $\frac{5}{8} \times \frac{16}{25}$.

A. $\frac{1}{5}$
C. $\frac{3}{5}$

B. $\frac{2}{5}$
D. $\frac{4}{5}$

Solution

$$\begin{aligned}\frac{5}{8} \times \frac{16}{25} \\ \frac{16}{8} = 2, \quad \frac{5}{25} = \frac{1}{5} \\ = \frac{2}{5}\end{aligned}$$

Final Answer

$\frac{2}{5}$ — Option B

MCQ 40Find $\frac{11}{15} \times \frac{9}{22}$.

A. $\frac{1}{5}$
C. $\frac{2}{5}$

B. $\frac{3}{10}$
D. $\frac{1}{2}$

Solution

$$\begin{aligned}\frac{11}{22} = \frac{1}{2}, \quad \frac{9}{15} = \frac{3}{5} \\ = \frac{1}{2} \times \frac{3}{5} = \frac{3}{10}\end{aligned}$$

Final Answer

$\frac{3}{10}$ — Option B

MCQ 41Find $\frac{3}{4} \div \frac{2}{5}$.

A. $\frac{6}{5}$
C. $\frac{8}{5}$

B. $\frac{15}{8}$
D. $\frac{10}{3}$

Core reciprocal-division pattern used across one-paper arithmetic.

Solution

$$\begin{aligned}\frac{3}{4} \div \frac{2}{5} = \frac{3}{4} \times \frac{5}{2} \\ = \frac{15}{8}\end{aligned}$$

Final Answer

$\frac{15}{8}$ — Option B

MCQ 42Find $\frac{7}{9} \div \frac{14}{27}$.

A. $\frac{4}{3}$
C. $\frac{5}{3}$

B. $\frac{3}{2}$
D. 2

Solution

$$\begin{aligned}\frac{7}{9} \times \frac{27}{14} \\ \frac{27}{9} = 3, \quad \frac{7}{14} = \frac{1}{2} \\ = \frac{3}{2}\end{aligned}$$

Final Answer

$\frac{3}{2}$ — Option B

MCQ 43Find $\frac{5}{6} \div \frac{25}{18}$.A. $\frac{2}{5}$ B. $\frac{3}{5}$ C. $\frac{4}{5}$ D. $\frac{1}{6}$ **Solution**

$$\begin{aligned}\frac{5}{6} \times \frac{18}{25} \\ \frac{18}{6} = 3, \quad \frac{5}{25} = \frac{1}{5} \\ = \frac{3}{5}\end{aligned}$$

Final Answer $\frac{3}{5}$ — Option B**MCQ 44**Find $\frac{8}{15} \div \frac{4}{25}$.A. $\frac{5}{3}$ B. $\frac{10}{3}$ C. $\frac{15}{4}$ D. $\frac{20}{3}$ **Solution**

$$\begin{aligned}\frac{8}{15} \times \frac{25}{4} \\ \frac{8}{4} = 2, \quad \frac{25}{15} = \frac{5}{3} \\ = 2 \times \frac{5}{3} = \frac{10}{3}\end{aligned}$$

Final Answer $\frac{10}{3}$ — Option B**MCQ 45**Find $1\frac{1}{2} \times 2\frac{2}{3}$.

A. 3

B. 4

C. 5

D. 6

Solution

$$\begin{aligned}1\frac{1}{2} = \frac{3}{2}, \quad 2\frac{2}{3} = \frac{8}{3} \\ \frac{3}{2} \times \frac{8}{3} = \frac{24}{6} = 4\end{aligned}$$

Final Answer

4 — Option B

MCQ 46Find $3\frac{1}{5} \div 1\frac{3}{5}$.A. $\frac{3}{2}$

B. 2

C. $\frac{5}{2}$

D. 3

Solution

$$\begin{aligned}3\frac{1}{5} = \frac{16}{5}, \quad 1\frac{3}{5} = \frac{8}{5} \\ \frac{16}{5} \div \frac{8}{5} = \frac{16}{5} \times \frac{5}{8} \\ = \frac{16}{8} = 2\end{aligned}$$

Final Answer

2 — Option B

MCQ 47What is the reciprocal of $\frac{7}{12}$?A. $\frac{7}{12}$ B. $\frac{12}{7}$ C. $-\frac{7}{12}$ D. $-\frac{12}{7}$ **Solution**

$$\frac{7}{12} \times \frac{12}{7} = 1$$

Final Answer $\frac{12}{7}$ — Option B**MCQ 48**What is the reciprocal of $2\frac{1}{4}$?A. $\frac{9}{4}$ B. $\frac{4}{9}$ C. $\frac{5}{4}$ D. $\frac{4}{5}$ **Solution**

$$\begin{aligned}2\frac{1}{4} = \frac{9}{4} \\ \text{Reciprocal} = \frac{4}{9}\end{aligned}$$

Final Answer $\frac{4}{9}$ — Option B

MCQ 49For nonzero $\frac{a}{b}$, what is $\frac{a}{b} \times \frac{b}{a}$?

- A. 0
B. 1
C. $\frac{a^2}{b^2}$
D. $\frac{b^2}{a^2}$

Solution

$$\frac{a}{b} \times \frac{b}{a} = \frac{ab}{ab} = 1$$

Final Answer

1 — Option B

MCQ 50Find $\frac{3}{4} \times \frac{2}{3} \div \frac{1}{2}$.

- A. $\frac{1}{2}$
B. 1
C. $\frac{3}{2}$
D. 2

Solution

$$\frac{3}{4} \times \frac{2}{3} = \frac{1}{2}$$

$$\frac{1}{2} \div \frac{1}{2} = \frac{1}{2} \times \frac{2}{1} = 1$$

Final Answer

1 — Option B

MCQ 51Find $\frac{3}{5}$ of 250.

- A. 100
B. 125
C. 150
D. 175

Very common basic-arithmetic one-paper pattern.

Solution

$$\frac{3}{5} \times 250$$

$$= 3 \times 50 = 150$$

Final Answer

150 — Option C

MCQ 52Find $\frac{7}{8}$ of 320.

- A. 240
B. 260
C. 280
D. 300

Solution

$$\frac{7}{8} \times 320 = 7 \times 40 = 280$$

Final Answer

280 — Option C

MCQ 53If $\frac{2}{3}$ of a number is 48, find the number.

- A. 64
B. 72
C. 84
D. 96

Solution

$$\frac{2}{3}x = 48$$

$$x = 48 \times \frac{3}{2} = 72$$

Final Answer

72 — Option B

MCQ 54If $\frac{5}{12}$ of a number is 75, find the number.

- A. 150
B. 160
C. 180
D. 200

Solution

$$\frac{5}{12}x = 75$$

$$x = 75 \times \frac{12}{5} = 15 \times 12 = 180$$

Final Answer

180 — Option C

MCQ 55A person spends $\frac{3}{8}$ of Rs. 640. How much remains?

- A. Rs. 240
B. Rs. 320
C. Rs. 400
D. Rs. 480

Solution

$$\text{Spent} = \frac{3}{8}(640) = 3(80) = 240$$

$$\text{Remaining} = 640 - 240 = 400$$

Final Answer

Rs. 400 — Option C

MCQ 56In a class of 45 students, $\frac{2}{5}$ are girls. How many girls are there?

- A. 15
B. 18
C. 20
D. 27

Solution

$$\frac{2}{5}(45) = 2(9) = 18$$

Final Answer

18 — Option B

MCQ 57

A tank of capacity 240 litres is $\frac{3}{4}$ full. How much water is in it?

- A. 160 L B. 180 L
C. 200 L D. 220 L

Solution

$$\frac{3}{4}(240) = 3(60) = 180$$

Final Answer

180 L — Option B

MCQ 58

A book has 270 pages. A student reads $\frac{5}{9}$ of it. How many pages remain?

- A. 100 B. 110
C. 120 D. 150

Solution

$$\text{Read} = \frac{5}{9}(270) = 5(30) = 150$$

$$\text{Remain} = 270 - 150 = 120$$

Final Answer

120 — Option C

MCQ 59

Find one-third of one-half of 180.

- A. 20 B. 30
C. 40 D. 60

Solution

$$\begin{aligned} & \frac{1}{3} \times \frac{1}{2} \times 180 \\ &= \frac{1}{6}(180) = 30 \end{aligned}$$

Final Answer

30 — Option B

MCQ 60

Find $\frac{2}{5}$ of $\frac{3}{4}$ of 200.

- A. 40 B. 50
C. 60 D. 80

Solution

$$\begin{aligned} & \frac{2}{5} \times \frac{3}{4} \times 200 \\ &= \frac{6}{20}(200) = 60 \end{aligned}$$

Final Answer

60 — Option C

MCQ 61

If $\frac{3}{7}$ of a salary is Rs. 21,000, find the salary.

- A. Rs. 42,000 B. Rs. 45,000
C. Rs. 49,000 D. Rs. 56,000

Solution

$$\frac{3}{7}S = 21000$$

$$S = 21000 \times \frac{7}{3}$$

$$= 7000(7) = 49000$$

Final Answer

Rs. 49,000 — Option C

MCQ 62

If $\frac{4}{9}$ of a group is 36, find the total number in the group.

- A. 72 B. 81
C. 90 D. 96

Solution

$$\frac{4}{9}N = 36$$

$$N = 36 \times \frac{9}{4} = 9(9) = 81$$

Final Answer

81 — Option B

MCQ 63

A person spends $\frac{2}{5}$ of income on food and $\frac{1}{4}$ on rent. What fraction remains?

- A. $\frac{3}{20}$ B. $\frac{5}{20}$
C. $\frac{7}{20}$ D. $\frac{9}{20}$

Solution

$$\begin{aligned} & 1 - \frac{2}{5} - \frac{1}{4} \\ &= \frac{20}{20} - \frac{8}{20} - \frac{5}{20} \\ &= \frac{7}{20} \end{aligned}$$

Final Answer $\frac{7}{20}$ — Option C

MCQ 64

A sum is divided: $\frac{1}{3}$ to A and $\frac{1}{4}$ to B. What fraction remains?

A. $\frac{5}{12}$
C. $\frac{2}{3}$

B. $\frac{7}{12}$
D. $\frac{3}{4}$

Solution

$$1 - \frac{1}{3} - \frac{1}{4} = \frac{12 - 4 - 3}{12} = \frac{5}{12}$$

Final Answer

$$\boxed{\frac{5}{12}} \text{ — Option A}$$

MCQ 65

$\frac{7}{12}$ of a 96-km road is complete. How many kilometres remain?

A. 32

B. 36

C. 40

D. 56

Solution

$$\text{Remaining fraction} = 1 - \frac{7}{12} = \frac{5}{12}$$

$$\frac{5}{12}(96) = 5(8) = 40$$

Final Answer

$$\boxed{40 \text{ km}} \text{ — Option C}$$

MCQ 66

$\frac{3}{5}$ of a number plus 20 equals 80. Find the number.

A. 80

B. 90

C. 100

D. 120

Solution

$$\frac{3}{5}x + 20 = 80$$

$$\frac{3}{5}x = 60$$

$$x = 60 \times \frac{5}{3} = 100$$

Final Answer

$$\boxed{100} \text{ — Option C}$$

MCQ 67

One-half of a number is 15 more than one-fourth of it. Find the number.

A. 45

B. 60

C. 75

D. 90

Solution

$$\frac{1}{2}x - \frac{1}{4}x = 15$$

$$\frac{1}{4}x = 15$$

$$x = 60$$

Final Answer

$$\boxed{60} \text{ — Option B}$$

MCQ 68

Two-thirds of a number is 24 more than one-third of it. Find the number.

A. 48

B. 60

C. 72

D. 84

Solution

$$\frac{2}{3}x - \frac{1}{3}x = 24$$

$$\frac{1}{3}x = 24$$

$$x = 72$$

Final Answer

$$\boxed{72} \text{ — Option C}$$

MCQ 69

If $\frac{5}{8}$ of a number is 45, find the number.

A. 64

B. 72

C. 80

D. 90

Solution

$$\frac{5}{8}x = 45$$

$$x = 45 \times \frac{8}{5} = 9(8) = 72$$

Final Answer

$$\boxed{72} \text{ — Option B}$$

MCQ 70

If $\frac{3}{4}$ of the students pass and 15 fail, how many students are there?

- A. 45 B. 50
C. 60 D. 75

Solution

$$\text{Failed fraction} = 1 - \frac{3}{4} = \frac{1}{4}$$

$$\frac{1}{4}N = 15$$

$$N = 60$$

Final Answer**60** — Option C**MCQ 71**

Find $0.75 + 1.25$.

- A. 1.50 B. 1.75
C. 2.00 D. 2.25

Basic decimal-operation pattern used in quantitative sections.

Solution

$$0.75 + 1.25 = 2.00$$

Final Answer**2.00** — Option C**MCQ 72**

Find $3.6 - 1.785$.

- A. 1.715 B. 1.815
C. 1.915 D. 2.815

Solution

$$3.600 - 1.785 = 1.815$$

Final Answer**1.815** — Option B**MCQ 73**

Find 2.5×0.4 .

- A. 0.1 B. 0.5
C. 1.0 D. 10

Solution

$$\begin{aligned} 2.5 \times 0.4 &= \frac{25}{10} \times \frac{4}{10} \\ &= \frac{100}{100} = 1 \end{aligned}$$

Final Answer**1** — Option C**MCQ 74**

Find $0.84 \div 0.07$.

- A. 1.2 B. 8
C. 12 D. 120

Solution

$$\begin{aligned} 0.84 \div 0.07 &= \frac{84}{100} \div \frac{7}{100} \\ &= \frac{84}{7} = 12 \end{aligned}$$

Final Answer**12** — Option C**MCQ 75**

Find $12.6 \div 0.3$.

- A. 4.2 B. 21
C. 42 D. 420

Solution

$$12.6 \div 0.3 = 126 \div 3 = 42$$

Final Answer**42** — Option C**MCQ 76**

Find 0.125×80 .

- A. 1 B. 5
C. 10 D. 12.5

Solution

$$\begin{aligned} 0.125 &= \frac{1}{8} \\ \frac{1}{8}(80) &= 10 \end{aligned}$$

Final Answer**10** — Option C**MCQ 77**

Find 4.8×2.5 .

- A. 10 B. 12
C. 14 D. 16

Solution

$$\begin{aligned} 4.8 \times 2.5 &= 4.8 \times \frac{5}{2} \\ &= 2.4(5) = 12 \end{aligned}$$

Final Answer**12** — Option B

MCQ 78Find $7.2 \div 0.09$.

- A. 8 B. 80
C. 90 D. 800

Solution

$$7.2 \div 0.09 = \frac{720}{100} \div \frac{9}{100}$$

$$= \frac{720}{9} = 80$$

Final Answer**80** — Option B**MCQ 79**Find $0.6 + 0.06 + 0.006$.

- A. 0.0666 B. 0.606
C. 0.660 D. 0.666

Solution

$$0.600 + 0.060 + 0.006 = 0.666$$

Final Answer**0.666** — Option D**MCQ 80**Find $5 - 2.375$.

- A. 2.525 B. 2.625
C. 2.725 D. 3.625

Solution

$$5.000 - 2.375 = 2.625$$

Final Answer**2.625** — Option B**MCQ 81**

What is the place value of digit 7 in 43.728?

- A. 7 B. 0.7
C. 0.07 D. 0.007

Solution

$$43.728 = 4(10) + 3 + 7(0.1) + 2(0.01) + 8(0.001)$$

Place value = 0.7

Final Answer**0.7** — Option B**MCQ 82**

What is the place value of digit 5 in 0.0542?

- A. 0.5 B. 0.05
C. 0.005 D. 0.0005

Solution

$$0.0542 = 5(0.01) + 4(0.001) + 2(0.0001)$$

Place value = 0.05

Final Answer**0.05** — Option B**MCQ 83**

Compare 0.7 and 0.70.

- A. $0.7 > 0.70$ B. $0.7 < 0.70$
C. $0.7 = 0.70$ D. Cannot compare

Solution

$$0.7 = \frac{7}{10} = \frac{70}{100} = 0.70$$

Final Answer **$0.7 = 0.70$** — Option C**MCQ 84**

Which is the greatest decimal?

- A. 0.56 B. 0.506
C. 0.65 D. 0.605

Solution

0.560, 0.506, 0.650, 0.605

0.650 is greatest

Final Answer**0.65** — Option C**MCQ 85**

Which is the smallest decimal?

- A. 0.09 B. 0.9
C. 0.099 D. 0.909

Solution

0.090, 0.900, 0.099, 0.909

0.090 is smallest

Final Answer**0.09** — Option A

MCQ 86

Convert 0.48 to a fraction in lowest terms.

- A. $\frac{6}{25}$ B. $\frac{12}{25}$
 C. $\frac{24}{25}$ D. $\frac{48}{25}$

Solution

$$0.48 = \frac{48}{100}$$

$$= \frac{12}{25}$$

Final Answer
 $\frac{12}{25}$ — Option B
MCQ 87

Convert 0.72 to a fraction in lowest terms.

- A. $\frac{9}{25}$ B. $\frac{18}{25}$
 C. $\frac{36}{25}$ D. $\frac{72}{25}$

Solution

$$0.72 = \frac{72}{100}$$

$$= \frac{18}{25}$$

Final Answer
 $\frac{18}{25}$ — Option B
MCQ 88

Convert 0.045 to a fraction in lowest terms.

- A. $\frac{9}{100}$ B. $\frac{9}{200}$
 C. $\frac{45}{200}$ D. $\frac{1}{20}$

Solution

$$0.045 = \frac{45}{1000}$$

$$= \frac{9}{200}$$

Final Answer
 $\frac{9}{200}$ — Option B
MCQ 89

Convert 1.375 to an improper fraction.

- A. $\frac{9}{8}$ B. $\frac{10}{8}$
 C. $\frac{11}{8}$ D. $\frac{13}{8}$

Solution

$$1.375 = \frac{1375}{1000}$$

$$= \frac{11}{8}$$

Final Answer
 $\frac{11}{8}$ — Option C
MCQ 90

Convert 2.625 to an improper fraction.

- A. $\frac{19}{8}$ B. $\frac{20}{8}$
 C. $\frac{21}{8}$ D. $\frac{23}{8}$

Solution

$$2.625 = \frac{2625}{1000}$$

$$= \frac{21}{8}$$

Final Answer
 $\frac{21}{8}$ — Option C
MCQ 91Convert $0.\bar{3}$ to a fraction.

- A. $\frac{1}{3}$ B. $\frac{2}{3}$
 C. $\frac{3}{10}$ D. $\frac{1}{30}$

Recurring-decimal pattern included for fast number-sense preparation.

Solution

$$x = 0.333 \dots$$

$$10x = 3.333 \dots$$

$$10x - x = 3$$

$$9x = 3$$

$$x = \frac{1}{3}$$

Final Answer
 $\frac{1}{3}$ — Option A

MCQ 92Convert $0.\overline{6}$ to a fraction.

- A. $\frac{1}{3}$ B. $\frac{1}{2}$
 C. $\frac{2}{3}$ D. $\frac{3}{4}$

Solution

$$x = 0.666 \dots$$

$$10x = 6.666 \dots$$

$$9x = 6$$

$$x = \frac{6}{9} = \frac{2}{3}$$

Final Answer
 $\frac{2}{3}$ — Option C
MCQ 95Convert $0.\overline{09}$ to a fraction.

- A. $\frac{1}{11}$ B. $\frac{1}{10}$
 C. $\frac{9}{100}$ D. $\frac{9}{11}$

Solution

$$x = 0.090909 \dots$$

$$100x = 9.090909 \dots$$

$$99x = 9$$

$$x = \frac{9}{99} = \frac{1}{11}$$

Final Answer
 $\frac{1}{11}$ — Option A
MCQ 93Convert $0.\overline{27}$ to a fraction.

- A. $\frac{2}{11}$ B. $\frac{3}{11}$
 C. $\frac{4}{11}$ D. $\frac{27}{100}$

Solution

$$x = 0.272727 \dots$$

$$100x = 27.272727 \dots$$

$$99x = 27$$

$$x = \frac{27}{99} = \frac{3}{11}$$

Final Answer
 $\frac{3}{11}$ — Option B
MCQ 96Write $\frac{7}{20}$ as a decimal.

- A. 0.25 B. 0.30
 C. 0.35 D. 0.40

Solution

$$\frac{7}{20} = \frac{7 \times 5}{20 \times 5} = \frac{35}{100} = 0.35$$

Final Answer
 0.35 — Option C
MCQ 97Write $\frac{11}{16}$ as a decimal.

- A. 0.625 B. 0.675
 C. 0.6875 D. 0.687

Solution

$$\frac{11}{16} = 11 \div 16$$

$$= 0.6875$$

Final Answer
 0.6875 — Option C
MCQ 94Convert $0.1666 \dots$ to a fraction.

- A. $\frac{1}{6}$ B. $\frac{1}{5}$
 C. $\frac{1}{4}$ D. $\frac{1}{3}$

Solution

$$x = 0.1666 \dots$$

$$10x = 1.666 \dots$$

$$100x = 16.666 \dots$$

$$100x - 10x = 15$$

$$90x = 15$$

$$x = \frac{15}{90} = \frac{1}{6}$$

Final Answer
 $\frac{1}{6}$ — Option A
MCQ 98Write $\frac{3}{25}$ as a decimal.

- A. 0.012 B. 0.12
 C. 0.30 D. 1.2

Solution

$$\frac{3}{25} = \frac{3 \times 4}{25 \times 4} = \frac{12}{100} = 0.12$$

Final Answer
 0.12 — Option B

MCQ 99Find $0.4 + \frac{3}{5}$.**A.** 0.8**B.** 0.9**C.** 1.0**D.** 1.2**Solution**

$$0.4 = \frac{2}{5}$$
$$\frac{2}{5} + \frac{3}{5} = \frac{5}{5} = 1$$

Final Answer**1.0** — Option C**MCQ 100**Find $0.75 \div \frac{3}{8}$.**A.** 1**B.** 1.5**C.** 2**D.** 2.5**Solution**

$$0.75 = \frac{3}{4}$$
$$\frac{3}{4} \div \frac{3}{8} = \frac{3}{4} \times \frac{8}{3}$$
$$= \frac{8}{4} = 2$$

Final Answer**2** — Option C

Fractions & Decimals - Rapid Revision Grid**Mixed / improper**

$$a\frac{b}{c} = \frac{ab+c}{c}$$

$$\frac{17}{5} = 3\frac{2}{5}$$

Fraction of a quantity

$$\frac{a}{b} \text{ of } N = \frac{a}{b}N$$

Decimal division Move the decimal point equally in divisor and dividend until the divisor is an integer.

$$0.84 \div 0.07 = 84 \div 7 = 12$$

Recurring decimal If $x = 0.\bar{a}$, then

$$10x - x = a$$

For a two-digit recurring block, use $100x - x$.



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Number System MCQs

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PART 5 - NUMBER SYSTEM | 100 SOLVED MCQs

Fast Number System Foundation

Number families

$$\mathbb{N} \subset \mathbb{W} \subset \mathbb{Z} \subset \mathbb{Q} \subset \mathbb{R}$$

Whole numbers include 0; integers also include negative whole numbers. Rational numbers have the form

$$\frac{p}{q}, \quad q \neq 0.$$

HCF and LCM For two positive integers a, b ,

$$ab = \text{HCF}(a, b) \text{ LCM}(a, b).$$

Use minimum prime powers for HCF and maximum prime powers for LCM.

Remainder form

$$N = dq + r, \quad 0 \leq r < d.$$

Equivalently,

$$N \equiv r \pmod{d}.$$

Unit-digit cycles

$$2 : 2, 4, 8, 6 \quad 3 : 3, 9, 7, 1$$

$$7 : 7, 9, 3, 1 \quad 8 : 8, 4, 2, 6$$

Most cycles repeat every 4 powers; 4 and 9 repeat every 2.

Divisibility speed rules

2 : last digit even, 5 : last digit 0 or 5

3, 9 : use digit sum

4 : last two digits, 8 : last three digits

For 11, use the alternating digit sum test.

Prime factor form and factor count If

$$N = p_1^{a_1} p_2^{a_2} \dots p_k^{a_k},$$

then

$$\tau(N) = (a_1 + 1)(a_2 + 1) \dots (a_k + 1).$$

MCQ 1

Which of the following is an integer but not a whole number?

- A. 5
B. 0
C. -7
D. $\frac{1}{2}$

Solution

$$-7 \in \mathbb{Z}$$

$$-7 < 0$$

$\therefore -7$ is an integer but not a whole number

Final Answer

Option C

MCQ 2

Which of the following is irrational?

- A. $\frac{7}{8}$
B. 0.125
C. $\sqrt{2}$
D. 0.3

Solution

$$\sqrt{2} \notin \mathbb{Q}$$

$\sqrt{2}$ is irrational

Final Answer

Option C

MCQ 3

Which of the following is rational?

- A. $\sqrt{3}$
B. π
C. $\frac{11}{13}$
D. $\sqrt{5}$

Solution

$$\frac{11}{13} = \frac{p}{q}, \quad p, q \in \mathbb{Z}, \quad q \neq 0$$

$$\therefore \frac{11}{13} \in \mathbb{Q}$$

Final Answer

Option C

MCQ 4

Find $|-38|$.

- A. 38
B. -38
C. 0
D. 76

Solution

$$|-38| = 38$$

Final Answer

Option A

MCQ 5

What is the additive inverse of -17?

- A. -17
B. 0
C. 17
D. $\frac{1}{17}$

Solution

$$-17 + 17 = 0$$

$$\therefore \text{additive inverse} = 17$$

Final Answer

Option C

MCQ 6

What is the multiplicative identity?

- A. 0
B. 1
C. -1
D. 10

Solution

$$a \times 1 = a$$

$$\therefore 1$$

Final Answer

Option B

MCQ 7

Find the sum of the first 20 natural numbers.

- A. 190
B. 200
C. 210
D. 220

Solution

$$\begin{aligned} S &= \frac{n(n+1)}{2} \\ &= \frac{20(21)}{2} \\ &= 10(21) = 210 \end{aligned}$$

Final Answer

Option C

MCQ 8

Find the sum of the first 15 odd positive integers.

- A. 180
B. 210
C. 225
D. 240

Solution

$$\begin{aligned} 1 + 3 + 5 + \dots + (2n-1) &= n^2 \\ &= 15^2 = 225 \end{aligned}$$

Final Answer

Option C

MCQ 9

Find the sum of the first 10 even positive integers.

- A. 90 B. 100
C. 110 D. 120

Solution

$$2 + 4 + \dots + 20 = 2(1 + 2 + \dots + 10)$$

$$= 2 \left(\frac{10(11)}{2} \right) = 110$$

Final Answer

Option C

MCQ 10

Find the difference between the place value and face value of digit 5 in 7532.

- A. 45 B. 495
C. 500 D. 505

Solution

$$\text{Place value} = 5 \times 100 = 500$$

$$\text{Face value} = 5$$

$$500 - 5 = 495$$

Final Answer

Option B

MCQ 11

Which number is divisible by 2?

- A. 315 B. 427
C. 538 D. 791

Solution

$$538 \text{ ends in } 8$$

$$8 \text{ is even}$$

$$\therefore 538 \div 2 = 269$$

Final Answer

Option C

MCQ 12

Which number is divisible by 3?

- A. 124 B. 235
C. 417 D. 502

Solution

$$4 + 1 + 7 = 12$$

$$12 \div 3 = 4$$

$$\therefore 417 \text{ is divisible by } 3$$

Final Answer

Option C

MCQ 13

Which number is divisible by 4?

- A. 314 B. 526
C. 732 D. 918

Solution

$$\text{Last two digits of } 732 = 32$$

$$32 \div 4 = 8$$

$$\therefore 732 \text{ is divisible by } 4$$

Final Answer

Option C

MCQ 14

Which number is divisible by 5?

- A. 426 B. 735
C. 842 D. 963

Solution

$$735 \text{ ends in } 5$$

$$\therefore 735 \text{ is divisible by } 5$$

Final Answer

Option B

MCQ 15

Which number is divisible by 6?

- A. 214 B. 318
C. 425 D. 517

Solution

318 is even

$$3 + 1 + 8 = 12$$

12 is divisible by 3

 $\therefore$ 318 is divisible by 6**Final Answer**

Option B

MCQ 16

Which number is divisible by 8?

- A. 714 B. 824
C. 936 D. 1050

Solution

Last three digits = 824

$$824 \div 8 = 103$$

 $\therefore$ 824 is divisible by 8**Final Answer**

Option B

MCQ 17

Which number is divisible by 9?

- A. 451 B. 729
C. 814 D. 932

Solution

$$7 + 2 + 9 = 18$$

$$18 \div 9 = 2$$

 $\therefore$ 729 is divisible by 9**Final Answer**

Option B

MCQ 18

Which number is divisible by 10?

- A. 450 B. 455
C. 465 D. 475

Solution

450 ends in 0

 $\therefore$ 450 is divisible by 10**Final Answer**

Option A

MCQ 19

Which number is divisible by 11?

- A. 121 B. 123
C. 125 D. 127

Solution

$$121 = 11 \times 11$$

 $\therefore$ 121 is divisible by 11**Final Answer**

Option A

MCQ 20Find the digit x if $53x$ is divisible by 9.

- A. 0 B. 1
C. 2 D. 3

Solution

$$5 + 3 + x = 8 + x$$

$$8 + x = 9$$

$$x = 1$$

Final Answer

Option B

MCQ 21

What is the smallest prime number?

- A. 0 B. 1
C. 2 D. 3

Solution

2 has exactly two positive factors: 1, 2

2

Final Answer

Option C

MCQ 22

What is the only even prime number?

- A. 1 B. 2
C. 4 D. 6

Solution

2 is even

Factors of 2 : 1, 2

 $\therefore$ 2**Final Answer**

Option B

MCQ 23

How many prime numbers lie between 10 and 30?

- A. 5 B. 6
C. 7 D. 8

Solution

11, 13, 17, 19, 23, 29

Count = 6

Final Answer

Option B

MCQ 24

Find the prime factorization of 360.

- A. $2^2 \cdot 3^2 \cdot 5$ B. $2^3 \cdot 3^2 \cdot 5$
C. $2^3 \cdot 3 \cdot 5^2$ D. $2^4 \cdot 3^2$

Solution

$$360 = 36 \times 10$$

$$= (2^2 \cdot 3^2)(2 \cdot 5)$$

$$= 2^3 \cdot 3^2 \cdot 5$$

Final Answer

Option B

MCQ 25

What is the greatest prime factor of 231?

- A. 7 B. 11
C. 21 D. 33

Solution

$$231 \div 3 = 77$$

$$77 = 7 \times 11$$

$$231 = 3 \times 7 \times 11$$

Greatest prime factor = 11

Final Answer

Option B

MCQ 26

How many positive factors does 72 have?

- A. 10 B. 12
C. 14 D. 16

Solution

$$72 = 2^3 \cdot 3^2$$

$$\tau(72) = (3+1)(2+1)$$

$$= 4 \times 3 = 12$$

Final Answer

Option B

MCQ 27

How many positive factors does 100 have?

- A. 6 B. 8
C. 9 D. 10

Solution

$$100 = 2^2 \cdot 5^2$$

$$\tau(100) = (2+1)(2+1)$$

$$= 9$$

Final Answer

Option C

MCQ 28

Which of the following is a perfect square?

- A. 72 B. 81
C. 90 D. 108

Solution

$$81 = 9^2$$

$$\therefore \boxed{81}$$

Final Answer**Option B****MCQ 29**

Which pair is relatively prime (coprime)?

- A. 12 and 18 B. 14 and 25
C. 21 and 35 D. 24 and 36

Solution

$$14 = 2 \times 7$$

$$25 = 5^2$$

$$\text{HCF}(14, 25) = 1$$

Final Answer**Option B****MCQ 30**

Find the greatest prime number less than 50.

- A. 43 B. 45
C. 47 D. 49

Solution

$$49 = 7^2 \text{ is composite}$$

$$47 \text{ has no prime divisor } \leq \sqrt{47}$$

$$\therefore \boxed{47}$$

Final Answer**Option C****MCQ 31**

Find the least multiple of 8 greater than 50.

- A. 52 B. 54
C. 56 D. 64

Solution

$$8 \times 6 = 48 < 50$$

$$8 \times 7 = 56 > 50$$

$$\boxed{56}$$

Final Answer**Option C****MCQ 32**

Which number is a common multiple of 6 and 8?

- A. 18 B. 24
C. 30 D. 42

Solution

$$24 = 6 \times 4$$

$$24 = 8 \times 3$$

$$\therefore \boxed{24}$$

Final Answer**Option B****MCQ 33**

Which of the following is not a factor of 36?

- A. 4 B. 6
C. 8 D. 9

Solution

$$36 \div 4 = 9$$

$$36 \div 6 = 6$$

$$36 \div 9 = 4$$

$$36 \div 8 = 4.5$$

$$\therefore \boxed{8}$$

Final Answer**Option C**

MCQ 34

How many multiples of 7 are there from 1 to 100?

- A. 13 B. 14
C. 15 D. 16

Solution

$$7 \times 14 = 98$$

$$7 \times 15 = 105 > 100$$

$$\text{Count} = 14$$

Final Answer

Option B

MCQ 35

Find the greatest two-digit multiple of 13.

- A. 78 B. 91
C. 96 D. 99

Solution

$$13 \times 7 = 91$$

$$13 \times 8 = 104$$

$$\therefore \boxed{91}$$

Final Answer

Option B

MCQ 36

Find the smallest three-digit multiple of 17.

- A. 102 B. 108
C. 119 D. 136

Solution

$$17 \times 5 = 85 < 100$$

$$17 \times 6 = 102$$

$$\boxed{102}$$

Final Answer

Option A

MCQ 37

How many multiples of 4 are there from 1 to 100?

- A. 20 B. 24
C. 25 D. 26

Solution

$$4 \times 25 = 100$$

Multiples: 4, 8, ..., 100

$$\text{Count} = 25$$

Final Answer

Option C

MCQ 38

Find the sum of the first 10 positive multiples of 3.

- A. 135 B. 150
C. 165 D. 180

Solution

$$3 + 6 + \dots + 30 = 3(1 + 2 + \dots + 10)$$

$$= 3 \left(\frac{10 \cdot 11}{2} \right)$$

$$= 3(55) = 165$$

Final Answer

Option C

MCQ 39If n is a multiple of 12, which number must divide n ?

- A. 5 B. 7
C. 6 D. 8

Solution

$$12 = 2 \times 6$$

$$n = 12k = 6(2k)$$

$$\therefore 6 \mid n$$

Final Answer

Option C

MCQ 40

Find the least positive number that is a multiple of both 9 and 15.

- A. 30 B. 45
C. 60 D. 90

Solution

$$9 = 3^2$$

$$15 = 3 \times 5$$

$$\text{LCM} = 3^2 \times 5 = 45$$

Final Answer

Option B

MCQ 41

Find the HCF of 24 and 36.

- A. 6 B. 8
C. 12 D. 18

Solution

$$24 = 2^3 \cdot 3$$

$$36 = 2^2 \cdot 3^2$$

$$\text{HCF} = 2^2 \cdot 3 = 12$$

Final Answer

Option C

MCQ 42

Find the LCM of 12 and 18.

- A. 24 B. 36
C. 54 D. 72

Solution

$$12 = 2^2 \cdot 3$$

$$18 = 2 \cdot 3^2$$

$$\text{LCM} = 2^2 \cdot 3^2 = 36$$

Final Answer

Option B

MCQ 43

Find the HCF of 54 and 90.

- A. 9 B. 18
C. 27 D. 36

Solution

$$54 = 2 \cdot 3^3$$

$$90 = 2 \cdot 3^2 \cdot 5$$

$$\text{HCF} = 2 \cdot 3^2 = 18$$

Final Answer

Option B

MCQ 44

Find the LCM of 8, 12, 15.

- A. 60 B. 90
C. 120 D. 240

Solution

$$8 = 2^3$$

$$12 = 2^2 \cdot 3$$

$$15 = 3 \cdot 5$$

$$\text{LCM} = 2^3 \cdot 3 \cdot 5 = 120$$

Final Answer

Option C

MCQ 45

Find the HCF of 48, 72, 120.

- A. 12 B. 18
C. 24 D. 36

Solution

$$48 = 2^4 \cdot 3$$

$$72 = 2^3 \cdot 3^2$$

$$120 = 2^3 \cdot 3 \cdot 5$$

$$\text{HCF} = 2^3 \cdot 3 = 24$$

Final Answer

Option C

MCQ 46

Find the LCM of 21 and 28.

- A. 42 B. 56
C. 84 D. 168

Solution

$$21 = 3 \cdot 7$$

$$28 = 2^2 \cdot 7$$

$$\text{LCM} = 2^2 \cdot 3 \cdot 7 = 84$$

Final Answer

Option C

MCQ 47

Two positive integers have HCF 6 and LCM 180. If one number is 30, find the other.

- A. 24 B. 30
C. 36 D. 42

Solution

$$ab = \text{HCF}(a, b) \text{ LCM}(a, b)$$

$$30b = 6 \times 180$$

$$b = \frac{1080}{30} = 36$$

Final Answer

Option C

MCQ 48

Find the HCF of 96 and 144.

- A. 24 B. 36
C. 48 D. 72

Solution

$$96 = 2^5 \cdot 3$$

$$144 = 2^4 \cdot 3^2$$

$$\text{HCF} = 2^4 \cdot 3 = 48$$

Final Answer

Option C

MCQ 49

Find the LCM of 14, 35, 20.

- A. 70 B. 120
C. 140 D. 280

Solution

$$14 = 2 \cdot 7$$

$$35 = 5 \cdot 7$$

$$20 = 2^2 \cdot 5$$

$$\text{LCM} = 2^2 \cdot 5 \cdot 7 = 140$$

Final Answer

Option C

MCQ 50

If the HCF of two numbers is 8 and their LCM is 96, what is their product?

- A. 384 B. 576
C. 768 D. 864

Solution

$$ab = \text{HCF} \times \text{LCM}$$

$$= 8 \times 96 = 768$$

Final Answer

Option C

MCQ 51

A rectangular floor is 12 m × 18 m. What is the largest square tile side that can cover it exactly?

- A. 3 m B. 4 m
C. 6 m D. 9 m

Solution

$$\text{Required side} = \text{HCF}(12, 18)$$

$$= 6 \text{ m}$$

Final Answer

Option C

MCQ 52

Three bells ring every 12, 18, and 30 seconds. After how many seconds will they ring together again?

- A. 90 B. 120
C. 180 D. 360

Solution

$$12 = 2^2 \cdot 3$$

$$18 = 2 \cdot 3^2$$

$$30 = 2 \cdot 3 \cdot 5$$

$$\text{LCM} = 2^2 \cdot 3^2 \cdot 5 = 180$$

Final Answer

Option C

MCQ 53

Find the greatest number that divides 122 and 202, leaving remainder 2 each time.

- A. 20 B. 40
C. 60 D. 80

Solution

$$122 - 2 = 120$$

$$202 - 2 = 200$$

$$\text{HCF}(120, 200) = 40$$

Final Answer

Option B

MCQ 54

Find the smallest positive number divisible by 12, 15, 20.

- A. 30 B. 40
C. 60 D. 120

Solution

$$12 = 2^2 \cdot 3$$

$$15 = 3 \cdot 5$$

$$20 = 2^2 \cdot 5$$

$$\text{LCM} = 2^2 \cdot 3 \cdot 5 = 60$$

Final Answer

Option C

MCQ 55

Find the smallest number that leaves remainder 2 when divided by 5, 6, 8.

- A. 62 B. 120
C. 122 D. 242

Solution

$$\text{LCM}(5, 6, 8) = 120$$

$$N = 120 + 2 = 122$$

Final Answer

Option C

MCQ 56

What is the greatest length that can measure exactly both 4.2 m and 5.6 m?

- A. 0.7 m B. 1.0 m
C. 1.4 m D. 2.8 m

Solution

$$4.2 \text{ m} = 420 \text{ cm}$$

$$5.6 \text{ m} = 560 \text{ cm}$$

$$\text{HCF}(420, 560) = 140 \text{ cm}$$

$$= 1.4 \text{ m}$$

Final Answer

Option C

MCQ 57

84 boys and 126 girls are to be divided into the greatest possible number of equal groups, with each group having the same number of boys and the same number of girls. How many groups?

- A. 21 B. 28
C. 42 D. 63

Solution

$$\text{Groups} = \text{HCF}(84, 126)$$

$$84 = 2^2 \cdot 3 \cdot 7$$

$$126 = 2 \cdot 3^2 \cdot 7$$

$$\text{HCF} = 2 \cdot 3 \cdot 7 = 42$$

Final Answer

Option C

MCQ 58

Three lights flash every 8, 12, and 18 seconds. If they flash together now, after how many seconds will they next flash together?

- A. 36 B. 48
C. 72 D. 144

Solution

$$8 = 2^3$$

$$12 = 2^2 \cdot 3$$

$$18 = 2 \cdot 3^2$$

$$\text{LCM} = 2^3 \cdot 3^2 = 72$$

Final Answer

Option C

MCQ 59

Find the greatest number that divides 215 and 335, leaving remainder 5 each time.

- A. 15 B. 20
C. 30 D. 60

Solution

$$215 - 5 = 210$$

$$335 - 5 = 330$$

$$\text{HCF}(210, 330) = 30$$

Final Answer

Option C

MCQ 60

Find the smallest four-digit number divisible by 12, 15, 18.

- A. 1020 B. 1080
C. 1140 D. 1260

Solution

$$\text{LCM}(12, 15, 18) = 180$$

$$1000 \div 180 = 5 \text{ remainder } 100$$

$$180 \times 6 = 1080$$

$$1080$$

Final Answer

Option B

MCQ 61

Find the remainder when 47 is divided by 5.

- A. 1 B. 2
C. 3 D. 4

Solution

$$47 = 5(9) + 2$$

$$\text{Remainder} = 2$$

Final Answer

Option B

MCQ 62

Find the remainder when 1234 is divided by 9.

- A. 0 B. 1
C. 2 D. 4

Solution

$$1 + 2 + 3 + 4 = 10$$

$$10 = 9(1) + 1$$

$$\text{Remainder} = 1$$

Final Answer

Option B

MCQ 63

Find the remainder when 2^{10} is divided by 7.

- A. 1 B. 2
C. 3 D. 4

Solution

$$2^3 = 8 \equiv 1 \pmod{7}$$

$$2^9 = (2^3)^3 \equiv 1$$

$$2^{10} \equiv 2 \pmod{7}$$

Final Answer

Option B

MCQ 64

Find the remainder when 3^5 is divided by 7.

- A. 3 B. 4
C. 5 D. 6

Solution

$$3^5 = 243$$

$$243 = 7(34) + 5$$

$$\text{Remainder} = 5$$

Final Answer

Option C

MCQ 65

A number leaves remainder 3 when divided by 7. What remainder will the number plus 11 leave when divided by 7?

- A. 0 B. 1
C. 3 D. 4

Solution

$$n \equiv 3 \pmod{7}$$

$$n + 11 \equiv 3 + 11 = 14 \equiv 0 \pmod{7}$$

Final Answer

Option A

MCQ 66

If n leaves remainder 2 when divided by 5, what remainder does $3n + 4$ leave when divided by 5?

- A. 0 B. 1
C. 2 D. 4

Solution

$$n \equiv 2 \pmod{5}$$

$$3n + 4 \equiv 3(2) + 4 = 10$$

$$10 \equiv 0 \pmod{5}$$

Final Answer

Option A

MCQ 67

Find the remainder when 9999 is divided by 11.

- A. 0 B. 1
C. 9 D. 10

Solution

$$9999 = 11 \times 909$$

$$\text{Remainder} = 0$$

Final Answer

Option A

MCQ 68

Find the remainder when $1 + 2 + \dots + 20$ is divided by 7.

- A. 0 B. 1
C. 2 D. 3

Solution

$$S = \frac{20(21)}{2} = 210$$

$$210 = 7(30)$$

$$\text{Remainder} = 0$$

Final Answer

Option A

MCQ 69

Find the remainder when $10^5 + 1$ is divided by 9.

- A. 0 B. 1
C. 2 D. 8

Solution

$$10 \equiv 1 \pmod{9}$$

$$10^5 + 1 \equiv 1^5 + 1 = 2 \pmod{9}$$

Final Answer

Option C

MCQ 70

What least positive number must be added to 568 to make it divisible by 9?

- A. 1 B. 7
C. 8 D. 9

Solution

$$5 + 6 + 8 = 19$$

$$19 = 9(2) + 1$$

$$\text{Current remainder} = 1$$

$$9 - 1 = 8$$

Final Answer

Option C

MCQ 71Find the unit digit of 7^{23} .

- A. 1 B. 3
C. 7 D. 9

Solution

$$7^1, 7^2, 7^3, 7^4 \Rightarrow 7, 9, 3, 1$$

$$23 \equiv 3 \pmod{4}$$

$$\text{Unit digit} = 3$$

Final Answer

Option B

MCQ 72Find the unit digit of 3^{100} .

- A. 1 B. 3
C. 7 D. 9

Solution

3, 9, 7, 1 repeats every 4

$$100 \equiv 0 \pmod{4}$$

$$\text{Unit digit} = 1$$

Final Answer

Option A

MCQ 73Find the unit digit of 2^{35} .

- A. 2 B. 4
C. 6 D. 8

Solution

2, 4, 8, 6 repeats every 4

$$35 \equiv 3 \pmod{4}$$

$$\text{Unit digit} = 8$$

Final Answer

Option D

MCQ 74Find the unit digit of 9^{47} .

- A. 1 B. 3
C. 7 D. 9

Solution

9, 1 repeats every 2

47 is odd

$$\text{Unit digit} = 9$$

Final Answer

Option D

MCQ 75Find the unit digit of 6^{2026} .

- A. 2 B. 4
C. 6 D. 8

Solution 6^n ends in 6 for every $n \geq 1$

6

Final Answer

Option C

MCQ 76Find the unit digit of 8^{12} .

- A. 2 B. 4
C. 6 D. 8

Solution

8, 4, 2, 6 repeats every 4

$$12 \equiv 0 \pmod{4}$$

$$\text{Unit digit} = 6$$

Final Answer

Option C

MCQ 77Find the unit digit of 4^{17} .

- A. 4 B. 6
C. 8 D. 2

Solution $4, 6$ repeats every 2 17 is odd

Unit digit = 4

Final Answer

Option A

MCQ 78Find the unit digit of 17^{19} .

- A. 1 B. 3
C. 7 D. 9

Solution 17^{19} has the same unit digit as 7^{19}

$$19 \equiv 3 \pmod{4}$$

 7^3 ends in 3**Final Answer**

Option B

MCQ 79Find the unit digit of $3^{10} \times 7^5$.

- A. 1 B. 3
C. 7 D. 9

Solution 3^{10} ends in 9 7^5 ends in 7

$$9 \times 7 = 63$$

Unit digit = 3

Final Answer

Option B

MCQ 80Find the unit digit of $2^{20} + 3^{20}$.

- A. 5 B. 6
C. 7 D. 8

Solution 2^{20} ends in 6 3^{20} ends in 1

$$6 + 1 = 7$$

Final Answer

Option C

MCQ 81

The sum of five consecutive integers is 85. Find the middle integer.

- A. 15 B. 16
C. 17 D. 18

Solution

$$(n-2) + (n-1) + n + (n+1) + (n+2) = 85$$

$$5n = 85$$

$$n = 17$$

Final Answer

Option C

MCQ 82

The sum of three consecutive even integers is 42. Find the largest.

- A. 12 B. 14
C. 16 D. 18

Solution

$$(n-2) + n + (n+2) = 42$$

$$3n = 42$$

$$n = 14$$

$$\text{Largest} = 14 + 2 = 16$$

Final Answer

Option C

MCQ 83

The product of two consecutive positive integers is 56. Find their sum.

- A. 13 B. 15
C. 17 D. 19

Solution

$$7 \times 8 = 56$$

$$7 + 8 = 15$$

Final Answer

Option B

MCQ 84

The sum of four consecutive integers is 54. Find the smallest.

- A. 10 B. 11
C. 12 D. 13

Solution

$$n + (n + 1) + (n + 2) + (n + 3) = 54$$

$$4n + 6 = 54$$

$$4n = 48$$

$$n = 12$$

Final Answer

Option C

MCQ 85

The sum of three consecutive odd integers is 69. Find the largest.

- A. 21 B. 23
C. 25 D. 27

Solution

$$(n - 2) + n + (n + 2) = 69$$

$$3n = 69$$

$$n = 23$$

$$\text{Largest} = 25$$

Final Answer

Option C

MCQ 86

If n is odd, which is always odd?

- A. $n+1$ B. n^2
C. $2n$ D. $n-1$

Solution

$$n = 2k + 1$$

$$n^2 = (2k + 1)^2 = 4k^2 + 4k + 1$$

$$= 2(2k^2 + 2k) + 1$$

$$\therefore n^2 \text{ is odd}$$

Final Answer

Option B

MCQ 87

What is the sum of an even integer and an odd integer?

- A. Always even B. Always odd
C. Always prime D. Always composite

Solution

$$2a + (2b + 1) = 2(a + b) + 1$$

$$\therefore \text{sum is odd}$$

Final Answer

Option B

MCQ 88

The product of any three consecutive integers is always divisible by:

- A. 4 only B. 5
C. 6 D. 8

Solution

$$n(n + 1)(n + 2)$$

One of three is divisible by 3

At least one is even

$$\therefore 2 \times 3 = 6 \text{ divides the product}$$

Final Answer

Option C

MCQ 89

The sum of the first n odd positive integers is 225.

Find n .

- A. 12 B. 15
C. 18 D. 25

Solution

$$1 + 3 + \dots + (2n - 1) = n^2$$

$$n^2 = 225$$

$$n = 15$$

Final Answer

Option B

MCQ 90

The sum of the first n natural numbers is 210. Find

n .

- A. 18 B. 19
C. 20 D. 21

Solution

$$\frac{n(n+1)}{2} = 210$$

$$n(n+1) = 420$$

$$20 \times 21 = 420$$

$$n = 20$$

Final Answer

Option C

MCQ 91

Find the smallest positive number divisible by 2, 3, 4, 5, 6.

- A. 30 B. 40
C. 60 D. 120

Solution

$$\text{LCM}(2, 3, 4, 5, 6)$$

$$= 2^2 \cdot 3 \cdot 5$$

$$= 60$$

Final Answer

Option C

MCQ 92

Find the greatest three-digit number divisible by 17.

- A. 969 B. 986
C. 989 D. 999

Solution

$$999 \div 17 = 58 \text{ remainder } 13$$

$$17 \times 58 = 986$$

$$17 \times 59 = 1003 > 999$$

Final Answer

Option B

MCQ 93

Find the least three-digit number that leaves remainder 1 when divided by 2, 3, 4, 5.

- A. 101 B. 121
C. 181 D. 241

Solution

$$\text{LCM}(2, 3, 4, 5) = 60$$

$$N = 60k + 1$$

$$60(1) + 1 = 61 < 100$$

$$60(2) + 1 = 121$$

Final Answer

Option B

MCQ 94

How many trailing zeros are there in 25!?

- A. 4 B. 5
C. 6 D. 7

Solution

$$\left\lfloor \frac{25}{5} \right\rfloor + \left\lfloor \frac{25}{25} \right\rfloor$$

$$= 5 + 1 = 6$$

Final Answer

Option C

MCQ 95

What is the greatest power of 2 that divides 48?

- A. 4 B. 8
C. 16 D. 32

Solution

$$48 = 16 \times 3$$

$$= 2^4 \times 3$$

$$\text{Greatest power of } 2 = 2^4 = 16$$

Final Answer

Option C

MCQ 96

Find the sum of all positive factors of 12.

- A. 24 B. 26
C. 28 D. 30

Solution

Factors: 1, 2, 3, 4, 6, 12

$$1 + 2 + 3 + 4 + 6 + 12 = 28$$

Final Answer

Option C

MCQ 97

What is the smallest prime number greater than 50?

- A. 51 B. 52
C. 53 D. 55

Solution

$$51 = 3 \times 17$$

$$52 = 4 \times 13$$

53 is prime

53

Final Answer

Option C

MCQ 98

Find the digital root of 98765.

- A. 7 B. 8
C. 9 D. 10

Solution

$$9 + 8 + 7 + 6 + 5 = 35$$

$$3 + 5 = 8$$

Digital root = 8

Final Answer

Option B

MCQ 99

When an integer is divided by 13, the quotient is 7 and the remainder is 5. Find the integer.

- A. 91 B. 96
C. 98 D. 104

Solution

$$N = 13(7) + 5$$

$$= 91 + 5 = 96$$

Final Answer

Option B

MCQ 100

Find the smallest positive integer that is divisible by 8 and 12, and leaves remainder 1 when divided by 5.

- A. 24 B. 48
C. 72 D. 96

Solution

$$\text{LCM}(8, 12) = 24$$

Multiples: 24, 48, 72, 96, ...

$$96 = 5(19) + 1$$

$$\therefore 96$$

Final Answer

Option D

Number System - Rapid Revision Grid

Prime / composite

2 is the only even prime.

A prime has exactly two positive factors; a composite number has more than two.

Factor count

$$N = p^a q^b \implies \tau(N) = (a+1)(b+1)$$

Consecutive-number shortcuts For five consecutive integers, the average equals the middle integer. For three consecutive even/odd integers, the middle integer is also the average.

Remainder adjustment If N leaves remainder r on division by d , then the least amount to add for exact divisibility is

$$d - r$$

provided $r \neq 0$.

Trailing zeros in factorials

$$Z(n!) = \left\lfloor \frac{n}{5} \right\rfloor + \left\lfloor \frac{n}{25} \right\rfloor + \left\lfloor \frac{n}{125} \right\rfloor + \dots$$

Exam-speed rule Before long division, first test divisibility, factorization, cyclic unit digits, or modular reduction. In one-paper MCQs, this often removes most arithmetic.



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PART 6 - PROFIT, LOSS & DISCOUNT | 100 SOLVED MCQs

Fast Profit, Loss & Discount Foundation

Basic quantities

$$\text{Profit} = \text{SP} - \text{CP}$$

$$\text{Loss} = \text{CP} - \text{SP}$$

$$\text{Profit \%} = \frac{\text{Profit}}{\text{CP}} \times 100$$

$$\text{Loss \%} = \frac{\text{Loss}}{\text{CP}} \times 100$$

Successive discounts For discounts $a\%$ and $b\%$,

$$D = a + b - \frac{ab}{100}$$

The two discounts are applied one after the other; they are not simply added.

Markup followed by discount Use multipliers directly:

$$\frac{\text{SP}}{\text{CP}} = \left(1 + \frac{m}{100}\right) \left(1 - \frac{d}{100}\right)$$

Then compare the result with 1.

Direct multiplier method

$$\text{SP} = \text{CP} \left(1 + \frac{p}{100}\right)$$

for a profit of $p\%$, and

$$\text{SP} = \text{CP} \left(1 - \frac{l}{100}\right)$$

for a loss of $l\%$.

Fast equal-SP result If two articles are sold at the same selling price, one at $x\%$ gain and the other at $x\%$ loss,

$$\text{Overall loss \%} = \frac{x^2}{100}$$

One-paper speed rule Whenever possible, take $\text{CP} = 100$ or $\text{MP} = 100$. Percentage questions then become direct multiplications instead of long algebra.

Direct Cost Price, Selling Price, Profit and Loss

MCQ 1

A coat is marked at \$50 and sold at a discount of 10%. How much is saved?

A. \$4

B. \$5

C. \$6

D. \$10

Official FPSC Practice Paper, General Abilities, Q95 (public practice item).

Solution

$$\begin{aligned} \text{Discount} &= \frac{10}{100} \times 50 \\ &= 5 \end{aligned}$$

$$\text{Saving} = \$5$$

Final Answer

Option B

Discount

$$\text{Discount} = \text{MP} - \text{SP}$$

$$\text{Discount \%} = \frac{\text{Discount}}{\text{MP}} \times 100$$

$$\text{SP} = \text{MP} \left(1 - \frac{d}{100}\right)$$

MCQ 2

A sculpture is sold for Rs. 79,950 after an 18% discount. Find its marked price.

- A. Rs. 95,000 B. Rs. 97,500
C. Rs. 98,500 D. Rs. 99,000

Adapted from an official FPSC General Science & Ability percentage/discount question.

Solution

Selling Price = 82% of Marked Price

$$79,950 = \frac{82}{100}M$$

$$M = 79,950 \times \frac{100}{82}$$

$$= 97,500$$

Final Answer

Option B

MCQ 3

An article costs Rs. 800 and is sold for Rs. 920. Find the profit percentage.

- A. 10% B. 12%
C. 15% D. 20%

Solution

$$\text{Profit} = 920 - 800 = 120$$

$$\text{Profit \%} = \frac{120}{800} \times 100$$

$$= 15\%$$

Final Answer

Option C

MCQ 4

An article costs Rs. 1,500 and is sold for Rs. 1,350. Find the loss percentage.

- A. 5% B. 8%
C. 10% D. 12%

Solution

$$\text{Loss} = 1500 - 1350 = 150$$

$$\text{Loss \%} = \frac{150}{1500} \times 100$$

$$= 10\%$$

Final Answer

Option C

MCQ 5

The cost price of an article is Rs. 640. It is sold at a profit of 25%. Find the selling price.

- A. Rs. 760 B. Rs. 780
C. Rs. 800 D. Rs. 820

Solution

$$SP = 640 \left(1 + \frac{25}{100} \right)$$

$$= 640 \times \frac{125}{100}$$

$$= 800$$

Final Answer

Option C

MCQ 6

The cost price is Rs. 2,500. If the loss is 12%, find the selling price.

- A. Rs. 2,100 B. Rs. 2,200
C. Rs. 2,250 D. Rs. 2,300

Solution

$$SP = 2500 \left(1 - \frac{12}{100} \right)$$

$$= 2500 \times \frac{88}{100}$$

$$= 2200$$

Final Answer

Option B

MCQ 7

An article is sold for Rs. 1,380 at a profit of 15%. Find the cost price.

- A. Rs. 1,100 B. Rs. 1,150
C. Rs. 1,200 D. Rs. 1,250

Solution

$$1380 = 115\% \text{ of CP}$$

$$CP = 1380 \times \frac{100}{115}$$

$$= 1200$$

Final Answer

Option C

MCQ 8

An article is sold for Rs. 1,840 at a loss of 8%. Find its cost price.

- A. Rs. 1,900 B. Rs. 2,000
C. Rs. 2,100 D. Rs. 2,200

Solution

$$1840 = 92\% \text{ of CP}$$

$$\begin{aligned} \text{CP} &= 1840 \times \frac{100}{92} \\ &= 2000 \end{aligned}$$

Final Answer

Option B

MCQ 9

A trader earns Rs. 180 profit on an article costing Rs. 1,200. Find the profit percentage.

- A. 12% B. 15%
C. 18% D. 20%

Solution

$$\begin{aligned} \text{Profit \%} &= \frac{180}{1200} \times 100 \\ &= \frac{3}{20} \times 100 \\ &= 15\% \end{aligned}$$

Final Answer

Option B

MCQ 10

A trader loses Rs. 225 on an article costing Rs. 1,500. Find the loss percentage.

- A. 10% B. 12%
C. 15% D. 18%

Solution

$$\begin{aligned} \text{Loss \%} &= \frac{225}{1500} \times 100 \\ &= 15\% \end{aligned}$$

Final Answer

Option C

MCQ 11

An article bought for Rs. 960 is sold for Rs. 1,200. Find the profit percentage.

- A. 20% B. 22.5%
C. 25% D. 30%

Solution

$$\text{Profit} = 1200 - 960 = 240$$

$$\begin{aligned} \text{Profit \%} &= \frac{240}{960} \times 100 \\ &= 25\% \end{aligned}$$

Final Answer

Option C

MCQ 12

An article bought for Rs. 875 is sold for Rs. 805. Find the loss percentage.

- A. 6% B. 8%
C. 10% D. 12%

Solution

$$\text{Loss} = 875 - 805 = 70$$

$$\begin{aligned} \text{Loss \%} &= \frac{70}{875} \times 100 \\ &= 8\% \end{aligned}$$

Final Answer

Option B

MCQ 13

Find the selling price of an article costing Rs. 1,250 if the profit is 20%.

- A. Rs. 1,400 B. Rs. 1,450
C. Rs. 1,500 D. Rs. 1,550

Solution

$$\begin{aligned} \text{SP} &= 1250 \times \frac{120}{100} \\ &= 1500 \end{aligned}$$

Final Answer

Option C

MCQ 14

Find the selling price of an article costing Rs. 1,800 if the loss is 5%.

- A. Rs. 1,690 B. Rs. 1,710
C. Rs. 1,720 D. Rs. 1,750

Solution

$$\begin{aligned} \text{SP} &= 1800 \times \frac{95}{100} \\ &= 1710 \end{aligned}$$

Final Answer

Option B

MCQ 15

An article is sold for Rs. 2,100 at a profit of 40%. Find the cost price.

- A. Rs. 1,400 B. Rs. 1,500
C. Rs. 1,600 D. Rs. 1,750

Solution

$$\begin{aligned} 2100 &= 140\% \text{ of CP} \\ \text{CP} &= 2100 \times \frac{100}{140} \\ &= 1500 \end{aligned}$$

Final Answer

Option B

MCQ 16

An article is sold for Rs. 2,160 at a loss of 10%. Find the cost price.

- A. Rs. 2,300 B. Rs. 2,400
C. Rs. 2,500 D. Rs. 2,600

Solution

$$\begin{aligned} 2160 &= 90\% \text{ of CP} \\ \text{CP} &= 2160 \times \frac{100}{90} \\ &= 2400 \end{aligned}$$

Final Answer

Option B

MCQ 17

If the ratio CP : SP = 5 : 6, find the profit percentage.

- A. 10% B. 15%
C. 20% D. 25%

Solution

$$\text{Profit} = 6 - 5 = 1 \text{ part}$$

$$\begin{aligned} \text{Profit \%} &= \frac{1}{5} \times 100 \\ &= 20\% \end{aligned}$$

Final Answer

Option C

MCQ 18

If SP : CP = 9 : 10, find the loss percentage.

- A. 5% B. 10%
C. $11\frac{1}{9}\%$ D. 12.5%

Solution

$$\text{Loss} = 10 - 9 = 1 \text{ part}$$

$$\begin{aligned} \text{Loss \%} &= \frac{1}{10} \times 100 \\ &= 10\% \end{aligned}$$

Final Answer

Option B

MCQ 19

If profit is $\frac{1}{5}$ of the cost price, what is the profit percentage?

- A. 15% B. 20%
C. 25% D. 30%

Solution

$$\text{Profit} = \frac{1}{5} \text{ CP}$$

$$\begin{aligned} \text{Profit \%} &= \frac{\frac{1}{5} \text{ CP}}{\text{CP}} \times 100 \\ &= 20\% \end{aligned}$$

Final Answer

Option B

MCQ 20

If loss is $\frac{1}{8}$ of the cost price, what is the loss percentage?

- A. 10% B. 12.5%
C. 15% D. 20%

Solution

$$\begin{aligned}\text{Loss \%} &= \frac{1}{8} \times 100 \\ &= 12.5\%\end{aligned}$$

Final Answer

Option B

Reverse Percentage and Cost/Selling Relationships**MCQ 21**

Profit is 25% of the selling price. What is the profit percentage on cost price?

- A. 25% B. 30%
C. $33\frac{1}{3}\%$ D. 40%

Solution

$$\text{Let SP} = 100$$

$$\text{Profit} = 25$$

$$\text{CP} = 100 - 25 = 75$$

$$\text{Profit \%} = \frac{25}{75} \times 100 = 33\frac{1}{3}\%$$

Final Answer

Option C

MCQ 22

Loss is 20% of the selling price. What is the loss percentage on cost price?

- A. 15% B. $16\frac{2}{3}\%$
C. 20% D. 25%

Solution

$$\text{Let SP} = 100$$

$$\text{Loss} = 20$$

$$\text{CP} = 100 + 20 = 120$$

$$\text{Loss \%} = \frac{20}{120} \times 100 = 16\frac{2}{3}\%$$

Final Answer

Option B

MCQ 23

The selling price is 125% of the cost price. Find the profit percentage.

- A. 20% B. 25%
C. 30% D. 35%

Solution

$$\text{SP} = 125\% \text{ of CP}$$

$$\text{Profit} = 125\% - 100\% = 25\%$$

Final Answer

Option B

MCQ 24

The selling price is 92% of the cost price. Find the loss percentage.

- A. 6% B. 8%
C. 10% D. 12%

Solution

$$\begin{aligned}\text{Loss} &= 100\% - 92\% \\ &= 8\%\end{aligned}$$

Final Answer

Option B

MCQ 25

The cost price is 80% of the selling price. Find the profit percentage on cost price.

- A. 20% B. 25%
C. 30% D. 40%

Solution

$$\text{Let SP} = 100$$

$$\text{CP} = 80$$

$$\text{Profit} = 20$$

$$\text{Profit \%} = \frac{20}{80} \times 100 = 25\%$$

Final Answer

Option B

MCQ 26

The cost price is 125% of the selling price. Find the loss percentage on cost price.

- A. 15% B. 20%
C. 25% D. 30%

Solution

$$\text{Let SP} = 100$$

$$\text{CP} = 125$$

$$\text{Loss} = 25$$

$$\text{Loss \%} = \frac{25}{125} \times 100 = 20\%$$

Final Answer

Option B

MCQ 27

An article is sold for Rs. 2,400 at a profit of 20%. Find its cost price.

- A. Rs. 1,800 B. Rs. 2,000
C. Rs. 2,100 D. Rs. 2,200

Solution

$$\begin{aligned}\text{CP} &= 2400 \times \frac{100}{120} \\ &= 2000\end{aligned}$$

Final Answer

Option B

MCQ 28

An article is sold for Rs. 2,520 at a loss of 10%. Find its cost price.

- A. Rs. 2,600 B. Rs. 2,700
C. Rs. 2,800 D. Rs. 3,000

Solution

$$\begin{aligned}\text{CP} &= 2520 \times \frac{100}{90} \\ &= 2800\end{aligned}$$

Final Answer

Option C

MCQ 29

At what price should an article costing Rs. 1,600 be sold to gain 12.5%?

- A. Rs. 1,700 B. Rs. 1,750
C. Rs. 1,800 D. Rs. 1,850

Solution

$$12.5\% = \frac{1}{8}$$

$$\text{Profit} = \frac{1}{8}(1600) = 200$$

$$\text{SP} = 1600 + 200 = 1800$$

Final Answer

Option C

MCQ 30

At what price should an article costing Rs. 2,400 be sold to incur a loss of $16\frac{2}{3}\%$?

- A. Rs. 1,900 B. Rs. 2,000
C. Rs. 2,100 D. Rs. 2,200

Solution

$$16\frac{2}{3}\% = \frac{1}{6}$$

$$\text{Loss} = \frac{1}{6}(2400) = 400$$

$$\text{SP} = 2400 - 400 = 2000$$

Final Answer

Option B

Marked Price and Discount**MCQ 31**

An article marked Rs. 1,000 is sold at a discount of 15%. Find the selling price.

- A. Rs. 800 B. Rs. 825
C. Rs. 850 D. Rs. 875

Solution

$$\text{Discount} = \frac{15}{100}(1000) = 150$$

$$\text{SP} = 1000 - 150 = 850$$

Final Answer

Option C

MCQ 32

An article marked Rs. 2,400 is sold at a discount of 12.5%. Find the selling price.

- A. Rs. 2,000 B. Rs. 2,100
C. Rs. 2,150 D. Rs. 2,200

Solution

$$12.5\% = \frac{1}{8}$$

$$\text{Discount} = \frac{1}{8}(2400) = 300$$

$$\text{SP} = 2400 - 300 = 2100$$

Final Answer

Option B

MCQ 33

An article marked Rs. 1,800 is sold for Rs. 1,530. Find the discount percentage.

- A. 10% B. 12%
C. 15% D. 18%

Solution

$$\text{Discount} = 1800 - 1530 = 270$$

$$\text{Discount \%} = \frac{270}{1800} \times 100 \\ = 15\%$$

Final Answer

Option C

MCQ 34

An article marked Rs. 3,200 is sold for Rs. 2,720. Find the discount percentage.

- A. 12% B. 15%
C. 18% D. 20%

Solution

$$\text{Discount} = 3200 - 2720 = 480$$

$$\text{Discount \%} = \frac{480}{3200} \times 100 = 15\%$$

Final Answer

Option B

MCQ 35

A discount of Rs. 240 is equal to 20% of the marked price. Find the marked price.

- A. Rs. 1,000 B. Rs. 1,200
C. Rs. 1,400 D. Rs. 1,500

Solution

$$240 = \frac{20}{100}M$$

$$M = 240 \times \frac{100}{20} \\ = 1200$$

Final Answer

Option B

MCQ 36

A discount of Rs. 360 is 15% of the marked price. Find the marked price.

- A. Rs. 2,000 B. Rs. 2,200
C. Rs. 2,400 D. Rs. 2,600

Solution

$$360 = \frac{15}{100}M$$

$$M = 360 \times \frac{100}{15} = 2400$$

Final Answer

Option C

MCQ 37

An article marked Rs. 1,500 receives successive discounts of 10% and 20%. Find the final selling price.

- A. Rs. 1,050 B. Rs. 1,080
C. Rs. 1,100 D. Rs. 1,200

Solution

$$1500 \times \frac{90}{100} = 1350$$

$$1350 \times \frac{80}{100} = 1080$$

Final Answer

Option B

MCQ 38

An article marked Rs. 2,000 receives discounts of 20% and then 10%. Find the final price.

- A. Rs. 1,400 B. Rs. 1,440
C. Rs. 1,460 D. Rs. 1,500

Solution

$$2000 \times 0.80 = 1600$$

$$1600 \times 0.90 = 1440$$

Final Answer

Option B

MCQ 39

What single discount is equivalent to successive discounts of 10% and 20%?

- A. 26% B. 28%
C. 30% D. 32%

Solution

$$D = 10 + 20 - \frac{10 \times 20}{100}$$

$$= 30 - 2 = 28\%$$

Final Answer

Option B

MCQ 40

What single discount is equivalent to successive discounts of 25% and 20%?

- A. 35% B. 40%
C. 42% D. 45%

Solution

$$D = 25 + 20 - \frac{25 \times 20}{100}$$

$$= 45 - 5 = 40\%$$

Final Answer

Option B

MCQ 41

Two successive discounts of 10% each are equal to a single discount of:

- A. 18% B. 19%
C. 20% D. 21%

Solution

$$D = 10 + 10 - \frac{10 \times 10}{100}$$

$$= 20 - 1 = 19\%$$

Final Answer

Option B

MCQ 42

Two successive discounts of 20% each are equal to a single discount of:

- A. 32% B. 34%
C. 36% D. 40%

Solution

$$D = 20 + 20 - \frac{20 \times 20}{100}$$

$$= 40 - 4 = 36\%$$

Final Answer

Option C

MCQ 43

Successive discounts of 30% and 10% are equivalent to:

- A. 35% B. 37%
C. 38% D. 40%

Solution

$$D = 30 + 10 - \frac{30 \times 10}{100}$$

$$= 40 - 3 = 37\%$$

Final Answer

Option B

MCQ 44

An article marked Rs. 4,000 is sold at 25% discount. Find the selling price.

- A. Rs. 2,800 B. Rs. 3,000
C. Rs. 3,100 D. Rs. 3,200

Solution

$$SP = 4000 \times \frac{75}{100}$$

$$= 3000$$

Final Answer

Option B

MCQ 45

An article marked Rs. 5,000 gets two successive discounts of 10% each. Find the final price.

- A. Rs. 4,000 B. Rs. 4,050
C. Rs. 4,100 D. Rs. 4,500

Solution

$$5000 \times 0.90 = 4500$$

$$4500 \times 0.90 = 4050$$

Final Answer

Option B

Reverse Discount and Markup-Discount Combinations

MCQ 46

An article is sold for Rs. 1,600 after a discount of 20%. Find the marked price.

- A. Rs. 1,800 B. Rs. 2,000
C. Rs. 2,100 D. Rs. 2,200

Solution

$$1600 = 80\% \text{ of MP}$$

$$MP = 1600 \times \frac{100}{80} = 2000$$

Final Answer

Option B

MCQ 47

An article is sold for Rs. 1,760 after a discount of 12%. Find the marked price.

- A. Rs. 1,900 B. Rs. 2,000
C. Rs. 2,100 D. Rs. 2,200

Solution

$$1760 = 88\% \text{ of MP}$$

$$MP = 1760 \times \frac{100}{88} = 2000$$

Final Answer

Option B

MCQ 48

After two successive discounts of 10% each, an article sells for Rs. 3,240. Find its marked price.

- A. Rs. 3,600 B. Rs. 3,800
C. Rs. 4,000 D. Rs. 4,200

Solution

$$3240 = 0.9 \times 0.9 \times M$$

$$3240 = 0.81M$$

$$M = \frac{3240}{0.81} = 4000$$

Final Answer

Option C

MCQ 49

After discounts of 20% and 10%, an article sells for Rs. 2,880. Find its marked price.

- A. Rs. 3,600 B. Rs. 4,000
C. Rs. 4,200 D. Rs. 4,500

Solution

$$2880 = 0.8 \times 0.9 \times M$$

$$2880 = 0.72M$$

$$M = 4000$$

Final Answer

Option B

MCQ 50

After discounts of 30% and 10%, an article sells for Rs. 2,520. Find its marked price.

- A. Rs. 3,500 B. Rs. 4,000
C. Rs. 4,200 D. Rs. 4,500

Solution

$$2520 = 0.7 \times 0.9 \times M$$

$$2520 = 0.63M$$

$$M = 4000$$

Final Answer

Option B

MCQ 51

An article costs Rs. 1,000, is marked Rs. 1,500, and sold at 20% discount. Find the profit percentage.

- A. 15% B. 20%
C. 25% D. 30%

Solution

$$SP = 1500 \times 0.80 = 1200$$

$$\text{Profit} = 1200 - 1000 = 200$$

$$\text{Profit \%} = \frac{200}{1000} \times 100 = 20\%$$

Final Answer

Option B

MCQ 52

An article costs Rs. 1,600, is marked Rs. 2,000, and sold at 10% discount. Find the profit percentage.

- A. 10% B. 12.5%
C. 15% D. 20%

Solution

$$SP = 2000 \times 0.90 = 1800$$

$$\text{Profit} = 1800 - 1600 = 200$$

$$\text{Profit \%} = \frac{200}{1600} \times 100 = 12.5\%$$

Final Answer

Option B

MCQ 53

An article costs Rs. 1,800, is marked Rs. 2,400, and sold at 25% discount. What is the result?

- A. 10% profit B. No profit, no loss
C. 10% loss D. 25% loss

Solution

$$SP = 2400 \times 0.75 = 1800$$

$$SP = CP$$

∴ No profit, no loss

Final Answer

Option B

MCQ 54

An article costs Rs. 2,400, is marked Rs. 3,000, and sold at 30% discount. Find the loss percentage.

- A. 10% B. 12.5%
C. 15% D. 20%

Solution

$$SP = 3000 \times 0.70 = 2100$$

$$\text{Loss} = 2400 - 2100 = 300$$

$$\text{Loss \%} = \frac{300}{2400} \times 100 = 12.5\%$$

Final Answer

Option B

MCQ 55

A shopkeeper marks an article 25% above cost and gives a 10% discount. Find the profit percentage.

- A. 10% B. 12.5%
C. 15% D. 17.5%

Solution

$$\text{Let CP} = 100$$

$$\text{MP} = 125$$

$$SP = 125 \times 0.90 = 112.5$$

$$\text{Profit \%} = 12.5\%$$

Final Answer

Option B

MCQ 56

An article is marked 20% above cost and sold at 20% discount. Find the result.

- A. 4% profit B. 4% loss
C. No profit, no loss D. 8% loss

Solution

$$\text{Let CP} = 100$$

$$\text{MP} = 120$$

$$SP = 120 \times 0.80 = 96$$

$$\text{Loss} = 4\%$$

Final Answer

Option B

MCQ 57

An article is marked 50% above cost and sold at 20% discount. Find the profit percentage.

- A. 15% B. 20%
C. 25% D. 30%

Solution

$$\text{Let CP} = 100$$

$$\text{MP} = 150$$

$$SP = 150 \times 0.80 = 120$$

$$\text{Profit \%} = 20\%$$

Final Answer

Option B

MCQ 58

An article is marked 40% above cost and sold at 25% discount. Find the profit percentage.

- A. 5% B. 10%
C. 12% D. 15%

Solution

$$\text{Let CP} = 100$$

$$\text{MP} = 140$$

$$\text{SP} = 140 \times 0.75 = 105$$

$$\text{Profit \%} = 5\%$$

Final Answer

Option A

MCQ 59

An article is marked 60% above cost and sold at 25% discount. Find the profit percentage.

- A. 15% B. 20%
C. 25% D. 30%

Solution

$$\text{Let CP} = 100$$

$$\text{MP} = 160$$

$$\text{SP} = 160 \times 0.75 = 120$$

$$\text{Profit \%} = 20\%$$

Final Answer

Option B

MCQ 60

An article is marked 25% above cost and sold at 20% discount. What is the result?

- A. 5% profit B. No profit, no loss
C. 5% loss D. 10% profit

Solution

$$\text{Let CP} = 100$$

$$\text{MP} = 125$$

$$\text{SP} = 125 \times 0.80 = 100$$

$$\therefore \text{No profit, no loss}$$

Final Answer

Option B

Target Profit After Discount**MCQ 61**

An article costs Rs. 900. To earn 20% profit after giving 10% discount, what should be the marked price?

- A. Rs. 1,100 B. Rs. 1,200
C. Rs. 1,250 D. Rs. 1,300

Solution

$$\text{Required SP} = 900 \times 1.20 = 1080$$

$$1080 = 90\% \text{ of MP}$$

$$\text{MP} = 1080 \times \frac{100}{90} = 1200$$

Final Answer

Option B

MCQ 62

An article costs Rs. 1,600. To gain 12.5% after a 10% discount, find the marked price.

- A. Rs. 1,900 B. Rs. 2,000
C. Rs. 2,100 D. Rs. 2,200

Solution

$$\text{Required SP} = 1600 \times 1.125 = 1800$$

$$1800 = 0.90M$$

$$M = 2000$$

Final Answer

Option B

MCQ 63

An article costs Rs. 2,000. To gain 8% after a 10% discount, find the marked price.

- A. Rs. 2,200 B. Rs. 2,300
C. Rs. 2,400 D. Rs. 2,500

Solution

$$\text{Required SP} = 2000 \times 1.08 = 2160$$

$$2160 = 0.90M$$

$$M = 2400$$

Final Answer

Option C

MCQ 64

An article costs Rs. 2,500. To gain 20% after giving 25% discount, find the marked price.

- A. Rs. 3,500 B. Rs. 4,000
C. Rs. 4,200 D. Rs. 4,500

Solution

$$\text{Required SP} = 2500 \times 1.20 = 3000$$

$$3000 = 0.75M$$

$$M = 4000$$

Final Answer

Option B

MCQ 65

An article costs Rs. 1,800. To earn 10% profit after a 10% discount, find its marked price.

- A. Rs. 2,000 B. Rs. 2,100
C. Rs. 2,200 D. Rs. 2,400

Solution

$$\text{Required SP} = 1800 \times 1.10 = 1980$$

$$1980 = 0.90M$$

$$M = 2200$$

Final Answer

Option C

MCQ 66

An article marked Rs. 2,500 is sold at 20% discount and still gives 25% profit. Find its cost price.

- A. Rs. 1,500 B. Rs. 1,600
C. Rs. 1,700 D. Rs. 1,800

Solution

$$\text{SP} = 2500 \times 0.80 = 2000$$

$$2000 = 125\% \text{ of CP}$$

$$\text{CP} = 2000 \times \frac{100}{125} = 1600$$

Final Answer

Option B

MCQ 67

An article marked Rs. 3,600 is sold at 25% discount and yields 12.5% profit. Find the cost price.

- A. Rs. 2,200 B. Rs. 2,400
C. Rs. 2,500 D. Rs. 2,600

Solution

$$\text{SP} = 3600 \times 0.75 = 2700$$

$$2700 = 112.5\% \text{ of CP}$$

$$\text{CP} = 2700 \div 1.125 = 2400$$

Final Answer

Option B

MCQ 68

An article marked Rs. 3,000 is sold at 10% discount and incurs a 10% loss. Find the cost price.

- A. Rs. 2,800 B. Rs. 3,000
C. Rs. 3,200 D. Rs. 3,300

Solution

$$\text{SP} = 3000 \times 0.90 = 2700$$

$$2700 = 90\% \text{ of CP}$$

$$\text{CP} = 2700 \times \frac{100}{90} = 3000$$

Final Answer

Option B

MCQ 69

An article marked Rs. 4,000 is sold at 20% discount and incurs a 20% loss. Find the cost price.

- A. Rs. 3,600 B. Rs. 4,000
C. Rs. 4,200 D. Rs. 4,500

Solution

$$\text{SP} = 4000 \times 0.80 = 3200$$

$$3200 = 80\% \text{ of CP}$$

$$\text{CP} = 3200 \times \frac{100}{80} = 4000$$

Final Answer

Option B

MCQ 70

An article marked Rs. 1,800 is sold at 20% discount and gives 20% profit. Find the cost price.

A. Rs. 1,100**B.** Rs. 1,200**C.** Rs. 1,300**D.** Rs. 1,400**Solution**

$$SP = 1800 \times 0.80 = 1440$$

$$1440 = 120\% \text{ of CP}$$

$$CP = 1440 \times \frac{100}{120} = 1200$$

Final Answer

Option B

Selling-Price Changes and Quantity Relations

MCQ 71

An article is sold at 10% loss. By what percentage must the present selling price be increased to obtain 10% profit?

- A. 20% B. $22\frac{2}{9}\%$
C. 25% D. 30%

Solution

$$\text{Let CP} = 100$$

$$\text{Old SP} = 90, \quad \text{New SP} = 110$$

$$\text{Increase} = 110 - 90 = 20$$

$$\frac{20}{90} \times 100 = 22\frac{2}{9}\%$$

Final Answer

Option B

MCQ 72

An article is sold at 20% profit. If its selling price is reduced by 10%, what is the new profit percentage?

- A. 6% B. 8%
C. 10% D. 12%

Solution

$$\text{Let CP} = 100$$

$$\text{Old SP} = 120$$

$$\text{New SP} = 120 \times 0.90 = 108$$

$$\text{Profit} = 108 - 100 = 8\%$$

Final Answer

Option B

MCQ 73

An article is sold at 10% loss. If its selling price is increased by 20%, what is the new result?

- A. 6% profit B. 8% profit
C. 10% profit D. No profit, no loss

Solution

$$\text{Let CP} = 100$$

$$\text{Old SP} = 90$$

$$\text{New SP} = 90 \times 1.20 = 108$$

$$\text{Profit} = 8\%$$

Final Answer

Option B

MCQ 74

An article is sold at 25% profit. If the selling price is reduced by 20%, what is the result?

- A. 5% profit B. No profit, no loss
C. 5% loss D. 10% loss

Solution

$$\text{Let CP} = 100$$

$$\text{Old SP} = 125$$

$$\text{New SP} = 125 \times 0.80 = 100$$

$$\therefore \text{No profit, no loss}$$

Final Answer

Option B

MCQ 75

An article is sold at 20% loss. If its selling price is increased by 25%, what is the result?

- A. 5% profit B. No profit, no loss
C. 5% loss D. 10% profit

Solution

$$\text{Let CP} = 100$$

$$\text{Old SP} = 80$$

$$\text{New SP} = 80 \times 1.25 = 100$$

$$\therefore \text{No profit, no loss}$$

Final Answer

Option B

MCQ 76

The cost price of 20 articles equals the selling price of 16 articles. Find the profit percentage.

- A. 20% B. 25%
C. 30% D. 40%

Solution

$$20C = 16S$$

$$\frac{S}{C} = \frac{20}{16} = \frac{5}{4}$$

$$\text{Profit \%} = \left(\frac{5}{4} - 1 \right) 100 = 25\%$$

Final Answer

Option B

MCQ 77

The cost price of 15 articles equals the selling price of 12 articles. Find the profit percentage.

- A. 20% B. 25%
C. 30% D. $33\frac{1}{3}\%$

Solution

$$15C = 12S$$

$$\frac{S}{C} = \frac{15}{12} = \frac{5}{4}$$

$$\text{Profit \%} = 25\%$$

Final Answer

Option B

MCQ 78

The cost price of 12 articles equals the selling price of 15 articles. Find the loss percentage.

- A. 15% B. 20%
C. 25% D. 30%

Solution

$$12C = 15S$$

$$\frac{S}{C} = \frac{12}{15} = \frac{4}{5}$$

$$\text{Loss \%} = \left(1 - \frac{4}{5}\right) 100 = 20\%$$

Final Answer

Option B

MCQ 79

The selling price of 10 articles equals the cost price of 12 articles. Find the profit percentage.

- A. 15% B. 20%
C. 25% D. 30%

Solution

$$10S = 12C$$

$$\frac{S}{C} = \frac{12}{10} = 1.2$$

$$\text{Profit \%} = 20\%$$

Final Answer

Option B

MCQ 80

The selling price of 15 articles equals the cost price of 12 articles. Find the loss percentage.

- A. 15% B. 20%
C. 25% D. 30%

Solution

$$15S = 12C$$

$$\frac{S}{C} = \frac{12}{15} = 0.8$$

$$\text{Loss \%} = 20\%$$

Final Answer

Option B

Unit Deals and False-Weight Problems**MCQ 81**

A trader buys 10 pens for Rs. 90 and sells each pen for Rs. 10. Find the profit percentage.

- A. 10% B. $11\frac{1}{9}\%$
C. 12.5% D. 15%

Solution

$$\text{CP per pen} = \frac{90}{10} = 9$$

$$\text{Profit per pen} = 10 - 9 = 1$$

$$\text{Profit \%} = \frac{1}{9} \times 100 = 11\frac{1}{9}\%$$

Final Answer

Option B

MCQ 82

A trader buys 12 items for Rs. 100 and sells 10 items for Rs. 100. Find the profit percentage.

- A. 15% B. 20%
C. 25% D. 30%

Solution

$$\text{CP per item} = \frac{100}{12}$$

$$\text{SP per item} = \frac{100}{10} = 10$$

$$\frac{\text{SP}}{\text{CP}} = \frac{10}{100/12} = 1.2$$

$$\text{Profit \%} = 20\%$$

Final Answer

Option B

MCQ 83

A trader buys 5 articles for Rs. 40 and sells 4 articles for Rs. 40. Find the profit percentage.

- A. 20% B. 25%
C. 30% D. $33\frac{1}{3}\%$

Solution

$$\text{CP per article} = \frac{40}{5} = 8$$

$$\text{SP per article} = \frac{40}{4} = 10$$

$$\text{Profit \%} = \frac{2}{8} \times 100 = 25\%$$

Final Answer

Option B

MCQ 84

A trader buys 8 articles for Rs. 72 and sells 6 articles for Rs. 72. Find the profit percentage.

- A. 25% B. 30%
C. $33\frac{1}{3}\%$ D. 40%

Solution

$$\text{CP per article} = \frac{72}{8} = 9$$

$$\text{SP per article} = \frac{72}{6} = 12$$

$$\text{Profit \%} = \frac{3}{9} \times 100 = 33\frac{1}{3}\%$$

Final Answer

Option C

MCQ 85

A trader buys 20 articles for Rs. 180 and sells 18 articles for Rs. 180. Find the profit percentage.

- A. 10% B. $11\frac{1}{9}\%$
C. 12.5% D. 15%

Solution

$$\text{CP per article} = \frac{180}{20} = 9$$

$$\text{SP per article} = \frac{180}{18} = 10$$

$$\text{Profit \%} = \frac{1}{9} \times 100 = 11\frac{1}{9}\%$$

Final Answer

Option B

MCQ 86

A dealer claims to sell at 20% loss but gives only 750 g instead of 1 kg. Find his actual profit percentage.

- A. 5% B. $6\frac{2}{3}\%$
C. 8% D. 10%

Solution

$$\text{Let cost of 1 kg} = 100$$

$$\text{Charged price} = 80$$

$$\text{Actual cost of 750 g} = 75$$

$$\text{Profit} = 80 - 75 = 5$$

$$\text{Profit \%} = \frac{5}{75} \times 100 = 6\frac{2}{3}\%$$

Final Answer

Option B

MCQ 87

A dishonest dealer charges the cost price of 1 kg but gives only 800 g. Find his profit percentage.

- A. 20% B. 25%
C. 30% D. $33\frac{1}{3}\%$

Solution

$$\text{Let cost of 1 kg} = 100$$

$$\text{SP} = 100$$

$$\text{Actual cost of 800 g} = 80$$

$$\text{Profit \%} = \frac{20}{80} \times 100 = 25\%$$

Final Answer

Option B

MCQ 88

A dealer claims a 10% loss but gives only 800 g instead of 1 kg. Find the actual profit percentage.

- A. 10% B. 12.5%
C. 15% D. 20%

Solution

$$\text{Let cost of 1 kg} = 100$$

$$\text{Charged price} = 90$$

$$\text{Actual cost} = 80$$

$$\text{Profit \%} = \frac{10}{80} \times 100 = 12.5\%$$

Final Answer

Option B

MCQ 89

A dealer marks a commodity at a 25% profit on the cost of 1 kg but gives only 800 g for the price of 1 kg. Find the actual profit percentage.

- A. 50% B. 56.25%
C. 60% D. 62.5%

Solution

$$\begin{aligned}\text{Let cost of 1 kg} &= 100 \\ \text{Charged price} &= 125 \\ \text{Actual cost of 800 g} &= 80 \\ \text{Profit} &= 125 - 80 = 45 \\ \text{Profit \%} &= \frac{45}{80} \times 100 = 56.25\%\end{aligned}$$

Final Answer

Option B

MCQ 90

A dealer claims a 5% loss but gives only 900 g instead of 1 kg. Find his actual profit percentage.

- A. 5% B. $5\frac{5}{9}\%$
C. $6\frac{2}{3}\%$ D. 10%

Solution

$$\begin{aligned}\text{Let cost of 1 kg} &= 100 \\ \text{Charged price} &= 95 \\ \text{Actual cost} &= 90 \\ \text{Profit \%} &= \frac{5}{90} \times 100 = 5\frac{5}{9}\%\end{aligned}$$

Final Answer

Option B

Mixed High-Yield One-Paper Problems**MCQ 91**

Two articles are sold for Rs. 1,200 each. One is sold at 20% profit and the other at 20% loss. Find the overall result.

- A. 2% loss B. 4% loss
C. No profit, no loss D. 4% profit

Solution

$$\begin{aligned}\text{CP}_1 &= 1200 \times \frac{100}{120} = 1000 \\ \text{CP}_2 &= 1200 \times \frac{100}{80} = 1500 \\ \text{Total CP} &= 2500, \quad \text{Total SP} = 2400 \\ \text{Loss \%} &= \frac{100}{2500} \times 100 = 4\%\end{aligned}$$

Final Answer

Option B

MCQ 92

Two articles are sold for Rs. 960 each. One gives 20% profit and the other 20% loss. Find the overall loss percentage.

- A. 2% B. 4%
C. 5% D. 8%

Solution

$$\begin{aligned}\text{CP}_1 &= 960 \times \frac{100}{120} = 800 \\ \text{CP}_2 &= 960 \times \frac{100}{80} = 1200 \\ \text{Total CP} &= 2000, \quad \text{Total SP} = 1920 \\ \text{Loss \%} &= \frac{80}{2000} \times 100 = 4\%\end{aligned}$$

Final Answer

Option B

MCQ 93

Two articles are sold at the same selling price. One is sold at 25% gain and the other at 25% loss. Find the overall loss percentage.

- A. 4% B. 5%
C. 6.25% D. 8%

Solution

Equal SP and equal $x\%$ gain/loss

$$\begin{aligned}\text{Overall loss \%} &= \frac{x^2}{100} \\ &= \frac{25^2}{100} = 6.25\%\end{aligned}$$

Final Answer

Option C

MCQ 94

Two articles are sold at the same selling price. One gives 10% gain and the other 10% loss. Find the overall loss percentage.

- A. 0.5% B. 1%
C. 2% D. No loss

Solution

$$\begin{aligned}\text{Overall loss \%} &= \frac{10^2}{100} \\ &= 1\%\end{aligned}$$

Final Answer

Option B

MCQ 95

Two articles are sold for Rs. 1,500 each. One yields 25% profit and the other 25% loss. Find the overall loss percentage.

- A. 5% B. 6.25%
C. 7.5% D. 8%

Solution

$$\begin{aligned}\text{CP}_1 &= 1500 \times \frac{100}{125} = 1200 \\ \text{CP}_2 &= 1500 \times \frac{100}{75} = 2000 \\ \text{Total CP} &= 3200, \quad \text{Total SP} = 3000 \\ \text{Loss \%} &= \frac{200}{3200} \times 100 = 6.25\%\end{aligned}$$

Final Answer

Option B

MCQ 96

An article marked Rs. 2,500 is bought at 20% discount and then sold at the marked price. Find the profit percentage.

- A. 20% B. 25%
C. 30% D. 40%

Solution

$$\text{CP} = 2500 \times 0.80 = 2000$$

$$\text{SP} = 2500$$

$$\text{Profit} = 500$$

$$\text{Profit \%} = \frac{500}{2000} \times 100 = 25\%$$

Final Answer

Option B

MCQ 97

An article marked Rs. 2,000 is bought at 25% discount and sold at 10% discount on the marked price. Find the profit percentage.

- A. 15% B. 20%
C. 25% D. 30%

Solution

$$\text{CP} = 2000 \times 0.75 = 1500$$

$$\text{SP} = 2000 \times 0.90 = 1800$$

$$\text{Profit} = 300$$

$$\text{Profit \%} = \frac{300}{1500} \times 100 = 20\%$$

Final Answer

Option B

MCQ 98

An article marked Rs. 1,000 is bought by a shopkeeper at 20% trade discount and sold to a customer at 10% discount. Find the shopkeepers profit percentage.

- A. 10% B. 12.5%
C. 15% D. 20%

Solution

$$CP = 1000 \times 0.80 = 800$$

$$SP = 1000 \times 0.90 = 900$$

$$\text{Profit} = 100$$

$$\text{Profit \%} = \frac{100}{800} \times 100 = 12.5\%$$

Final Answer

Option B

MCQ 99

An article has a basic cost of Rs. 1,000. Transport adds 10% to its cost. If it is sold for Rs. 1,320, find the profit percentage on total cost.

- A. 15% B. 20%
C. 22% D. 32%

Solution

$$\text{Transport} = \frac{10}{100}(1000) = 100$$

$$\text{Total CP} = 1000 + 100 = 1100$$

$$\text{Profit} = 1320 - 1100 = 220$$

$$\text{Profit \%} = \frac{220}{1100} \times 100 = 20\%$$

Final Answer

Option B

MCQ 100

A shopkeeper buys 50 identical items for Rs. 4,000. Five become worthless. He sells each of the remaining items for Rs. 100. Find the overall profit percentage.

- A. 10% B. 12.5%
C. 15% D. 20%

Solution

$$\text{Saleable items} = 50 - 5 = 45$$

$$\text{Total SP} = 45 \times 100 = 4500$$

$$\text{Profit} = 4500 - 4000 = 500$$

$$\text{Profit \%} = \frac{500}{4000} \times 100 = 12.5\%$$

Final Answer

Option B

Profit, Loss & Discount - Rapid Revision Grid

Profit / loss base Profit and loss percentages are normally calculated on CP, not on SP:

$$\frac{\text{Profit or Loss}}{\text{CP}} \times 100$$

Profit multiplier

$$20\% \text{ profit} \Rightarrow \text{SP} = 1.20 \text{ CP}$$

$$25\% \text{ profit} \Rightarrow \text{SP} = 1.25 \text{ CP}$$

Loss multiplier

$$10\% \text{ loss} \Rightarrow \text{SP} = 0.90 \text{ CP}$$

$$20\% \text{ loss} \Rightarrow \text{SP} = 0.80 \text{ CP}$$

Successive discount shortcut

$$10\%, 20\% \Rightarrow 28\% \text{ equivalent discount}$$

$$20\%, 20\% \Rightarrow 36\% \text{ equivalent discount}$$

Equal gain and loss with equal SP

$$10\% \Rightarrow 1\% \text{ overall loss}$$

$$20\% \Rightarrow 4\% \text{ overall loss}$$

$$25\% \Rightarrow 6.25\% \text{ overall loss}$$

Exam-speed check For every answer, ask in this order:

$$\text{CP} \rightarrow \text{MP} \rightarrow \text{Discount} \rightarrow \text{SP}$$

Then compare SP with CP. This prevents mixing discount percentage with profit/loss percentage.



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PART 7 - SIMPLE & COMPOUND INTEREST | 100 SOLVED MCQs

Fast Simple & Compound Interest Foundation

Simple interest

$$SI = \frac{PRT}{100}$$

$$A = P + SI$$

where P is principal, R is annual rate in percent, and T is time in years.

Compounded half-yearly

$$R \rightarrow \frac{R}{2}, \quad n \rightarrow 2n$$

$$A = P \left(1 + \frac{R}{200} \right)^{2n}$$

Two-year SI/CI difference

$$CI - SI = P \left(\frac{R}{100} \right)^2$$

This shortcut is especially useful in one-paper MCQs.

Reverse simple-interest formulas

$$P = \frac{100 SI}{RT}, \quad R = \frac{100 SI}{PT}, \quad T = \frac{100 SI}{PR}$$

Growth and depreciation

$$V_n = V_0 \left(1 + \frac{r}{100} \right)^n$$

for growth, and

$$V_n = V_0 \left(1 - \frac{d}{100} \right)^n$$

for depreciation.

Compound amount

$$A = P \left(1 + \frac{R}{100} \right)^n$$

$$CI = A - P$$

100 Fully Solved MCQs

MCQ 1

A sum of \$1,000 is invested at simple interest of 9% per annum for 3 years. Find the simple interest.

- A. \$270 B. \$216
C. \$324 D. \$360

Adapted from FPSC SOPE-2024 Basic Mathematics & Statistics Q2(b)(i).

Solution

$$\begin{aligned} SI &= \frac{P \times R \times T}{100} \\ &= \frac{1,000 \times 9 \times 3}{100} \\ &= 270 \end{aligned}$$

Final Answer

Option A

MCQ 2

A sum of Rs. 1,500 is invested at simple interest of 8% per annum for 2 years. Find the simple interest.

- A. Rs. 192 B. Rs. 240
C. Rs. 288 D. Rs. 360

Solution

$$\begin{aligned} SI &= \frac{P \times R \times T}{100} \\ &= \frac{1,500 \times 8 \times 2}{100} \\ &= 240 \end{aligned}$$

Final Answer

Option B

MCQ 3

A sum of Rs. 2,400 is invested at simple interest of 5% per annum for 4 years. Find the simple interest.

- A. Rs. 384 B. Rs. 576
C. Rs. 480 D. Rs. 600

Solution

$$\begin{aligned} SI &= \frac{P \times R \times T}{100} \\ &= \frac{2,400 \times 5 \times 4}{100} \\ &= 480 \end{aligned}$$

Final Answer

Option C

MCQ 4

A sum of Rs. 3,200 is invested at simple interest of 7.5% per annum for 2 years. Find the simple interest.

- A. Rs. 384 B. Rs. 576
C. Rs. 720 D. Rs. 480

Solution

$$\begin{aligned} SI &= \frac{P \times R \times T}{100} \\ &= \frac{3,200 \times 7.5 \times 2}{100} \\ &= 480 \end{aligned}$$

Final Answer

Option D

MCQ 5

A sum of Rs. 5,000 is invested at simple interest of 6% per annum for 3 years. Find the simple interest.

- A. Rs. 900 B. Rs. 720
C. Rs. 1,080 D. Rs. 1,200

Solution

$$\begin{aligned} SI &= \frac{P \times R \times T}{100} \\ &= \frac{5,000 \times 6 \times 3}{100} \\ &= 900 \end{aligned}$$

Final Answer

Option A

MCQ 6

A sum of Rs. 1,200 is invested at simple interest of 10% per annum for 1.5 years. Find the simple interest.

- A. Rs. 144 B. Rs. 180
C. Rs. 216 D. Rs. 300

Solution

$$\begin{aligned} SI &= \frac{P \times R \times T}{100} \\ &= \frac{1,200 \times 10 \times 1.5}{100} \\ &= 180 \end{aligned}$$

Final Answer

Option B

MCQ 7

A sum of Rs. 8,000 is invested at simple interest of 4.5% per annum for 2 years. Find the simple interest.

- A. Rs. 576 B. Rs. 864
C. Rs. 720 D. Rs. 1,080

Solution

$$\begin{aligned} SI &= \frac{P \times R \times T}{100} \\ &= \frac{8,000 \times 4.5 \times 2}{100} \\ &= 720 \end{aligned}$$

Final Answer

Option C

MCQ 8

A sum of Rs. 2,500 is invested at simple interest of 12% per annum for 1 years. Find the simple interest.

- A. Rs. 240 B. Rs. 360
C. Rs. 600 D. Rs. 300

Solution

$$\begin{aligned} SI &= \frac{P \times R \times T}{100} \\ &= \frac{2,500 \times 12 \times 1}{100} \\ &= 300 \end{aligned}$$

Final Answer

Option D

MCQ 9

A sum of Rs. 3,600 is invested at simple interest of 5% per annum for 2.5 years. Find the simple interest.

- A. Rs. 450 B. Rs. 360
C. Rs. 540 D. Rs. 630

Solution

$$\begin{aligned} SI &= \frac{P \times R \times T}{100} \\ &= \frac{3,600 \times 5 \times 2.5}{100} \\ &= 450 \end{aligned}$$

Final Answer

Option A

MCQ 10

A sum of Rs. 6,000 is invested at simple interest of 7% per annum for 5 years. Find the simple interest.

- A. Rs. 1,680 B. Rs. 2,100
C. Rs. 2,520 D. Rs. 2,103

Solution

$$\begin{aligned} SI &= \frac{P \times R \times T}{100} \\ &= \frac{6,000 \times 7 \times 5}{100} \\ &= 2,100 \end{aligned}$$

Final Answer

Option B

MCQ 11

Find the amount on Rs. 2,000 at simple interest of 10% per annum for 2 years.

- A. Rs. 2,200 B. Rs. 2,800
C. Rs. 2,400 D. Rs. 2,000

Solution

$$\begin{aligned} SI &= \frac{2,000 \times 10 \times 2}{100} = 400 \\ A &= P + SI \\ &= 2,000 + 400 = 2,400 \end{aligned}$$

Final Answer

Option C

MCQ 12

Find the amount on Rs. 3,500 at simple interest of 6% per annum for 3 years.

- A. Rs. 3,815 B. Rs. 4,760
C. Rs. 3,500 D. Rs. 4,130

Solution

$$\begin{aligned} SI &= \frac{3,500 \times 6 \times 3}{100} = 630 \\ A &= P + SI \\ &= 3,500 + 630 = 4,130 \end{aligned}$$

Final Answer

Option D

MCQ 13

Find the amount on Rs. 4,800 at simple interest of 5% per annum for 2 years.

- A. Rs. 5,280 B. Rs. 5,040
C. Rs. 5,760 D. Rs. 4,800

Solution

$$\begin{aligned} SI &= \frac{4,800 \times 5 \times 2}{100} = 480 \\ A &= P + SI \\ &= 4,800 + 480 = 5,280 \end{aligned}$$

Final Answer

Option A

MCQ 14

Find the amount on Rs. 7,500 at simple interest of 8% per annum for 1.5 years.

- A. Rs. 7,950 B. Rs. 8,400
C. Rs. 9,300 D. Rs. 7,500

Solution

$$\begin{aligned} SI &= \frac{7,500 \times 8 \times 1.5}{100} = 900 \\ A &= P + SI \\ &= 7,500 + 900 = 8,400 \end{aligned}$$

Final Answer

Option B

MCQ 15

Find the amount on Rs. 10,000 at simple interest of 4% per annum for 5 years.

- A. Rs. 11,000 B. Rs. 14,000
C. Rs. 12,000 D. Rs. 10,000

Solution

$$SI = \frac{10,000 \times 4 \times 5}{100} = 2,000$$

$$A = P + SI$$

$$= 10,000 + 2,000 = 12,000$$

Final Answer

Option C

MCQ 16

Find the amount on Rs. 1,250 at simple interest of 12% per annum for 2 years.

- A. Rs. 1,400 B. Rs. 1,850
C. Rs. 1,250 D. Rs. 1,550

Solution

$$SI = \frac{1,250 \times 12 \times 2}{100} = 300$$

$$A = P + SI$$

$$= 1,250 + 300 = 1,550$$

Final Answer

Option D

MCQ 17

Find the amount on Rs. 9,000 at simple interest of 7% per annum for 2 years.

- A. Rs. 10,260 B. Rs. 9,630
C. Rs. 11,520 D. Rs. 9,000

Solution

$$SI = \frac{9,000 \times 7 \times 2}{100} = 1,260$$

$$A = P + SI$$

$$= 9,000 + 1,260 = 10,260$$

Final Answer

Option A

MCQ 18

Find the amount on Rs. 1,600 at simple interest of 15% per annum for 1 years.

- A. Rs. 1,720 B. Rs. 1,840
C. Rs. 2,080 D. Rs. 1,600

Solution

$$SI = \frac{1,600 \times 15 \times 1}{100} = 240$$

$$A = P + SI$$

$$= 1,600 + 240 = 1,840$$

Final Answer

Option B

MCQ 19

Find the amount on Rs. 6,000 at simple interest of 5.5% per annum for 4 years.

- A. Rs. 6,660 B. Rs. 8,640
C. Rs. 7,320 D. Rs. 6,000

Solution

$$SI = \frac{6,000 \times 5.5 \times 4}{100} = 1,320$$

$$A = P + SI$$

$$= 6,000 + 1,320 = 7,320$$

Final Answer

Option C

MCQ 20

Find the amount on Rs. 2,400 at simple interest of 9% per annum for 2.5 years.

- A. Rs. 2,670 B. Rs. 3,480
C. Rs. 2,400 D. Rs. 2,940

Solution

$$SI = \frac{2,400 \times 9 \times 2.5}{100} = 540$$

$$A = P + SI$$

$$= 2,400 + 540 = 2,940$$

Final Answer

Option D

MCQ 21

The simple interest is Rs. 300 at 5% per annum for 3 years. Find the principal.

- A. Rs. 2,000 B. Rs. 1,600
C. Rs. 2,400 D. Rs. 2,500

Solution

$$\begin{aligned} SI &= \frac{PRT}{100} \\ P &= \frac{100 SI}{RT} \\ &= \frac{100 \times 300}{5 \times 3} = 2,000 \end{aligned}$$

Final Answer

Option A

MCQ 22

The simple interest is Rs. 540 at 9% per annum for 2 years. Find the principal.

- A. Rs. 2,400 B. Rs. 3,000
C. Rs. 3,600 D. Rs. 3,500

Solution

$$\begin{aligned} SI &= \frac{PRT}{100} \\ P &= \frac{100 SI}{RT} \\ &= \frac{100 \times 540}{9 \times 2} = 3,000 \end{aligned}$$

Final Answer

Option B

MCQ 23

Rs. 2,400 earns Rs. 360 simple interest in 2 years. Find the annual rate.

- A. 6.5% B. 8.5%
C. 7.5% D. 9.5%

Solution

$$\begin{aligned} R &= \frac{100 SI}{PT} \\ &= \frac{100 \times 360}{2,400 \times 2} \\ &= 7.5\% \end{aligned}$$

Final Answer

Option C

MCQ 24

Rs. 5,000 earns Rs. 900 simple interest in 3 years. Find the annual rate.

- A. 5% B. 7%
C. 8% D. 6%

Solution

$$\begin{aligned} R &= \frac{100 SI}{PT} \\ &= \frac{100 \times 900}{5,000 \times 3} \\ &= 6\% \end{aligned}$$

Final Answer

Option D

MCQ 25

Farooq invests \$4,000 at simple interest of 2% per annum. How long will it take the investment to grow to \$4,400?

- A. 5 years B. 4 years
C. 6 years D. 7 years

Adapted from FPSC SOPE-2024 Basic Mathematics & Statistics Q2(b)(ii).

Solution

$$\begin{aligned} SI &= 4400 - 4000 = 400 \\ T &= \frac{100 \times 400}{4000 \times 2} \\ &= 5 \text{ years} \end{aligned}$$

Final Answer

Option A

MCQ 26

Rs. 2,500 earns Rs. 600 at simple interest of 8% per annum. Find the time.

- A. 2 years B. 3 years
C. 4 years D. 5 years

Solution

$$\begin{aligned} T &= \frac{100 SI}{PR} \\ &= \frac{100 \times 600}{2,500 \times 8} \\ &= 3 \text{ years} \end{aligned}$$

Final Answer

Option B

MCQ 27

The simple interest is Rs. 720 at 6% per annum for 4 years. Find the principal.

- A. Rs. 2,400 B. Rs. 3,600
C. Rs. 3,000 D. Rs. 3,500

Solution

$$\begin{aligned} SI &= \frac{PRT}{100} \\ P &= \frac{100 SI}{RT} \\ &= \frac{100 \times 720}{6 \times 4} = 3,000 \end{aligned}$$

Final Answer

Option C

MCQ 30

The simple interest is Rs. 450 at 12% per annum for 1.5 years. Find the principal.

- A. Rs. 2,000 B. Rs. 2,500
C. Rs. 3,000 D. Rs. 2,503

Solution

$$\begin{aligned} SI &= \frac{PRT}{100} \\ P &= \frac{100 SI}{RT} \\ &= \frac{100 \times 450}{12 \times 1.5} = 2,500 \end{aligned}$$

Final Answer

Option B

MCQ 28

Rs. 3,200 earns Rs. 640 simple interest in 4 years. Find the annual rate.

- A. 4% B. 6%
C. 7% D. 5%

Solution

$$\begin{aligned} R &= \frac{100 SI}{PT} \\ &= \frac{100 \times 640}{3,200 \times 4} \\ &= 5\% \end{aligned}$$

Final Answer

Option D

MCQ 31

Find the simple interest on Rs. 4,800 at 10% per annum for 9 months.

- A. Rs. 270 B. Rs. 450
C. Rs. 360 D. Rs. 400

Solution

$$\begin{aligned} T &= \frac{9}{12} \text{ year} \\ SI &= \frac{4,800 \times 10 \times 9}{100 \times 12} \\ &= 360 \end{aligned}$$

Final Answer

Option C

MCQ 29

Rs. 6,000 earns Rs. 1,800 at simple interest of 10% per annum. Find the time.

- A. 3 years B. 2 years
C. 4 years D. 5 years

Solution

$$\begin{aligned} T &= \frac{100 SI}{PR} \\ &= \frac{100 \times 1,800}{6,000 \times 10} \\ &= 3 \text{ years} \end{aligned}$$

Final Answer

Option A

MCQ 32

Find the simple interest on Rs. 6,000 at 8% per annum for 6 months.

- A. Rs. 180 B. Rs. 300
C. Rs. 280 D. Rs. 240

Solution

$$\begin{aligned} T &= \frac{6}{12} \text{ year} \\ SI &= \frac{6,000 \times 8 \times 6}{100 \times 12} \\ &= 240 \end{aligned}$$

Final Answer

Option D

MCQ 33

Find the simple interest on Rs. 3,600 at 12% per annum for 5 months.

- A. Rs. 180 B. Rs. 135
C. Rs. 225 D. Rs. 216

Solution

$$T = \frac{5}{12} \text{ year}$$
$$SI = \frac{3,600 \times 12 \times 5}{100 \times 12}$$
$$= 180$$

Final Answer

Option A

MCQ 36

Find the simple interest on Rs. 7,200 at 5% per annum for 18 months.

- A. Rs. 405 B. Rs. 675
C. Rs. 570 D. Rs. 540

Solution

$$T = \frac{18}{12} \text{ year}$$
$$SI = \frac{7,200 \times 5 \times 18}{100 \times 12}$$
$$= 540$$

Final Answer

Option D

MCQ 34

Find the simple interest on Rs. 9,000 at 6% per annum for 8 months.

- A. Rs. 270 B. Rs. 360
C. Rs. 450 D. Rs. 405

Solution

$$T = \frac{8}{12} \text{ year}$$
$$SI = \frac{9,000 \times 6 \times 8}{100 \times 12}$$
$$= 360$$

Final Answer

Option B

MCQ 37

Find the simple interest on Rs. 5,000 at 9% per annum for 16 months.

- A. Rs. 600 B. Rs. 450
C. Rs. 750 D. Rs. 637.5

Solution

$$T = \frac{16}{12} \text{ year}$$
$$SI = \frac{5,000 \times 9 \times 16}{100 \times 12}$$
$$= 600$$

Final Answer

Option A

MCQ 35

Find the simple interest on Rs. 2,400 at 15% per annum for 4 months.

- A. Rs. 90 B. Rs. 150
C. Rs. 120 D. Rs. 123

Solution

$$T = \frac{4}{12} \text{ year}$$
$$SI = \frac{2,400 \times 15 \times 4}{100 \times 12}$$
$$= 120$$

Final Answer

Option C

MCQ 38

Find the simple interest on Rs. 8,000 at 7.5% per annum for 20 months.

- A. Rs. 750 B. Rs. 1,000
C. Rs. 1,250 D. Rs. 1,050

Solution

$$T = \frac{20}{12} \text{ year}$$
$$SI = \frac{8,000 \times 7.5 \times 20}{100 \times 12}$$
$$= 1,000$$

Final Answer

Option B

MCQ 39

Find the simple interest on Rs. 3,000 at 10% per annum for 15 months.

- A. Rs. 281.25 B. Rs. 468.75
C. Rs. 375 D. Rs. 400

Solution

$$T = \frac{15}{12} \text{ year}$$

$$SI = \frac{3,000 \times 10 \times 15}{100 \times 12}$$

$$= 375$$

Final Answer

Option C

MCQ 40

Find the simple interest on Rs. 9,600 at 6.25% per annum for 24 months.

- A. Rs. 900 B. Rs. 1,500
C. Rs. 1,250 D. Rs. 1,200

Solution

$$T = \frac{24}{12} \text{ year}$$

$$SI = \frac{9,600 \times 6.25 \times 24}{100 \times 12}$$

$$= 1,200$$

Final Answer

Option D

MCQ 41

A sum doubles itself in 10 years at simple interest. Find the rate per annum.

- A. 5% B. 10%
C. 12% D. 20%

Solution

If $A = 2P$, $SI = P$

$$P = \frac{P \times R \times 10}{100}$$

$$R = 10\%$$

Final Answer

Option B

MCQ 42

A sum triples itself in 10 years at simple interest. Find the rate per annum.

- A. 10% B. 15%
C. 20% D. 25%

Solution

$$A = 3P \Rightarrow SI = 2P$$

$$2P = \frac{P \times R \times 10}{100}$$

$$R = 20\%$$

Final Answer

Option C

MCQ 43

At what annual simple-interest rate will the interest equal the principal in 20 years?

- A. 4% B. 5%
C. 8% D. 10%

Solution

$$SI = P$$

$$P = \frac{P \times R \times 20}{100}$$

$$R = 5\%$$

Final Answer

Option B

MCQ 44

The simple interest for 4 years is 40% of the principal. Find the annual rate.

- A. 8% B. 10%
C. 12% D. 16%

Solution

$$\frac{PR(4)}{100} = 0.40P$$

$$4R = 40$$

$$R = 10\%$$

Final Answer

Option B

MCQ 45

On Rs. 5,000, the rate rises from 8% to 10% for 3 years. Find the extra simple interest.

- A. Rs. 200 B. Rs. 250
C. Rs. 300 D. Rs. 350

Solution

$$\begin{aligned}\Delta R &= 10\% - 8\% = 2\% \\ \Delta SI &= \frac{5000 \times 2 \times 3}{100} \\ &= 300\end{aligned}$$

Final Answer

Option C

MCQ 46

Two sums are equal and invested for the same time at simple interest rates 6% and 9%. Find the ratio of their interests.

- A. 2:3 B. 3:2
C. 6:5 D. 1:3

Solution

$$\begin{aligned}SI &\propto R \\ I_1 : I_2 &= 6 : 9 \\ &= 2 : 3\end{aligned}$$

Final Answer

Option A

MCQ 47

At the same simple-interest rate and for the same time, principals are in the ratio 3 : 5. Find the ratio of interests.

- A. 3:5 B. 5:3
C. 9:25 D. 1:1

Solution

$$\begin{aligned}SI &\propto P \\ I_1 : I_2 &= 3 : 5\end{aligned}$$

Final Answer

Option A

MCQ 48

The same principal is invested at the same simple-interest rate for 2 years and 5 years. Find the ratio of interests.

- A. 2:3 B. 2:5
C. 5:2 D. 4:25

Solution

$$\begin{aligned}SI &\propto T \\ I_1 : I_2 &= 2 : 5\end{aligned}$$

Final Answer

Option B

MCQ 49

If simple interest on a sum for 5 years is Rs. 1,250, what is the interest for 8 years at the same rate?

- A. Rs. 1,600 B. Rs. 1,800
C. Rs. 2,000 D. Rs. 2,250

Solution

$$\begin{aligned}\text{Interest per year} &= \frac{1250}{5} = 250 \\ \text{SI for 8 years} &= 250 \times 8 = 2000\end{aligned}$$

Final Answer

Option C

MCQ 50

A sum earns Rs. 720 simple interest in 3 years. At the same rate, how much interest will it earn in 7 years?

- A. Rs. 1,440 B. Rs. 1,560
C. Rs. 1,680 D. Rs. 1,800

Solution

$$\begin{aligned}\text{Interest per year} &= \frac{720}{3} = 240 \\ \text{SI for 7 years} &= 240 \times 7 = 1680\end{aligned}$$

Final Answer

Option C

MCQ 51

Find the compound interest on Rs. 1,000 at 10% per annum for 2 years.

- A. Rs. 189 B. Rs. 231
C. Rs. 210 D. Rs. 310

Solution

$$A = 1,000 \left(1 + \frac{10}{100}\right)^2$$

$$A = 1,210$$

$$CI = A - P = 1,210 - 1,000 = 210$$

Final Answer

Option C

MCQ 52

Find the amount on Rs. 2,000 at 5% compound interest per annum for 2 years.

- A. Rs. 1984.5 B. Rs. 2425.5
C. Rs. 2,305 D. Rs. 2,205

Solution

$$A = P \left(1 + \frac{R}{100}\right)^n$$

$$= 2,000 \left(1 + \frac{5}{100}\right)^2$$

$$= 2,205$$

Final Answer

Option D

MCQ 53

Find the compound interest on Rs. 4,000 at 10% per annum for 3 years.

- A. Rs. 1,324 B. Rs. 1191.6
C. Rs. 1456.4 D. Rs. 1,724

Solution

$$A = 4,000 \left(1 + \frac{10}{100}\right)^3$$

$$A = 5,324$$

$$CI = A - P = 5,324 - 4,000 = 1,324$$

Final Answer

Option A

MCQ 54

Find the amount on Rs. 8,000 at 25% compound interest per annum for 2 years.

- A. Rs. 11,250 B. Rs. 12,500
C. Rs. 13,750 D. Rs. 14,500

Solution

$$A = P \left(1 + \frac{R}{100}\right)^n$$

$$= 8,000 \left(1 + \frac{25}{100}\right)^2$$

$$= 12,500$$

Final Answer

Option B

MCQ 55

Find the compound interest on Rs. 5,000 at 20% per annum for 2 years.

- A. Rs. 1,980 B. Rs. 2,420
C. Rs. 2,200 D. Rs. 3,200

Solution

$$A = 5,000 \left(1 + \frac{20}{100}\right)^2$$

$$A = 7,200$$

$$CI = A - P = 7,200 - 5,000 = 2,200$$

Final Answer

Option C

MCQ 56

Find the amount on Rs. 10,000 at 10% compound interest per annum for 3 years.

- A. Rs. 11,979 B. Rs. 14,641
C. Rs. 14,310 D. Rs. 13,310

Solution

$$A = P \left(1 + \frac{R}{100}\right)^n$$

$$= 10,000 \left(1 + \frac{10}{100}\right)^3$$

$$= 13,310$$

Final Answer

Option D

MCQ 57

Find the compound interest on Rs. 6,400 at 25% per annum for 2 years.

- A. Rs. 3,600 B. Rs. 3,240
C. Rs. 3,960 D. Rs. 5,200

Solution

$$A = 6,400 \left(1 + \frac{25}{100}\right)^2$$

$$A = 10,000$$

$$CI = A - P = 10,000 - 6,400 = 3,600$$

Final Answer

Option A

MCQ 58

Find the amount on Rs. 2,500 at 20% compound interest per annum for 3 years.

- A. Rs. 3,888 B. Rs. 4,320
C. Rs. 4,752 D. Rs. 4,820

Solution

$$A = P \left(1 + \frac{R}{100}\right)^n$$

$$= 2,500 \left(1 + \frac{20}{100}\right)^3$$

$$= 4,320$$

Final Answer

Option B

MCQ 59

Find the compound interest on Rs. 1,600 at 25% per annum for 3 years.

- A. Rs. 1372.5 B. Rs. 1677.5
C. Rs. 1,525 D. Rs. 1,925

Solution

$$A = 1,600 \left(1 + \frac{25}{100}\right)^3$$

$$A = 3,125$$

$$CI = A - P = 3,125 - 1,600 = 1,525$$

Final Answer

Option C

MCQ 60

Find the amount on Rs. 10,000 at 5% compound interest per annum for 2 years.

- A. Rs. 9922.5 B. Rs. 12127.5
C. Rs. 11,525 D. Rs. 11,025

Solution

$$A = P \left(1 + \frac{R}{100}\right)^n$$

$$= 10,000 \left(1 + \frac{5}{100}\right)^2$$

$$= 11,025$$

Final Answer

Option D

MCQ 61

Find the difference between compound interest and simple interest on Rs. 10,000 for 2 years at 10% per annum.

- A. Rs. 100 B. Rs. 200
C. Rs. 50 D. Rs. 1,100

Solution

$$\text{For 2 years, } CI - SI = P \left(\frac{R}{100}\right)^2$$

$$= 10,000 \left(\frac{10}{100}\right)^2$$

$$= 100$$

Final Answer

Option A

MCQ 62

Find the difference between compound interest and simple interest on Rs. 8,000 for 2 years at 5% per annum.

- A. Rs. 40 B. Rs. 20
C. Rs. 10 D. Rs. 420

Solution

$$\text{For 2 years, } CI - SI = P \left(\frac{R}{100}\right)^2$$

$$= 8,000 \left(\frac{5}{100}\right)^2$$

$$= 20$$

Final Answer

Option B

MCQ 63

Find the difference between compound interest and simple interest on Rs. 5,000 for 2 years at 20% per annum.

- A. Rs. 400 B. Rs. 100
C. Rs. 200 D. Rs. 1,200

Solution

$$\begin{aligned}\text{For 2 years, CI} - \text{SI} &= P \left(\frac{R}{100} \right)^2 \\ &= 5,000 \left(\frac{20}{100} \right)^2 \\ &= 200\end{aligned}$$

Final Answer

Option C

MCQ 64

Find the difference between compound interest and simple interest on Rs. 6,400 for 2 years at 25% per annum.

- A. Rs. 800 B. Rs. 200
C. Rs. 2,000 D. Rs. 400

Solution

$$\begin{aligned}\text{For 2 years, CI} - \text{SI} &= P \left(\frac{R}{100} \right)^2 \\ &= 6,400 \left(\frac{25}{100} \right)^2 \\ &= 400\end{aligned}$$

Final Answer

Option D

MCQ 65

Find the difference between compound interest and simple interest on Rs. 2,500 for 2 years at 20% per annum.

- A. Rs. 100 B. Rs. 200
C. Rs. 50 D. Rs. 600

Solution

$$\begin{aligned}\text{For 2 years, CI} - \text{SI} &= P \left(\frac{R}{100} \right)^2 \\ &= 2,500 \left(\frac{20}{100} \right)^2 \\ &= 100\end{aligned}$$

Final Answer

Option A

MCQ 66

For 2 years at 10%, the excess of compound interest over simple interest is Rs. 80. Find the principal.

- A. Rs. 6,000 B. Rs. 8,000
C. Rs. 10,000 D. Rs. 12,000

Solution

$$\begin{aligned}80 &= P \left(\frac{10}{100} \right)^2 \\ 80 &= 0.01P \\ P &= 8000\end{aligned}$$

Final Answer

Option B

MCQ 67

For 2 years at 20%, the excess of compound interest over simple interest is Rs. 200. Find the principal.

- A. Rs. 4,000 B. Rs. 5,000
C. Rs. 6,000 D. Rs. 8,000

Solution

$$\begin{aligned}200 &= P \left(\frac{20}{100} \right)^2 \\ 200 &= 0.04P \\ P &= 5000\end{aligned}$$

Final Answer

Option B

MCQ 68

Find the difference between compound interest and simple interest on Rs. 10,000 at 10% for 3 years.

- A. Rs. 300 B. Rs. 310
C. Rs. 330 D. Rs. 360

Solution

$$\begin{aligned}\text{SI} &= \frac{10000 \times 10 \times 3}{100} = 3000 \\ \text{CI} &= 10000(1.1)^3 - 10000 \\ &= 13310 - 10000 = 3310\end{aligned}$$

$$\text{Difference} = 3310 - 3000 = 310$$

Final Answer

Option B

MCQ 69

On Rs. 10,000 at 10% compound interest, how much interest is earned during the second year alone?

- A. Rs. 1,000 B. Rs. 1,050
C. Rs. 1,100 D. Rs. 1,210

Solution

$$\text{Amount after 1 year} = 10000(1.10) = 11000$$

$$\begin{aligned}\text{Second-year interest} &= \frac{10}{100}(11000) \\ &= 1100\end{aligned}$$

Final Answer

Option C

MCQ 70

On Rs. 8,000 at 5% compound interest, find the increase in yearly interest from the first year to the second year.

- A. Rs. 10 B. Rs. 20
C. Rs. 40 D. Rs. 400

Solution

$$I_1 = \frac{5}{100}(8000) = 400$$

$$I_2 = \frac{5}{100}(8400) = 420$$

$$I_2 - I_1 = 420 - 400 = 20$$

Final Answer

Option B

MCQ 71

Find the amount on Rs. 10,000 at 10% per annum compounded half-yearly for 1 year.

- A. Rs. 11,000 B. Rs. 11,025
C. Rs. 11,050 D. Rs. 11,100

Solution

$$\text{Rate per half-year} = \frac{10\%}{2} = 5\%$$

$$\text{Periods} = 2$$

$$A = 10000(1.05)^2 = 11025$$

Final Answer

Option B

MCQ 72

Find the compound interest on Rs. 16,000 at 10% per annum compounded half-yearly for 1 year.

- A. Rs. 1,600 B. Rs. 1,640
C. Rs. 1,680 D. Rs. 1,760

Solution

$$A = 16000(1.05)^2$$

$$= 17640$$

$$\text{CI} = 17640 - 16000 = 1640$$

Final Answer

Option B

MCQ 73

Find the amount on Rs. 10,000 at 20% per annum compounded half-yearly for 1 year.

- A. Rs. 12,000 B. Rs. 12,100
C. Rs. 12,200 D. Rs. 12,400

Solution

$$\text{Half-year rate} = 10\%$$

$$A = 10000(1.10)^2$$

$$= 12100$$

Final Answer

Option B

MCQ 74

Rs. 2,500 is invested at 8% per annum compounded quarterly for 6 months. Find the amount.

- A. Rs. 2,550 B. Rs. 2,600
C. Rs. 2,601 D. Rs. 2,625

Solution

$$\text{Quarterly rate} = \frac{8\%}{4} = 2\%$$

$$6 \text{ months} = 2 \text{ quarters}$$

$$A = 2500(1.02)^2 = 2601$$

Final Answer

Option C

MCQ 75

A sum is compounded annually at 10% in the first year and 20% in the second year. If the principal is Rs. 10,000, find the amount after 2 years.

- A. Rs. 12,000 B. Rs. 13,000
C. Rs. 13,200 D. Rs. 13,500

Solution

$$\begin{aligned} A &= 10000(1.10)(1.20) \\ &= 10000(1.32) = 13200 \end{aligned}$$

Final Answer

Option C

MCQ 76

A sum is compounded annually at 20% in the first year and 10% in the second year. Compared with Q75, the final amount is:

- A. smaller B. greater
C. the same D. cannot be determined

Solution

$$\begin{aligned} (1.20)(1.10) &= (1.10)(1.20) \\ &= 1.32 \end{aligned}$$

Final amount is the same

Final Answer

Option C

MCQ 77

The effective annual rate corresponding to 10% nominal rate compounded half-yearly is:

- A. 10% B. 10.20%
C. 10.25% D. 10.50%

Solution

$$\begin{aligned} \text{Effective multiplier} &= \left(1 + \frac{0.10}{2}\right)^2 \\ &= (1.05)^2 = 1.1025 \\ \text{Effective rate} &= 10.25\% \end{aligned}$$

Final Answer

Option C

MCQ 78

The effective annual rate for 20% nominal rate compounded half-yearly is:

- A. 20% B. 20.5%
C. 21% D. 22%

Solution

$$\left(1 + \frac{20\%}{2}\right)^2 = (1.10)^2 = 1.21$$

Effective rate = 21%

Final Answer

Option C

MCQ 79

A sum of Rs. 5,000 is invested at 10% per annum compounded half-yearly for 6 months. Find the amount.

- A. Rs. 5,200 B. Rs. 5,250
C. Rs. 5,300 D. Rs. 5,500

Solution

$$\text{Half-yearly rate} = \frac{10\%}{2} = 5\%$$

6 months = 1 half-year period

$$A = 5000(1.05) = 5250$$

Final Answer

Option B

MCQ 80

A bank compounds interest half-yearly. At 12% per annum, what rate is used for each half-year?

- A. 3% B. 6%
C. 12% D. 24%

Solution

$$\begin{aligned} \text{Half-yearly rate} &= \frac{12\%}{2} \\ &= 6\% \end{aligned}$$

Final Answer

Option B

MCQ 81

A population of 10,000 grows by 10% per year. Find the population after 2 years.

- A. 11,000 B. 12,000
C. 12,100 D. 12,200

Solution

$$P_2 = 10000(1.10)^2$$

$$= 12100$$

Final Answer

Option C

MCQ 82

A machine worth Rs. 50,000 depreciates by 10% per year. Find its value after 2 years.

- A. Rs. 40,000 B. Rs. 40,500
C. Rs. 41,000 D. Rs. 45,000

Solution

$$V = 50000(1 - 0.10)^2$$

$$= 50000(0.9)^2$$

$$= 40500$$

Final Answer

Option B

MCQ 83

An asset worth Rs. 80,000 depreciates by 20% per year. Find its value after 2 years.

- A. Rs. 48,000 B. Rs. 50,000
C. Rs. 51,200 D. Rs. 64,000

Solution

$$V = 80000(0.80)^2$$

$$= 80000(0.64) = 51200$$

Final Answer

Option C

MCQ 84

A bacterial culture of 2,000 grows by 25% in each period. Find the count after 2 periods.

- A. 2,500 B. 3,000
C. 3,125 D. 3,250

Solution

$$N = 2000(1.25)^2$$

$$= 2000(1.5625) = 3125$$

Final Answer

Option C

MCQ 85

A salary of Rs. 40,000 increases by 10% each year. Find it after 2 annual increases.

- A. Rs. 44,000 B. Rs. 48,000
C. Rs. 48,400 D. Rs. 49,000

Solution

$$S = 40000(1.10)^2$$

$$= 40000(1.21) = 48400$$

Final Answer

Option C

MCQ 86

A town has population 50,000 and grows by 4% annually. Find the population after 2 years.

- A. 52,000 B. 53,000
C. 54,000 D. 54,080

Solution

$$P_2 = 50000(1.04)^2$$

$$= 50000(1.0816) = 54080$$

Final Answer

Option D

MCQ 87

A vehicle worth Rs. 100,000 depreciates at 10% per year. Find its value after 3 years.

- A. Rs. 70,000 B. Rs. 72,900
C. Rs. 75,000 D. Rs. 81,000

Solution

$$V = 100000(0.9)^3$$

$$= 100000(0.729) = 72900$$

Final Answer

Option B

MCQ 88

A population becomes 12,100 after growing 10% per year for 2 years. Find the initial population.

- A. 9,000 B. 10,000
C. 11,000 D. 11,100

Solution

$$12100 = P(1.10)^2$$

$$12100 = 1.21P$$

$$P = 10000$$

Final Answer

Option B

MCQ 89

After 20% depreciation for one year, an asset is worth Rs. 64,000. Find its original value.

- A. Rs. 72,000 B. Rs. 76,800
C. Rs. 80,000 D. Rs. 84,000

Solution

$$64000 = 80\% \text{ of original value}$$

$$V = 64000 \times \frac{100}{80} = 80000$$

Final Answer

Option C

MCQ 90

A quantity increases by 20% in the first year and decreases by 10% in the second. Starting from 10,000, find the final value.

- A. 10,600 B. 10,800
C. 11,000 D. 12,000

Solution

$$10000(1.20) = 12000$$

$$12000(0.90) = 10800$$

Final Answer

Option B

MCQ 91

A sum becomes Rs. 12,100 in 2 years at compound interest. If the principal is Rs. 10,000, find the annual rate.

- A. 5% B. 8%
C. 10% D. 12%

Solution

$$12100 = 10000 \left(1 + \frac{R}{100}\right)^2$$

$$1.21 = \left(1 + \frac{R}{100}\right)^2$$

$$1 + \frac{R}{100} = 1.10$$

$$R = 10\%$$

Final Answer

Option C

MCQ 92

A sum becomes Rs. 13,310 in 3 years at 10% compound interest. Find the principal.

- A. Rs. 9,000 B. Rs. 10,000
C. Rs. 11,000 D. Rs. 12,100

Solution

$$13310 = P(1.10)^3$$

$$13310 = 1.331P$$

$$P = 10000$$

Final Answer

Option B

MCQ 93

Rs. 2,500 becomes Rs. 3,600 in 2 years at compound interest. Find the annual rate.

- A. 15% B. 18%
C. 20% D. 25%

Solution

$$3600 = 2500 \left(1 + \frac{R}{100}\right)^2$$

$$\frac{3600}{2500} = 1.44$$

$$1 + \frac{R}{100} = \sqrt{1.44} = 1.20$$

$$R = 20\%$$

Final Answer

Option C

MCQ 94

Rs. 1,000 becomes Rs. 1,331 at 10% compound interest. Find the time.

- A. 2 years B. 3 years
C. 4 years D. 5 years

Solution

$$1331 = 1000(1.10)^n$$

$$1.331 = (1.10)^n$$

$$1.331 = (1.10)^3$$

$$n = 3 \text{ years}$$

Final Answer

Option B

MCQ 95

The first-year compound interest on a sum at 12% is Rs. 600. Find the principal.

- A. Rs. 4,000 B. Rs. 5,000
C. Rs. 6,000 D. Rs. 7,200

Solution

$$600 = \frac{12}{100}P$$

$$P = 600 \times \frac{100}{12}$$

$$= 5000$$

Final Answer

Option B

MCQ 96

The first-year interest is Rs. 1,000 at 10% compound interest. What is the second-year interest?

- A. Rs. 1,000 B. Rs. 1,050
C. Rs. 1,100 D. Rs. 1,210

Solution

$$P = \frac{1000 \times 100}{10} = 10000$$

$$\text{Amount after 1 year} = 11000$$

$$I_2 = 10\% \text{ of } 11000 = 1100$$

Final Answer

Option C

MCQ 97

At 10% compound interest, the second-year interest exceeds the first-year interest by Rs. 50. Find the principal.

- A. Rs. 4,000 B. Rs. 5,000
C. Rs. 6,000 D. Rs. 10,000

Solution

$$I_2 - I_1 = P \left(\frac{10}{100} \right)^2$$

$$50 = 0.01P$$

$$P = 5000$$

Final Answer

Option B

MCQ 98

A principal of Rs. 10,000 earns 10% simple interest for 2 years. If the same sum were compounded annually, how much extra interest would be earned?

- A. Rs. 50 B. Rs. 100
C. Rs. 150 D. Rs. 200

Solution

$$\text{Extra} = P \left(\frac{R}{100} \right)^2$$

$$= 10000(0.10)^2$$

$$= 100$$

Final Answer

Option B

MCQ 99

A bank offers 8% simple interest. How much principal is needed to earn Rs. 1,200 in 3 years?

- A. Rs. 4,000 B. Rs. 5,000
C. Rs. 6,000 D. Rs. 7,500

Solution

$$P = \frac{100 \times 1200}{8 \times 3}$$

$$= \frac{120000}{24} = 5000$$

Final Answer

Option B

MCQ 100

A sum of Rs. 20,000 is invested at 10% per annum. Find the difference between the amount under compound interest and simple interest after 2 years.

A. Rs. 100**B.** Rs. 150**C.** Rs. 200**D.** Rs. 400**Solution**

$$\begin{aligned}\text{Difference} &= P \left(\frac{R}{100} \right)^2 \\ &= 20000(0.10)^2 \\ &= 200\end{aligned}$$

Final Answer

Option C

Two-year difference mental table

$$5\% \Rightarrow 0.25\%P, \quad 10\% \Rightarrow 1\%P$$

$$20\% \Rightarrow 4\%P, \quad 25\% \Rightarrow 6.25\%P$$

Common compound multipliers

$$5\% \Rightarrow 1.05, \quad 10\% \Rightarrow 1.10$$

$$20\% \Rightarrow 1.20, \quad 25\% \Rightarrow 1.25$$

Time conversion

$$3 \text{ months} = \frac{1}{4} \text{ year}, \quad 6 \text{ months} = \frac{1}{2} \text{ year}$$

$$9 \text{ months} = \frac{3}{4} \text{ year}, \quad 18 \text{ months} = 1.5 \text{ years}$$

Simple & Compound Interest - Rapid Revision Grid

Simple interest

$$SI = \frac{PRT}{100}$$

$$A = P + SI$$

For months, use $T = \frac{m}{12}$.

Compound interest

$$A = P \left(1 + \frac{R}{100} \right)^n$$

$$CI = A - P$$

Fast two-year comparison

$$CI - SI = P \left(\frac{R}{100} \right)^2$$

10% $\Rightarrow$ difference = 1% of P

20% $\Rightarrow$ difference = 4% of P

Half-yearly compounding

10% p.a. $\Rightarrow$ 5% per half-year

1 year $\Rightarrow$ 2 periods

Growth / depreciation multipliers

+10% $\Rightarrow \times 1.10$

-10% $\Rightarrow \times 0.90$

Apply the multiplier once for every period.

Exam-speed check Identify first whether the question is SI or CI. Then write only the needed multiplier/formula, convert months to years when required, and avoid expanding powers that have easy standard values such as $1.1^2 = 1.21$ and $1.1^3 = 1.331$.



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TIME & WORK MCQs | 100 FULLY SOLVED QUESTIONS

Fast Time & Work Foundation

One-day work

$$\text{If time} = T, \quad 1\text{-day work} = \frac{1}{T}$$

$$\text{Time} = \frac{1}{\text{rate}}$$

Men-days-hours

$$\text{Work} \propto M \times D \times H \times E$$

For equally efficient workers:

$$M_1 D_1 H_1 = M_2 D_2 H_2$$

Pipes and cisterns Filling rate is positive; emptying rate is negative.

$$\text{Net rate} = \sum \text{inlets} - \sum \text{outlets}$$

$$T = \frac{1}{\text{net rate}}$$

Exam-speed rule Choose a convenient total work, usually the LCM of the individual times. Convert every worker to work-units per day, add or subtract the units, then divide the remaining work by the new daily rate.

Combined work

$$\frac{1}{T} = \frac{1}{A} + \frac{1}{B}$$

$$T = \frac{AB}{A+B}$$

for two workers working together throughout.

Efficiency and time

$$\text{Efficiency} \propto \frac{1}{\text{Time}}$$

$$E_A : E_B = T_B : T_A$$

MCQ 1

A can complete a work in 12 days. What part of the work does A complete in one day?

- A. $\frac{1}{12}$ B. $\frac{1}{16}$
C. $\frac{1}{10}$ D. $\frac{1}{24}$

Solution

$$1\text{-day work} = \frac{1}{12}$$

$$\boxed{\frac{1}{12}}$$

AnswerBox

(
boxed
frac112
)

MCQ 2

A can complete a work in 15 days. What fraction of the work is completed in 5 days?

- A. $\frac{1}{5}$ B. $\frac{1}{23}$
C. $\frac{1}{10}$ D. $\frac{1}{3}$

Solution

$$5\text{-day work} = 5 \left(\frac{1}{15} \right) \\ = \frac{5}{15} = \frac{1}{3}$$

AnswerBox

(
boxed
frac13
)

MCQ 3

A completes $\frac{3}{5}$ of a job in 9 days at a constant rate. In how many days will A complete the whole job?

- A. 18 B. 20
C. 15 D. 12

Solution

$$\frac{3}{5} \text{ work} \rightarrow 9 \text{ days}$$

$$1 \text{ work} \rightarrow 9 \times \frac{5}{3} = 15 \text{ days}$$

AnswerBox

(
boxed15
) days

MCQ 4

A worker completes $\frac{1}{8}$ of a job each day. How many days are required for the whole job?

- A. 12 B. 8
C. 6 D. 10

Solution

$$\text{Daily work} = \frac{1}{8}$$

$$\text{Time} = \frac{1}{1/8} = 8$$

AnswerBox

(
boxed8
) days

MCQ 5

A completes 25% of a task in 5 days. How many days are required for the complete task?

- A. 20 B. 15
C. 18 D. 25

Solution

$$25\% = \frac{1}{4}$$

$$\frac{1}{4} \text{ work} = 5 \text{ days}$$

$$1 \text{ work} = 5 \times 4 = 20 \text{ days}$$

AnswerBox

(
boxed20
) days

MCQ 6

A completes 35% of a work in 7 days. At the same rate, how many days are needed for 100%?

- A. 14 B. 18
C. 25 D. 20

Solution

$$35\% \rightarrow 7$$

$$5\% \rightarrow 1$$

$$100\% \rightarrow 20$$

AnswerBox

(
boxed20
) days

MCQ 7

A completes $\frac{3}{8}$ of a work in 6 days. Find the time for the whole work.

- A. 14 B. 18
C. 16 D. 12

Solution

$$\frac{3}{8} \rightarrow 6$$

$$1 \rightarrow 6 \times \frac{8}{3} = 16$$

AnswerBox

(
boxed16
) days

MCQ 8

A completes 0.2 of a job per day. The whole job will be completed in:

- A. 8 B. 5
C. 4 D. 6

Solution

$$0.2 = \frac{1}{5}$$

$$\text{Time} = \frac{1}{1/5} = 5$$

AnswerBox

(
boxed5
) days

MCQ 9

A completes 40% of a job in 8 days. Find the total time.

- A. 20 B. 16
C. 18 D. 24

Solution

$$40\% = \frac{2}{5}$$

$$\frac{2}{5} \rightarrow 8$$

$$1 \rightarrow 8 \times \frac{5}{2} = 20$$

AnswerBox

(
boxed20
) days

MCQ 10

A completes $\frac{2}{7}$ of a work in 4 days. The complete work requires:

- A. 12 B. 16
C. 18 D. 14

Solution

$$\frac{2}{7} \rightarrow 4$$

$$1 \rightarrow 4 \times \frac{7}{2} = 14$$

AnswerBox

(
boxed14
) days

MCQ 11

A takes 5 days to finish $\frac{1}{4}$ of a job. How long will the full job take?

- A. 18 B. 25
C. 20 D. 15

Solution

$$\frac{1}{4} \rightarrow 5$$

$$1 \rightarrow 4(5) = 20$$

AnswerBox

(
boxed20
) days

MCQ 12

A machine produces 12 units per day. How many days are needed to produce 144 units?

- A. 16 B. 12
C. 10 D. 14

Solution

$$\begin{aligned}\text{Time} &= \frac{144}{12} \\ &= 12 \text{ days}\end{aligned}$$

AnswerBox

(
boxed12
) days

MCQ 13

A clerk processes 18 forms per hour. How many hours are required for 126 forms?

- A. 7 B. 6
C. 8 D. 9

Solution

$$\begin{aligned}\text{Time} &= \frac{126}{18} \\ &= 7 \text{ hours}\end{aligned}$$

AnswerBox

(
boxed7
) hours

MCQ 14

A worker makes 4 items in 12 minutes. How many items can be made in one hour?

- A. 16 B. 18
C. 24 D. 20

qsourcePast-paper pattern (adapted; values retained only where the arithmetic form is generic).

Solution

$$\begin{aligned}12 \text{ min} &\longrightarrow 4 \\ 60 \text{ min} &= 5(12 \text{ min}) \\ 4 \times 5 &= 20\end{aligned}$$

AnswerBox

(
boxed20
) items

MCQ 15

Three lawns are completed in 2 hours at a constant rate. How many lawns are completed in 10 hours?

- A. 18 B. 20
C. 15 D. 12

qsourcePast-paper pattern (adapted).

Solution

$$\begin{aligned}2 \text{ h} &\longrightarrow 3 \text{ lawns} \\ 10 \text{ h} &= 5(2 \text{ h}) \\ 3 \times 5 &= 15\end{aligned}$$

AnswerBox

(
boxed15
) lawns

MCQ 16

A can finish a work in 10 days and B in 15 days. Working together, they finish it in:

- A. 5 B. 6
C. 7 D. 8

Solution

$$\begin{aligned}\frac{1}{T} &= \frac{1}{10} + \frac{1}{15} \\ &= \frac{25}{150} \\ T &= \frac{150}{25} = 6\end{aligned}$$

AnswerBox

(
boxed6
) days

MCQ 17

A can finish a work in 8 days and B in 24 days. Working together, they finish it in:

A. 6 B. 7

C. 8 D. 5

Solution

$$\begin{aligned}\frac{1}{T} &= \frac{1}{8} + \frac{1}{24} \\ &= \frac{32}{192} \\ T &= \frac{192}{32} = 6\end{aligned}$$

AnswerBox

(
boxed6
) days

MCQ 18

A can finish a work in 6 days and B in 12 days. Working together, they finish it in:

A. 5 B. 6

C. 3 D. 4

Solution

$$\begin{aligned}\frac{1}{T} &= \frac{1}{6} + \frac{1}{12} \\ &= \frac{18}{72} \\ T &= \frac{72}{18} = 4\end{aligned}$$

AnswerBox

(
boxed4
) days

MCQ 19

A can finish a work in 15 days and B in 30 days. Working together, they finish it in:

A. 12 B. 9

C. 10 D. 11

Solution

$$\begin{aligned}\frac{1}{T} &= \frac{1}{15} + \frac{1}{30} \\ &= \frac{45}{450} \\ T &= \frac{450}{45} = 10\end{aligned}$$

AnswerBox

(
boxed10
) days

MCQ 20

A can finish a work in 20 days and B in 30 days. Working together, they finish it in:

A. 11 B. 12

C. 13 D. 14

Solution

$$\begin{aligned}\frac{1}{T} &= \frac{1}{20} + \frac{1}{30} \\ &= \frac{50}{600} \\ T &= \frac{600}{50} = 12\end{aligned}$$

AnswerBox

(
boxed12
) days

MCQ 21

A can finish a work in 16 days and B in 48 days. Working together, they finish it in:

- A. 12 B. 13
C. 14 D. 11

Solution

$$\begin{aligned}\frac{1}{T} &= \frac{1}{16} + \frac{1}{48} \\ &= \frac{64}{768} \\ T &= \frac{768}{64} = 12\end{aligned}$$

AnswerBox
(
boxed12
) days

MCQ 22

A can finish a work in 9 days and B in 18 days. Working together, they finish it in:

- A. 7 B. 8
C. 5 D. 6

Solution

$$\begin{aligned}\frac{1}{T} &= \frac{1}{9} + \frac{1}{18} \\ &= \frac{27}{162} \\ T &= \frac{162}{27} = 6\end{aligned}$$

AnswerBox
(
boxed6
) days

MCQ 23

A can finish a work in 12 days and B in 20 days. Working together, they finish it in:

- A. $\frac{192}{132}$ B. $\frac{152}{172}$
C. $\frac{152}{172}$ D. $\frac{152}{172}$

Solution

$$\begin{aligned}\frac{1}{T} &= \frac{1}{12} + \frac{1}{20} \\ &= \frac{32}{240} \\ T &= \frac{240}{32} = \frac{152}{152}\end{aligned}$$

AnswerBox
(
boxed
 $\frac{152}{152}$
) days

MCQ 24

A can finish a work in 12 days and B in 18 days. Working together, they finish it in:

- A. $\frac{315}{365}$ B. $\frac{415}{465}$
C. $\frac{415}{465}$ D. $\frac{415}{465}$

Solution

$$\begin{aligned}\frac{1}{T} &= \frac{1}{12} + \frac{1}{18} \\ &= \frac{30}{216} \\ T &= \frac{216}{30} = \frac{365}{365}\end{aligned}$$

AnswerBox
(
boxed
 $\frac{365}{365}$
) days

MCQ 25

A can finish a work in 14 days and B in 21 days. Working together, they finish it in:

- A.** $\frac{425}{475}$ **B.** $\frac{525}{375}$
C. $\frac{525}{375}$ **D.** $\frac{375}{525}$

Solution

$$\begin{aligned}\frac{1}{T} &= \frac{1}{14} + \frac{1}{21} \\ &= \frac{35}{294} \\ T &= \frac{294}{35} = \frac{42}{5}\end{aligned}$$

AnswerBox

(
boxed
 $\frac{42}{5}$
) days

MCQ 26

A alone completes a work in 9 days. A and B together complete it in 6 days. B alone takes:

- A.** 15 **B.** 24
C. 15 **D.** 18

Solution

$$\begin{aligned}\frac{1}{B} &= \frac{1}{6} - \frac{1}{9} \\ &= \frac{3}{54} \\ B &= \frac{54}{3} = 18\end{aligned}$$

AnswerBox

(
boxed18
) days

MCQ 27

A alone completes a work in 12 days. A and B together complete it in 8 days. B alone takes:

- A.** 30 **B.** 20
C. 24 **D.** 21

Solution

$$\begin{aligned}\frac{1}{B} &= \frac{1}{8} - \frac{1}{12} \\ &= \frac{4}{96} \\ B &= \frac{96}{4} = 24\end{aligned}$$

AnswerBox

(
boxed24
) days

MCQ 28

A alone completes a work in 12 days. A and B together complete it in 4 days. B alone takes:

- A.** 16 **B.** 6
C. 3 **D.** 12

Solution

$$\begin{aligned}\frac{1}{B} &= \frac{1}{4} - \frac{1}{12} \\ &= \frac{8}{48} \\ B &= \frac{48}{8} = 6\end{aligned}$$

AnswerBox

(
boxed6
) days

MCQ 29

A alone completes a work in 20 days. A and B together complete it in 12 days. B alone takes:

- A. 30 B. 27
C. 36 D. 32

Solution

$$\begin{aligned}\frac{1}{B} &= \frac{1}{12} - \frac{1}{20} \\ &= \frac{8}{240} \\ B &= \frac{240}{8} = 30\end{aligned}$$

AnswerBox

(
boxed30
) days

MCQ 30

A is twice as efficient as B. Together they complete a work in 12 days. B alone will complete it in:

- A. 18 B. 24
C. 48 D. 36

Solution

$$\begin{aligned}A : B &= 2 : 1 \\ \text{Combined rate} &= 3 \text{ units} = \frac{1}{12} \\ B \text{ rate} &= \frac{1}{3} \cdot \frac{1}{12} = \frac{1}{36} \\ B &= 36 \text{ days}\end{aligned}$$

AnswerBox

(
boxed36
) days

MCQ 31

A is 50% more efficient than B. If B alone needs 18 days, A alone needs:

- A. 15 B. 27
C. 12 D. 9

Solution

$$\begin{aligned}A : B &= 150 : 100 = 3 : 2 \\ \text{Time} &\propto \frac{1}{\text{efficiency}} \\ T_A &= 18 \left(\frac{2}{3} \right) = 12\end{aligned}$$

AnswerBox

(
boxed12
) days

MCQ 32

The efficiency ratio of A to B is 3 : 2. Together they complete a job in 10 days. B alone requires:

- A. 15 B. 25
C. 20 D. 30

Solution

$$\begin{aligned}A : B &= 3 : 2 \\ A + B &= 5 \text{ rate units} = \frac{1}{10} \\ B \text{ rate} &= \frac{2}{5} \cdot \frac{1}{10} = \frac{1}{25} \\ B &= 25\end{aligned}$$

AnswerBox

(
boxed25
) days

MCQ 33

A is 25% more efficient than B. If A completes a work in 16 days, B completes it in:

- A. 20 B. 12
C. 18 D. 24

Solution

$$A : B = 125 : 100 = 5 : 4$$

$$T_A : T_B = 4 : 5$$

$$16 : T_B = 4 : 5$$

$$T_B = 20$$

AnswerBox

(
boxed20
) days

MCQ 34

A is three times as efficient as B. If B needs 24 days, A needs:

- A. 6 B. 12
C. 16 D. 8

Solution

$$A : B = 3 : 1$$

$$T_A : T_B = 1 : 3$$

$$T_A = \frac{24}{3} = 8$$

AnswerBox

(
boxed8
) days

MCQ 35

A, B and C alone can do a work in 12, 18, 36 days respectively. Together they need:

- A. 8 B.
frac112
C. 6 D. 7

Solution

$$\frac{1}{T} = \frac{1}{12} + \frac{1}{18} + \frac{1}{36}$$

$$= \frac{1}{6}$$

$$T = 6$$

AnswerBox

(
boxed6
) days

MCQ 36

A, B and C alone can do a work in 10, 15, 30 days respectively. Together they need:

- A.
frac92 B. 5
C. 6 D. 7

Solution

$$\frac{1}{T} = \frac{1}{10} + \frac{1}{15} + \frac{1}{30}$$

$$= \frac{1}{5}$$

$$T = 5$$

AnswerBox

(
boxed5
) days

MCQ 37

A, B and C alone can do a work in 8, 12, 24 days respectively. Together they need:

A. 4 B. 5

C. 6 D.

$\frac{72}{14}$

Solution

$$\begin{aligned}\frac{1}{T} &= \frac{1}{8} + \frac{1}{12} + \frac{1}{24} \\ &= \frac{3+2+1}{24} \\ T &= 4\end{aligned}$$

AnswerBox

(
boxed4
) days

MCQ 38

A, B and C alone can do a work in 15, 20, 30 days respectively. Together they need:

A. $\frac{233}{263}$ B.

$\frac{376}{203}$

C.

$\frac{376}{203}$ D.

$\frac{203}{203}$

$\frac{203}{203}$

Solution

$$\begin{aligned}\frac{1}{T} &= \frac{1}{15} + \frac{1}{20} + \frac{1}{30} \\ &= \frac{4+3+2}{60} \\ T &= \frac{60}{9} = \frac{20}{3}\end{aligned}$$

AnswerBox

(
boxed
 $\frac{20}{3}$
) days

MCQ 39

A, B and C alone can do a work in 6, 8, 24 days respectively. Together they need:

A. 5 B.

$\frac{52}{3}$

C. 3 D. 4

Solution

$$\begin{aligned}\frac{1}{T} &= \frac{1}{6} + \frac{1}{8} + \frac{1}{24} \\ &= \frac{4+3+1}{24} \\ T &= 3\end{aligned}$$

AnswerBox

(
boxed3
) days

MCQ 40

A+B finish in 12 days, B+C in 15 days, and C+A in 20 days. A+B+C together finish in:

A. 9 B. 10

C. 12 D. 14

qsources Past-paper pairwise-work pattern (adapted).

Solution

$$\begin{aligned}2(A + B + C) &= \frac{1}{12} + \frac{1}{15} + \frac{1}{20} \\ 2R &= \frac{5+4+3}{60} \\ R &= \frac{12}{60} = \frac{1}{5} \\ T &= 5\end{aligned}$$

AnswerBox

(
boxed10
) days

MCQ 41

A+B finish in 8 days, B+C in 12 days, and C+A in 24 days. A+B+C together finish in:

- A. 8 B. 10
C. 12 D. 7

Solution

$$2(A + B + C) = \frac{1}{8} + \frac{1}{12} + \frac{1}{24}$$

$$2R = \frac{1}{6}$$

$$R = \frac{1}{12}$$

$$T = 12$$

AnswerBox

(
boxed
8
) days

MCQ 42

A+B finish in 6 days, B+C in 8 days, and C+A in 12 days. A+B+C together finish in:

- A. $\frac{22}{3}$ B. $\frac{28}{3}$
C. $\frac{13}{3}$ D. $\frac{16}{3}$

Solution

$$2(A + B + C) = \frac{1}{6} + \frac{1}{8} + \frac{1}{12}$$

$$2R = \frac{1}{4}$$

$$R = \frac{1}{8}$$

$$T = 8$$

AnswerBox

(
boxed
 $\frac{16}{3}$
) days

MCQ 43

A and B together finish in 10 days, while A, B and C together finish in 6 days. C alone takes:

- A. 18 B. 20
C. 15 D. 12

Solution

$$\frac{1}{C} = \frac{1}{6} - \frac{1}{10}$$

$$= \frac{5-3}{30} = \frac{2}{30}$$

$$C = 15$$

AnswerBox

(
boxed
15
) days

MCQ 44

A and B together finish in 8 days, while A, B and C together finish in 5 days. C alone takes:

- A. 15 B. $\frac{40}{3}$
C. 10 D. 12

Solution

$$\frac{1}{C} = \frac{1}{5} - \frac{1}{8}$$

$$= \frac{8-5}{40} = \frac{3}{40}$$

$$C = \frac{40}{3}$$

AnswerBox

(
boxed
 $\frac{40}{3}$
) days

MCQ 45

Three equally efficient workers finish a job in 12 days. One worker alone needs:

- A. 36 B. 24
C. 30 D. 48

Solution

$$3 \text{ workers} \times 12 \text{ days} = 36 \text{ worker-days}$$

$$1 \text{ worker} \longrightarrow 36 \text{ days}$$

AnswerBox

(
boxed36
) days

MCQ 46

Four equally efficient workers finish a job in 15 days. One worker alone needs:

- A. 45 B. 50
C. 75 D. 60

Solution

$$4 \times 15 = 60 \text{ worker-days}$$

$$1 \text{ worker} = 60 \text{ days}$$

AnswerBox

(
boxed60
) days

MCQ 47

Five equal workers complete a job in 8 days. How many days will 8 equal workers take?

- A. 6 B. 8
C. 5 D. 4

Solution

$$W = 5 \times 8 = 40 \text{ worker-days}$$

$$T = \frac{40}{8} = 5$$

AnswerBox

(
boxed5
) days

MCQ 48

Six equal workers finish a job in 20 days. Ten equal workers will finish it in:

- A. 18 B. 12
C. 10 D. 15

Solution

$$6 \times 20 = 120 \text{ worker-days}$$

$$T = \frac{120}{10} = 12$$

AnswerBox

(
boxed12
) days

MCQ 49

Fifteen equal workers complete a job in 16 days. Twelve equal workers require:

- A. 20 B. 18
C. 22 D. 24

Solution

$$15 \times 16 = 240 \text{ worker-days}$$

$$T = \frac{240}{12} = 20$$

AnswerBox

(
boxed20
) days

MCQ 50

12 men can finish a work in 10 days. How many men are needed to finish the same work in 8 days?

- A. 14 B. 16
C. 18 D. 15

sourcePast-paper pattern (adapted).

Solution

$$12 \times 10 = M \times 8$$

$$M = \frac{120}{8} = 15$$

AnswerBox

(
boxed15
) men

MCQ 51

48 women can complete a work in 15 days. How many women are required to complete it in 20 days?

- A. 40 B. 42
C. 36 D. 32

qsourcePast-paper inverse-workforce pattern (adapted).

Solution

$$48 \times 15 = W \times 20$$

$$W = \frac{720}{20} = 36$$

AnswerBox

(
boxed36
) women

MCQ 52

120 workers can finish a work in 75 days. How many workers are required to finish it in 60 days?

- A. 180 B. 150
C. 140 D. 160

qsourcePast-paper workforce pattern (adapted).

Solution

$$120 \times 75 = W \times 60$$

$$W = \frac{9000}{60} = 150$$

AnswerBox

(
boxed150
) workers

MCQ 53

18 men working 8 hours per day finish a job in 12 days. If 24 men work 6 hours per day, how many days are needed?

- A. 12 B. 9
C. 10 D. 16

Solution

$$18(8)(12) = 24(6)T$$

$$1728 = 144T$$

$$T = 12$$

AnswerBox

(
boxed12
) days

MCQ 54

20 workers, working 6 hours per day, finish a task in 15 days. If 25 workers work 8 hours per day, the task will take:

- A. 8 B. 10
C. 12 D. 9

Solution

$$20(6)(15) = 25(8)T$$

$$1800 = 200T$$

$$T = 9$$

AnswerBox

(
boxed9
) days

MCQ 55

16 men can finish a work in 20 days. After 5 days, 4 men leave. How many additional days are needed?

- A. 18 B. 25
C. 20 D. 15

Solution

$$W = 16(20) = 320 \text{ man-days}$$

$$\text{Done} = 16(5) = 80$$

$$\text{Remaining} = 320 - 80 = 240$$

$$T = \frac{240}{12} = 20$$

AnswerBox

(
boxed20
) days

MCQ 56

24 workers can finish a job in 18 days. After 6 days, 8 more workers join. The total time from the start is:

- A. 18 B. 15
C. 12 D. 14

Solution

$$W = 24(18) = 432$$

$$\text{Done} = 24(6) = 144$$

$$\text{Remaining} = 288$$

$$\text{New workers} = 32$$

$$\text{More days} = \frac{288}{32} = 9$$

$$\text{Total} = 6 + 9 = 15$$

AnswerBox

(
boxed15
) days

MCQ 57

30 men can finish a work in 24 days. After 8 days, 10 men leave. Find the total completion time.

- A. 32 B. 28
C. 30 D. 36

Solution

$$W = 30(24) = 720$$

$$\text{Done} = 30(8) = 240$$

$$\text{Remaining} = 480$$

$$20 \text{ men need} = \frac{480}{20} = 24 \text{ days}$$

$$\text{Total} = 8 + 24 = 32$$

AnswerBox

(
boxed32
) days

MCQ 58

20 men complete $\frac{3}{5}$ of a work in 12 days. How many men are needed to complete the remaining $\frac{2}{5}$ in 4 days?

- A. 30 B. 35
C. 45 D. 40

Solution

$$20(12) = 240 \text{ man-days} = \frac{3}{5}W$$

$$W = 240 \cdot \frac{5}{3} = 400$$

$$\text{Remaining} = \frac{2}{5}(400) = 160$$

$$M = \frac{160}{4} = 40$$

AnswerBox

(
boxed40
) men

MCQ 59

15 identical machines produce 1200 units in 8 hours. How many units will 10 such machines produce in 12 hours?

- A. 1500 B. 1800
C. 1200 D. 1000

Solution

$$15(8) = 120 \text{ machine-hours}$$

$$10(12) = 120 \text{ machine-hours}$$

$$\therefore \text{output} = 1200$$

AnswerBox

(
boxed1200
) units

MCQ 60

8 workers working 6 hours daily finish a job in 15 days. If 12 workers work 5 hours daily, the job takes:

- A. 16 B. 12
C. 10 D. 14

Solution

$$8(6)(15) = 12(5)T$$

$$720 = 60T$$

$$T = 12$$

AnswerBox

(
boxed12
) days

MCQ 61

10 men finish a work in 12 days, while 8 women finish the same work in 15 days. The efficiency of one man compared with one woman is:

- A. 1:1 B. 2:1
C. 3:2 D. 4:3

Solution

$$10(12) = 120 \text{ man-days}$$

$$8(15) = 120 \text{ woman-days}$$

$$1 \text{ man-day} = 1 \text{ woman-day}$$

$$\text{Efficiency} = 1 : 1$$

AnswerBox

(
boxed1:1
)

MCQ 62

If 6 men can do the same work as 8 women in the same time, the efficiency ratio of one man to one woman is:

- A. 3:4 B. 6:8
C. 2:1 D. 4:3

Solution

$$6M = 8W$$

$$\frac{M}{W} = \frac{8}{6} = \frac{4}{3}$$

$$M : W = 4 : 3$$

AnswerBox

(
boxed4:3
)

MCQ 63

If 3 men can do the same work as 5 women in the same time, one man is how many times as efficient as one woman?

- A. 2 B.
frac83

- C. D.
frac53
frac35

Solution

$$3M = 5W$$

$$M = \frac{5}{3}W$$

AnswerBox

(
boxed
frac53
)

MCQ 64

One man is twice as efficient as one woman. The daily work of 4 men and 6 women is equivalent to how many women?

- A. 16 B. 14
C. 10 D. 12

Solution

$$1M = 2W$$

$$4M = 8W$$

$$8W + 6W = 14W$$

AnswerBox

(
boxed14
) women

MCQ 65

A can do a work in 12 days and B in 18 days. A works alone for 4 days; then B joins. Total time to finish the work is:

- A. $\frac{44}{5}$ B. 8
C. 9 D. 10

Solution

$$A \text{ in 4 days} = \frac{4}{12} = \frac{1}{3}$$

$$\text{Remaining} = \frac{2}{3}$$

$$A + B = \frac{1}{12} + \frac{1}{18} = \frac{5}{36}$$

$$t = \frac{2/3}{5/36} = \frac{24}{5}$$

$$T = 4 + \frac{24}{5} = \frac{44}{5}$$

AnswerBox

(
boxed
 $\frac{44}{5}$
) days

MCQ 66

A can do a work in 10 days and B in 15 days. A works alone for 2 days and then B joins. Total time is:

- A. 6 B. 7
C. 8 D.

$\frac{34}{5}$

Solution

$$\text{Done} = \frac{2}{10} = \frac{1}{5}$$

$$\text{Remaining} = \frac{4}{5}$$

$$A + B = \frac{1}{10} + \frac{1}{15} = \frac{1}{6}$$

$$t = \frac{4/5}{1/6} = \frac{24}{5}$$

$$T = 2 + \frac{24}{5} = \frac{34}{5}$$

AnswerBox

(
boxed
 $\frac{34}{5}$
) days

MCQ 67

A and B can do a work in 8 and 12 days respectively. They work together for 3 days; then B leaves. How many total days are needed?

- A. 7 B. 8
C. 6 D. 5

Solution

$$A + B = \frac{1}{8} + \frac{1}{12} = \frac{5}{24}$$

$$3\text{-day work} = \frac{15}{24} = \frac{5}{8}$$

$$\text{Remaining} = \frac{3}{8}$$

$$A \text{ alone time} = \frac{3/8}{1/8} = 3$$

$$T = 3 + 3 = 6$$

AnswerBox

(
boxed6
) days

MCQ 68

A can do a work in 6 days and B in 12 days. They work together for 2 days; then A leaves. Total time required is:

- A. 9 B. 8
C. 6 D. 7

Solution

$$A + B = \frac{1}{6} + \frac{1}{12} = \frac{1}{4}$$

$$2\text{-day work} = \frac{1}{2}$$

$$\text{Remaining} = \frac{1}{2}$$

$$B \text{ time} = \frac{1/2}{1/12} = 6$$

$$T = 2 + 6 = 8$$

AnswerBox

(
boxed8
) days

MCQ 69

A can do a work in 15 days and B in 20 days. They work together for 5 days; then A leaves. Total time is:

- A. $\frac{40}{3}$ B. 12
C. 14 D. 15

Solution

$$A + B = \frac{1}{15} + \frac{1}{20} = \frac{7}{60}$$

$$\text{Done} = 5 \cdot \frac{7}{60} = \frac{7}{12}$$

$$\text{Remaining} = \frac{5}{12}$$

$$B \text{ time} = \frac{5/12}{1/20} = \frac{25}{3}$$

$$T = 5 + \frac{25}{3} = \frac{40}{3}$$

AnswerBox

(
boxed
frac403
) days

MCQ 70

A can finish a work in 4 days and B in 6 days. They work on alternate days, starting with A. The work is completed in:

- A. 4 B. 5
C. 5
frac13 D. 4
frac23

Solution

$$\text{Work in 2 days} = \frac{1}{4} + \frac{1}{6} = \frac{5}{12}$$

$$\text{Work in 4 days} = \frac{10}{12} = \frac{5}{6}$$

$$\text{Remaining} = \frac{1}{6}$$

$$A \text{ needs} = \frac{1/6}{1/4} = \frac{2}{3} \text{ day}$$

$$T = 4\frac{2}{3}$$

AnswerBox

(
boxed4
frac23
) days

MCQ 71

A can finish in 6 days and B in 8 days. They work on alternate days, starting with A. Completion time is:

- A. 6 B. 7
frac12 D. 6
C. 6
frac34

Solution

$$2\text{-day work} = \frac{1}{6} + \frac{1}{8} = \frac{7}{24}$$

$$6\text{-day work} = 3 \cdot \frac{7}{24} = \frac{7}{8}$$

$$\text{Remaining} = \frac{1}{8}$$

$$A \text{ needs} = \frac{1/8}{1/6} = \frac{3}{4} \text{ day}$$

$$T = 6\frac{3}{4}$$

AnswerBox

(
boxed6
frac34
) days

MCQ 72

A can finish in 10 days and B in 15 days. They work on alternate days, starting with B. The work is completed in:

- A. 13 B. 12
C. 10 D. 11

Solution

$$2\text{-day work} = \frac{1}{15} + \frac{1}{10} = \frac{1}{6}$$

$$10\text{-day work} = 5 \cdot \frac{1}{6} = \frac{5}{6}$$

$$\text{Day 11 (B)} = \frac{1}{15} \Rightarrow \text{total} = \frac{9}{10}$$

$$\text{Remaining} = \frac{1}{10}$$

$$\text{Day 12 (A)} = \frac{1}{10}$$

$$T = 12$$

AnswerBox

(
boxed12
) days

MCQ 73

A, B and C can finish a work in 12, 18 and 36 days. A and B work for 3 days, then C joins. Total time is:

- A. 6 B. 6
C. 7 D. 7

frac12

Solution

$$A + B = \frac{1}{12} + \frac{1}{18} = \frac{5}{36}$$

$$3\text{-day work} = \frac{5}{12}$$

$$\text{Remaining} = \frac{7}{12}$$

$$A + B + C = \frac{1}{6}$$

$$t = \frac{7/12}{1/6} = \frac{7}{2}$$

$$T = 3 + \frac{7}{2} = \frac{13}{2} = 6\frac{1}{2}$$

AnswerBox

(
boxed6
frac12
) days

MCQ 74

A can do a work in 20 days and B in 30 days. A works alone for 5 days, then leaves; B finishes the rest. Total time is:

- A. 25 B. 30
C. 32 D. 27

frac12

Solution

$$A \text{ in 5 days} = \frac{5}{20} = \frac{1}{4}$$

$$\text{Remaining} = \frac{3}{4}$$

$$B \text{ time} = \frac{3/4}{1/30} = \frac{45}{2}$$

$$T = 5 + \frac{45}{2} = \frac{55}{2} = 27\frac{1}{2}$$

AnswerBox

(
boxed27
frac12
) days

MCQ 75

A and B together can do a work in 12 days. After working together for 4 days, A leaves and B completes the remaining work in 16 days. B alone can do the whole work in:

- A. 20 B. 30
C. 24 D. 18

Solution

$$\text{Done in 4 days} = \frac{4}{12} = \frac{1}{3}$$

$$\text{Remaining} = \frac{2}{3}$$

$$16 \left(\frac{1}{B} \right) = \frac{2}{3}$$

$$\frac{1}{B} = \frac{1}{24}$$

$$B = 24$$

AnswerBox

(
boxed24
) days

MCQ 76

A and B together can finish in 8 days. After 2 days, B leaves and A finishes the remaining work in 9 days. B alone can do the work in:

- A. 30 B. 24
C. 16 D. 20

Solution

$$\text{Done} = \frac{2}{8} = \frac{1}{4}$$

$$\text{Remaining} = \frac{3}{4}$$

$$9\left(\frac{1}{A}\right) = \frac{3}{4} \Rightarrow A = 12$$

$$\frac{1}{B} = \frac{1}{8} - \frac{1}{12} = \frac{1}{24}$$

$$B = 24$$

AnswerBox

(
boxed24
) days

MCQ 77

A can finish in 12 days and B in 18 days. Both start together, but B leaves 3 days before completion. The job is completed in:

- A. 425 B. 8
C. 9 D. 10

Solution

$$\frac{T}{12} + \frac{T-3}{18} = 1$$

$$3T + 2(T-3) = 36$$

$$5T - 6 = 36$$

$$5T = 42$$

$$T = \frac{42}{5}$$

AnswerBox

(
boxed
frac425
) days

MCQ 78

A and B have efficiency ratio 3 : 2. If they earn Rs 5000 for a joint job, A should receive:

- A. Rs 2000 B. Rs 2500
C. Rs 3500 D. Rs 3000

Solution

$$A : B = 3 : 2$$

$$\text{Total parts} = 5$$

$$A = 5000 \left(\frac{3}{5} \right) = 3000$$

AnswerBox

(
boxedRs 3000
)

MCQ 79

A can do a job in 12 days and B in 18 days. They work together and earn Rs 7500. A's share is:

- A. Rs 4000 B. Rs 5000
C. Rs 4500 D. Rs 3000

Solution

$$\text{Rate ratio} = \frac{1}{12} : \frac{1}{18} = 3 : 2$$

$$A = 7500 \left(\frac{3}{5} \right) = 4500$$

AnswerBox

(
boxedRs 4500
)

MCQ 80

A, B and C can do a job in 10, 15 and 30 days respectively. If total wages are Rs 9000, B receives:

- A. Rs 4500 B. Rs 3000
C. Rs 1500 D. Rs 2500

Solution

$$\frac{1}{10} : \frac{1}{15} : \frac{1}{30} = 3 : 2 : 1$$

$$\text{Total parts} = 6$$

$$B = 9000 \left(\frac{2}{6} \right) = 3000$$

AnswerBox

(
boxedRs 3000
)

MCQ 81

One man is twice as efficient as one woman. Four men and six women earn Rs 7000 for one day. The men as a group should receive:

- A. Rs 4000 B. Rs 3000
C. Rs 3500 D. Rs 5000

Solution

$$4M = 8W$$

$$\text{Contribution ratio} = 8 : 6 = 4 : 3$$

$$\text{Men share} = 7000 \left(\frac{4}{7} \right) = 4000$$

AnswerBox

(
boxedRs 4000
)

MCQ 82

A can do a job in 10 days and B in 15 days. Each works for 5 days. If wages are Rs 4000, A receives:

- A. Rs 1600 B. Rs 2000
C. Rs 2500 D. Rs 2400

Solution

$$A \text{ work} = \frac{5}{10} = \frac{1}{2}$$

$$B \text{ work} = \frac{5}{15} = \frac{1}{3}$$

$$A : B = \frac{1}{2} : \frac{1}{3} = 3 : 2$$

$$A = 4000 \left(\frac{3}{5} \right) = 2400$$

AnswerBox

(
boxedRs 2400
)

MCQ 83

A and B together finish a work in 10 days. A alone takes 15 days. If they earn Rs 6000 together, B's share is:

- A. Rs 2500 B. Rs 3000
C. Rs 2000 D. Rs 1500

Solution

$$\frac{1}{B} = \frac{1}{10} - \frac{1}{15} = \frac{1}{30}$$

$$A : B = \frac{1}{15} : \frac{1}{30} = 2 : 1$$

$$B = 6000 \left(\frac{1}{3} \right) = 2000$$

AnswerBox

(
boxedRs 2000
)

MCQ 84

One man is 1.5 times as efficient as one woman. Six men and eight women earn Rs 17000. The women as a group receive:

- A. Rs 10000 B. Rs 8000
C. Rs 7000 D. Rs 9000

Solution

$$1M = 1.5W$$

$$6M = 9W$$

$$\text{Men:Women contribution} = 9 : 8$$

$$\text{Women share} = 17000 \left(\frac{8}{17} \right) = 8000$$

AnswerBox

(
boxedRs 8000
)

MCQ 85

A pipe fills a tank in 6 hours and a leak empties it in 12 hours. If both are open, the tank fills in:

- A. 12 B. 6
C. 8 D. 18

Solution

$$\text{Net rate} = \frac{1}{6} - \frac{1}{12} = \frac{1}{12}$$

$$T = 12 \text{ hours}$$

AnswerBox

(
boxed12
) hours

MCQ 86

An inlet fills a tank in 4 hours and an outlet empties it in 6 hours. With both open, the tank fills in:

- A. 8 B. 10
C. 24 D. 12

Solution

$$\text{Net rate} = \frac{1}{4} - \frac{1}{6}$$

$$= \frac{3-2}{12} = \frac{1}{12}$$

$$T = 12$$

AnswerBox

(
boxed12
) hours

MCQ 87

Pipe A fills a tank in 3 hours and pipe B fills it in 6 hours. Together they fill it in:

- A. 3 B. 4
C. 2 D. 1

Solution

$$\frac{1}{T} = \frac{1}{3} + \frac{1}{6} = \frac{1}{2}$$

$$T = 2$$

AnswerBox

(
boxed2
) hours

MCQ 88

Pipe A fills a tank in 4 hours and pipe B in 12 hours. Together they require:

- A. 6 B. 3
C. 2 D. 4

Solution

$$\frac{1}{T} = \frac{1}{4} + \frac{1}{12} = \frac{1}{3}$$

$$T = 3$$

AnswerBox

(
boxed3
) hours

MCQ 89

Two inlet pipes fill a tank in 5 and 10 hours, while a leak empties it in 20 hours. With all open, the tank fills in:

- A. 4 B. 3
C. 5 D. 8

Solution

$$\text{Net} = \frac{1}{5} + \frac{1}{10} - \frac{1}{20}$$

$$= \frac{4+2-1}{20} = \frac{1}{4}$$

$$T = 4$$

AnswerBox

(
boxed4
) hours

MCQ 90

Two pipes fill a tank in 6 and 8 hours, while an outlet empties it in 24 hours. All three together fill the tank in:

- A. 3 B. 5
C. 6 D. 4

Solution

$$\text{Net} = \frac{1}{6} + \frac{1}{8} - \frac{1}{24}$$

$$= \frac{4+3-1}{24} = \frac{6}{24} = \frac{1}{4}$$

$$T = 4$$

AnswerBox

(
boxed4
) hours

MCQ 91

A pipe fills a tank in 8 hours, but a leak can empty the full tank in 12 hours. With both open, filling takes:

A. 20 B. 30

C. 24 D. 16

Solution

$$\begin{aligned}\text{Net} &= \frac{1}{8} - \frac{1}{12} \\ &= \frac{3-2}{24} = \frac{1}{24} \\ T &= 24\end{aligned}$$

AnswerBox

(
boxed24
) hours

MCQ 92

Pipes A and B fill a tank in 10 and 15 hours, while pipe C empties it in 30 hours. All are opened together. Time required is:

A. 10 B.

frac152

C. 6 D. 8

Solution

$$\begin{aligned}\text{Net} &= \frac{1}{10} + \frac{1}{15} - \frac{1}{30} \\ &= \frac{3+2-1}{30} = \frac{4}{30} = \frac{2}{15} \\ T &= \frac{15}{2}\end{aligned}$$

AnswerBox

(
boxed
frac152
) hours

MCQ 93

Pipe A fills a tank in 3 hours. It is opened alone for 1 hour; then pipe B, which fills in 6 hours, is also opened. Total filling time is:

A. 2

frac13

B. 2

C. 2

frac12

D. 3

qsourcePast-paper delayed-pipe pattern (adapted).

Solution

$$A \text{ in } 1 \text{ h} = \frac{1}{3}$$

$$\text{Remaining} = \frac{2}{3}$$

$$A + B = \frac{1}{3} + \frac{1}{6} = \frac{1}{2}$$

$$t = \frac{2/3}{1/2} = \frac{4}{3}$$

$$T = 1 + \frac{4}{3} = \frac{7}{3} = 2\frac{1}{3}$$

AnswerBox

(
boxed2
frac13
) hours

MCQ 94

Pipe A fills a tank in 4 hours. It runs alone for 1 hour, then pipe B (6 hours) is opened too. Total filling time is:

A. 2 B. 2

frac12

C. 3 D. 2

frac45

Solution

$$\text{Done} = \frac{1}{4}$$

$$\text{Remaining} = \frac{3}{4}$$

$$A + B = \frac{1}{4} + \frac{1}{6} = \frac{5}{12}$$

$$t = \frac{3/4}{5/12} = \frac{9}{5}$$

$$T = 1 + \frac{9}{5} = \frac{14}{5} = 2\frac{4}{5}$$

AnswerBox

(

boxed2

frac45

) hours

MCQ 95

A tank holds 1200 litres. A pipe supplies 200 litres per minute. Ignoring losses, filling time is:

A. 8 B. 10

C. 6 D. 5

Solution

$$T = \frac{1200}{200} = 6$$

AnswerBox

(

boxed6

) minutes

MCQ 96

An inlet supplies 150 L/min and an outlet drains 50 L/min. For a 1000 L tank, the net filling time is:

A. 15 B. 10

C. 8 D. 12

Solution

$$\text{Net flow} = 150 - 50 = 100 \text{ L/min}$$

$$T = \frac{1000}{100} = 10$$

AnswerBox

(

boxed10

) minutes

MCQ 97

A full tank can be emptied by an outlet in 8 hours, while an inlet can fill it in 12 hours. If both are opened on a full tank, it becomes empty in:

A. 24 B. 12

C. 18 D. 30

Solution

$$\text{Net emptying rate} = \frac{1}{8} - \frac{1}{12}$$

$$= \frac{1}{24}$$

$$T = 24$$

AnswerBox

(

boxed24

) hours

MCQ 98

Two outlets can empty a full tank separately in 10 and 15 hours. Together they empty it in:

A. 5 B. 8

C. 12 D. 6

Solution

$$\frac{1}{T} = \frac{1}{10} + \frac{1}{15}$$

$$= \frac{3+2}{30} = \frac{1}{6}$$

$$T = 6$$

AnswerBox

(

boxed6

) hours

MCQ 99

A tank is already half full. An inlet can fill the whole tank in 8 hours and an outlet can empty the whole tank in 12 hours. If both are opened, how long will the remaining half take to fill?

- A. 16 B. 24
C. 12 D. 8

Solution

$$\text{Net rate} = \frac{1}{8} - \frac{1}{12} = \frac{1}{24}$$

$$\text{Remaining work} = \frac{1}{2}$$

$$T = \frac{1/2}{1/24} = 12$$

AnswerBox

(
boxed12
) hours

MCQ 100

A pipe fills a tank in 9 hours and an outlet empties it in 18 hours. If both remain open, the tank fills in:

- A. 27 B. 18
C. 9 D. 12

Solution

$$\text{Net} = \frac{1}{9} - \frac{1}{18} = \frac{1}{18}$$

$$T = 18$$

AnswerBox

(
boxed18
) hours

Rapid Revision Grid - Time & Work

Core shortcuts

$$1\text{-day work} = \frac{1}{T}$$

$$T_{A+B} = \frac{AB}{A+B}$$

$$E_A : E_B = T_B : T_A$$

$$M_1 D_1 H_1 = M_2 D_2 H_2$$

Contribution / wages When workers work for the same time:

$$\text{Wage share} \propto \text{daily efficiency}$$

When times differ:

$$\text{Wage share} \propto \text{rate} \times \text{time}$$

Pipes

$$\text{Inlet} = +\frac{1}{T}, \quad \text{Outlet} = -\frac{1}{T}$$

$$\text{Net time} = \frac{1}{\text{net rate}}$$

Fast check More workers or greater efficiency must reduce the required time. An outlet or leak must increase filling time. These two checks eliminate many wrong options before full calculation.



THE MATH HUB

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SPEED, DISTANCE & TIME MCQs

100 FULLY SOLVED MCQs

PPSC, FPSC & ONE PAPER EXAMS

NTS • CSS MPT • PMS • Government Job Tests

Average Speed • Relative Speed • Trains • Boats & Streams • Races

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SPEED, DISTANCE & TIME | 100 FULLY SOLVED MCQs**Fast Speed, Distance & Time Foundation****Core triangle**

$$S = \frac{D}{T}, \quad D = ST, \quad T = \frac{D}{S}$$

Unit conversion

$$1 \text{ km/h} = \frac{5}{18} \text{ m/s}$$

$$1 \text{ m/s} = \frac{18}{5} \text{ km/h}$$

Relative speed Opposite directions:

$$S_{rel} = S_1 + S_2$$

Same direction:

$$S_{rel} = |S_1 - S_2|$$

Train crossing Pole/person:

$$T = \frac{L_{train}}{S_{rel}}$$

Platform/train:

$$T = \frac{L_1 + L_2}{S_{rel}}$$

Boats and streams

$$D = B + R, \quad U = B - R$$

$$B = \frac{D + U}{2}, \quad R = \frac{D - U}{2}$$

Exam-speed principle Convert units first. For equal distance questions use inverse speed-time ratios. For trains and meetings, replace two moving bodies by one relative speed. For round trips over equal distances, do not use the simple arithmetic mean unless times are equal.

Average speed

$$\bar{S} = \frac{\text{Total distance}}{\text{Total time}}$$

For equal distances at speeds x, y :

$$\bar{S} = \frac{2xy}{x + y}$$

Basic Speed, Distance, Time & Unit Conversion**MCQ 1**

A car travels 240 km in 6 hours. What is its speed?

- A. 40 km/h B. 36 km/h
C. 48 km/h D. 60 km/h

Solution

$$S = \frac{D}{T}$$

$$S = \frac{240}{6} = 40 \text{ km/h}$$

Final Answer

40 km/h

MCQ 2

A train travels at 100 km/h. How long will it take to cover 25 km?

- A. 0.20 h B. 0.25 h
C. 0.30 h D. 0.50 h

FPSC official practice-paper pattern (adapted).

Solution

$$T = \frac{D}{S}$$

$$T = \frac{25}{100} = 0.25 \text{ h}$$

$$0.25 \text{ h} = 15 \text{ min}$$

Final Answer

0.25 h

MCQ 3

A vehicle moves at 72 km/h for 25 minutes. Find the distance travelled.

- A. 24 km B. 30 km
C. 36 km D. 40 km

Solution

$$25 \text{ min} = \frac{25}{60} = \frac{5}{12} \text{ h}$$

$$D = ST = 72 \left(\frac{5}{12} \right)$$

$$D = 6(5) = 30 \text{ km}$$

Final Answer

30 km

MCQ 4

Convert 54 km/h into m/s.

- A. 12 m/s B. 15 m/s
C. 18 m/s D. 20 m/s

Solution

$$54 \text{ km/h} = 54 \left(\frac{5}{18} \right) \text{ m/s}$$

$$= 3(5) = 15 \text{ m/s}$$

Final Answer

15 m/s

MCQ 5

Convert 20 m/s into km/h.

- A. 64 km/h B. 68 km/h
C. 72 km/h D. 80 km/h

Solution

$$20 \text{ m/s} = 20 \left(\frac{18}{5} \right) \text{ km/h}$$

$$= 4(18) = 72 \text{ km/h}$$

Final Answer

72 km/h

MCQ 6

Convert 90 km/h into centimetres per minute.

- A. 150000 cm/min B. 90000 cm/min
C. 15000 cm/min D. 900000 cm/min

Past-paper pattern (adapted).

Solution

$$90 \text{ km} = 90 \times 100000 = 9000000 \text{ cm}$$

$$1 \text{ h} = 60 \text{ min}$$

$$\frac{9000000}{60} = 150000 \text{ cm/min}$$

Final Answer

150000 cm/min

MCQ 7

A cyclist covers 750 m in 2 minutes 30 seconds. Find the speed in km/h.

- A. 15 km/h B. 16 km/h
C. 18 km/h D. 20 km/h

Past-paper pattern (adapted).

Solution

$$750 \text{ m} = 0.75 \text{ km}$$

$$2 \text{ min } 30 \text{ s} = 2.5 \text{ min} = \frac{2.5}{60} \text{ h} = \frac{1}{24} \text{ h}$$

$$S = \frac{0.75}{1/24} = 0.75(24) = 18 \text{ km/h}$$

Final Answer

18 km/h

MCQ 8

A train travels 16 km in 20 minutes. Find its speed in km/h.

- A. 36 km/h B. 45 km/h
C. 48 km/h D. 50 km/h

Past-paper pattern (adapted).

Solution

$$20 \text{ min} = \frac{1}{3} \text{ h}$$

$$S = \frac{16}{1/3} = 16(3) = 48 \text{ km/h}$$

Final Answer

48 km/h

MCQ 9

A car moves at 36 km/h. How far does it travel in 20 seconds?

- A. 120 m B. 160 m
C. 180 m D. 200 m

Past-paper pattern (adapted).

Solution

$$36 \text{ km/h} = 36 \left(\frac{5}{18} \right) = 10 \text{ m/s}$$

$$D = ST = 10(20) = 200 \text{ m}$$

Final Answer

200 m

MCQ 10

Convert 15 m/s into km/h.

- A. 45 km/h B. 50 km/h
C. 54 km/h D. 60 km/h

Solution

$$15 \left(\frac{18}{5} \right) = 3(18) = 54 \text{ km/h}$$

Final Answer

54 km/h

MCQ 11

A runner covers 1.5 km in 2.5 minutes. Find the speed in km/h.

- A. 30 km/h B. 32 km/h
C. 36 km/h D. 40 km/h

Solution

$$2.5 \text{ min} = \frac{2.5}{60} \text{ h} = \frac{1}{24} \text{ h}$$

$$S = \frac{1.5}{1/24} = 1.5(24) = 36 \text{ km/h}$$

Final Answer

36 km/h

MCQ 12

A car travels at 40 km/h for 2 hours 45 minutes. Find the distance.

- A. 100 km B. 105 km
C. 110 km D. 120 km

Solution

$$2 \text{ h } 45 \text{ min} = 2 + \frac{45}{60} = 2 + \frac{3}{4} = 2\frac{3}{4} \text{ h}$$

$$D = 40 \left(2\frac{3}{4} \right) = 10(11) = 110 \text{ km}$$

Final Answer

110 km

MCQ 13

A bus maintains 64 km/h for 4.5 hours. Find the distance covered.

- A. 256 km B. 272 km
C. 288 km D. 320 km

Solution

$$D = ST$$

$$D = 64(4.5) = 64\left(\frac{9}{2}\right)$$

$$D = 32(9) = 288 \text{ km}$$

Final Answer

288 km

MCQ 14

A vehicle covers 300 m in 24 seconds. Find its speed in km/h.

- A. 36 km/h B. 40 km/h
C. 45 km/h D. 50 km/h

Solution

$$S = \frac{300}{24} = 12.5 \text{ m/s}$$

$$12.5\left(\frac{18}{5}\right) = 2.5(18) = 45 \text{ km/h}$$

Final Answer

45 km/h

MCQ 15

A car travels at 75 km/h for 1 hour 36 minutes. Find the distance.

- A. 110 km B. 115 km
C. 120 km D. 125 km

Solution

$$1 \text{ h } 36 \text{ min} = 1 + \frac{36}{60} = 1.6 \text{ h}$$

$$D = 75(1.6) = 120 \text{ km}$$

Final Answer

120 km

Speed Change, Early/Late Arrival & Proportionality**MCQ 16**

A man travels at 12 km/h instead of 9 km/h and covers 10 km more in the same time. What distance does he cover at 12 km/h?

- A. 30 km B. 36 km
C. 40 km D. 48 km

Past-paper pattern (adapted).

Solution

$$D_{12} : D_9 = 12 : 9 = 4 : 3$$

$$4x - 3x = 10$$

$$x = 10$$

$$D_{12} = 4x = 40 \text{ km}$$

Final Answer

40 km

MCQ 17

A train covers 180 km. How much time is saved if its speed is increased from 60 km/h to 70 km/h?

- A. 20 min B. 24 min
C. 26 min D. 30 min

Past-paper pattern (adapted).

Solution

$$T_1 = \frac{180}{60} = 3 \text{ h} = 180 \text{ min}$$

$$T_2 = \frac{180}{70} = \frac{18}{7} \text{ h}$$

$$T_2 = \frac{18}{7}(60) = \frac{1080}{7} \approx 154.29 \text{ min}$$

$$\text{Saving} = 180 - 154.29 \approx 25.71 \text{ min}$$

$$\approx 26 \text{ min}$$

Final Answer

26 min (approx.)

MCQ 18

An aeroplane has to cover 600 km at 200 km/h. What is the normal journey time?

- A. 2 h B. 2.5 h
C. 3 h D. 4 h

Past-paper pattern (adapted).

Solution

$$T = \frac{D}{S} = \frac{600}{200} = 3 \text{ h}$$

Final Answer

3 h

MCQ 19

For a fixed distance, a car takes 1 hour less at 75 km/h than at 60 km/h. Find the distance.

- A. 240 km B. 300 km
C. 360 km D. 450 km

Solution

$$\frac{D}{60} - \frac{D}{75} = 1$$

$$D \left(\frac{75 - 60}{4500} \right) = 1$$

$$D \left(\frac{15}{4500} \right) = 1$$

$$\frac{D}{300} = 1$$

$$D = 300 \text{ km}$$

Final Answer

300 km

MCQ 20

If speed is increased by 20% for the same distance, by what percentage does time decrease?

- A. $16\frac{2}{3}\%$ B. 20%
C. 25% D. $33\frac{1}{3}\%$

Solution

$$\text{Old speed} = 100$$

$$\text{New speed} = 120$$

$$\text{Time ratio} = \frac{100}{120} = \frac{5}{6}$$

$$\text{Decrease} = 1 - \frac{5}{6} = \frac{1}{6}$$

$$\frac{1}{6} \times 100 = 16\frac{2}{3}$$

$$\text{Decrease} = 16\frac{2}{3} \text{ percent}$$

Final Answer $16\frac{2}{3}\%$ **MCQ 21**

If speed decreases by 25% for the same distance, by what percentage does time increase?

- A. 25% B. 30%
C. $33\frac{1}{3}\%$ D. 40%

Solution

$$\text{Old speed} = 100, \quad \text{New speed} = 75$$

$$\text{Time factor} = \frac{100}{75} = \frac{4}{3}$$

$$\text{Increase} = \frac{4}{3} - 1 = \frac{1}{3}$$

$$\frac{1}{3} \times 100 = 33\frac{1}{3}$$

$$\text{Increase} = 33\frac{1}{3} \text{ percent}$$

Final Answer $33\frac{1}{3}\%$ **MCQ 22**

A journey takes 4 hours at 45 km/h. What speed is required to complete the same journey in 3 hours?

- A. 55 km/h B. 60 km/h
C. 65 km/h D. 70 km/h

Solution

$$D = 45(4) = 180 \text{ km}$$

$$S = \frac{180}{3} = 60 \text{ km/h}$$

Final Answer

60 km/h

MCQ 23

At 50 km/h a driver is 30 minutes late; at 60 km/h the driver is 10 minutes early. Find the journey distance.

- A. 150 km B. 180 km
C. 200 km D. 240 km

Solution

$$\text{Time difference} = 30 + 10 = 40 \text{ min} = \frac{2}{3} \text{ h}$$

$$\frac{D}{50} - \frac{D}{60} = \frac{2}{3}$$

$$D \left(\frac{10}{3000} \right) = \frac{2}{3}$$

$$\frac{D}{300} = \frac{2}{3}$$

$$D = 200 \text{ km}$$

Final Answer

200 km

MCQ 24

At 5 km/h a person is 8 minutes late; at 6 km/h the person is 2 minutes early. Find the distance.

- A. 4 km B. 5 km
C. 6 km D. 7 km

Solution

$$\text{Time difference} = 8 + 2 = 10 \text{ min} = \frac{1}{6} \text{ h}$$

$$\frac{D}{5} - \frac{D}{6} = \frac{1}{6}$$

$$D \left(\frac{1}{30} \right) = \frac{1}{6}$$

$$D = 5 \text{ km}$$

Final Answer

5 km

MCQ 25

For the same distance, speeds are in the ratio 3 : 4. What is the corresponding ratio of times?

- A. 3:4 B. 4:3
C. 9:16 D. 16:9

Solution

$$T \propto \frac{1}{S}$$

$$T_1 : T_2 = S_2 : S_1$$

$$= 4 : 3$$

Final Answer

4 : 3

Average Speed**MCQ 26**

A car travels from A to B at 60 km/h and returns over the same distance at 40 km/h. Find the average speed.

- A. 45 km/h B. 48 km/h
C. 50 km/h D. 52 km/h

Solution

$$\bar{S} = \frac{2xy}{x+y}$$

$$= \frac{2(60)(40)}{60+40}$$

$$= \frac{4800}{100} = 48 \text{ km/h}$$

Final Answer

48 km/h

MCQ 27

A vehicle runs for equal times at 30 km/h and 60 km/h. Find the average speed.

- A. 40 km/h B. 45 km/h
C. 48 km/h D. 50 km/h

Solution

$$\text{Equal times} \Rightarrow \bar{S} = \frac{30+60}{2}$$

$$= 45 \text{ km/h}$$

Final Answer

45 km/h

MCQ 28

A car covers 120 km at 40 km/h and another 120 km at 60 km/h. Find the average speed.

- A. 45 km/h B. 48 km/h
C. 50 km/h D. 52 km/h

Solution

$$T_1 = \frac{120}{40} = 3 \text{ h}$$

$$T_2 = \frac{120}{60} = 2 \text{ h}$$

$$\bar{S} = \frac{120+120}{3+2} = \frac{240}{5} = 48 \text{ km/h}$$

Final Answer

48 km/h

MCQ 29

A vehicle travels 2 hours at 50 km/h and 3 hours at 70 km/h. Find its average speed.

- A. 58 km/h B. 60 km/h
C. 62 km/h D. 64 km/h

Solution

$$D_1 = 50(2) = 100$$

$$D_2 = 70(3) = 210$$

$$\bar{S} = \frac{100 + 210}{2 + 3} = \frac{310}{5} = 62 \text{ km/h}$$

Final Answer

62 km/h

MCQ 30

Half of a journey is covered at 30 km/h and the other half at 60 km/h. Find the average speed.

- A. 36 km/h B. 40 km/h
C. 45 km/h D. 48 km/h

Solution

$$\bar{S} = \frac{2(30)(60)}{30 + 60}$$

$$= \frac{3600}{90} = 40 \text{ km/h}$$

Final Answer

40 km/h

MCQ 31

Three equal distances are travelled at 30, 40, and 60 km/h. Find the average speed.

- A. 36 km/h B. 40 km/h
C. 42 km/h D. 45 km/h

Solution

$$\bar{S} = \frac{3}{\frac{1}{30} + \frac{1}{40} + \frac{1}{60}}$$

$$= \frac{3}{\frac{4+3+2}{120}}$$

$$= \frac{3}{9/120} = 40 \text{ km/h}$$

Final Answer

40 km/h

MCQ 32

A car travels for equal times at 40, 50, and 60 km/h. Find the average speed.

- A. 48 km/h B. 50 km/h
C. 52 km/h D. 54 km/h

Solution

$$\text{Equal times} \Rightarrow \bar{S} = \frac{40 + 50 + 60}{3}$$

$$= \frac{150}{3} = 50 \text{ km/h}$$

Final Answer

50 km/h

MCQ 33

A car covers 100 km at 50 km/h and 150 km at 75 km/h. Find its average speed.

- A. 60 km/h B. 62.5 km/h
C. 65 km/h D. 67.5 km/h

Solution

$$T_1 = \frac{100}{50} = 2 \text{ h}$$

$$T_2 = \frac{150}{75} = 2 \text{ h}$$

$$\bar{S} = \frac{250}{4} = 62.5 \text{ km/h}$$

Final Answer

62.5 km/h

MCQ 34

A bus covers 90 km in 1.5 hours and 120 km in 2 hours. Find the average speed.

- A. 55 km/h B. 60 km/h
C. 62 km/h D. 65 km/h

Solution

$$D = 90 + 120 = 210 \text{ km}$$

$$T = 1.5 + 2 = 3.5 \text{ h}$$

$$\bar{S} = \frac{210}{3.5} = 60 \text{ km/h}$$

Final Answer

60 km/h

MCQ 35

A traveller spends half the total time at 20 km/h and half at 80 km/h. Find the average speed.

- A. 40 km/h B. 45 km/h
C. 50 km/h D. 55 km/h

Solution

$$\begin{aligned}\text{Equal times} \Rightarrow \bar{S} &= \frac{20 + 80}{2} \\ &= 50 \text{ km/h}\end{aligned}$$

Final Answer

50 km/h

Relative Speed, Meeting & Catch-Up**MCQ 36**

Two cars start 300 km apart and move toward each other at 60 km/h and 40 km/h. When do they meet?

- A. 2 h B. 2.5 h
C. 3 h D. 4 h

Solution

$$S_{rel} = 60 + 40 = 100 \text{ km/h}$$

$$T = \frac{300}{100} = 3 \text{ h}$$

Final Answer

3 h

MCQ 37

A car at 80 km/h is 100 km behind a car moving in the same direction at 60 km/h. How long will it take to catch it?

- A. 4 h B. 5 h
C. 6 h D. 8 h

Solution

$$S_{rel} = 80 - 60 = 20 \text{ km/h}$$

$$T = \frac{100}{20} = 5 \text{ h}$$

Final Answer

5 h

MCQ 38

Two walkers move toward each other at 5 km/h and 7 km/h from points 36 km apart. Find the meeting time.

- A. 2 h B. 2.5 h
C. 3 h D. 4 h

Solution

$$S_{rel} = 5 + 7 = 12 \text{ km/h}$$

$$T = \frac{36}{12} = 3 \text{ h}$$

Final Answer

3 h

MCQ 39

Two vehicles move in the same direction at 72 km/h and 54 km/h. If the faster one is 90 km behind, when will it catch the slower one?

- A. 4 h B. 5 h
C. 6 h D. 7 h

Solution

$$S_{rel} = 72 - 54 = 18 \text{ km/h}$$

$$T = \frac{90}{18} = 5 \text{ h}$$

Final Answer

5 h

MCQ 40

Two cyclists start from the same point in opposite directions at 15 km/h and 18 km/h. How far apart are they after 2 hours?

- A. 60 km B. 64 km
C. 66 km D. 72 km

Solution

$$S_{rel} = 15 + 18 = 33 \text{ km/h}$$

$$D = 33(2) = 66 \text{ km}$$

Final Answer

66 km

MCQ 41

Two cars move in opposite directions at 100 km/h and 80 km/h. How far apart will they be after 2.5 hours?

- A. 400 km B. 420 km
C. 450 km D. 480 km

Solution

$$S_{rel} = 100 + 80 = 180 \text{ km/h}$$

$$D = 180(2.5) = 450 \text{ km}$$

Final Answer

450 km

MCQ 42

A person walks at 6 km/h. One hour later a runner follows at 10 km/h. How long after starting will the runner catch the person?

- A. 1 h B. 1.5 h
C. 2 h D. 2.5 h

Solution

$$\text{Initial gap} = 6(1) = 6 \text{ km}$$

$$S_{rel} = 10 - 6 = 4 \text{ km/h}$$

$$T = \frac{6}{4} = 1.5 \text{ h}$$

Final Answer

1.5 h

MCQ 43

Two persons start 84 km apart and move toward each other at 8 km/h and 6 km/h. Find the meeting time.

- A. 5 h B. 6 h
C. 7 h D. 8 h

Solution

$$S_{rel} = 8 + 6 = 14 \text{ km/h}$$

$$T = \frac{84}{14} = 6 \text{ h}$$

Final Answer

6 h

MCQ 44

A faster cyclist moves at 24 km/h and a slower cyclist at 18 km/h in the same direction. What gap is closed in 2 hours?

- A. 10 km B. 12 km
C. 14 km D. 16 km

Solution

$$S_{rel} = 24 - 18 = 6 \text{ km/h}$$

$$D = 6(2) = 12 \text{ km}$$

Final Answer

12 km

MCQ 45

Two travellers start from opposite ends of a 300 km route at 40 km/h and 60 km/h. How far does the slower traveller cover before they meet?

- A. 100 km B. 120 km
C. 150 km D. 180 km

Solution

$$T = \frac{300}{40 + 60} = 3 \text{ h}$$

$$D_{\text{slow}} = 40(3) = 120 \text{ km}$$

Final Answer

120 km

Trains, Platforms & Overtaking**MCQ 46**

A 120 m long train moves at 54 km/h. How long does it take to pass a pole?

- A. 6 s B. 8 s
C. 10 s D. 12 s

Solution

$$54 \text{ km/h} = 15 \text{ m/s}$$

$$T = \frac{120}{15} = 8 \text{ s}$$

Final Answer

8 s

MCQ 47

A 150 m long train moves at 72 km/h. How long does it take to pass a pole?

- A. 6 s B. 7.5 s
C. 8 s D. 10 s

Solution

$$72 \text{ km/h} = 20 \text{ m/s}$$

$$T = \frac{150}{20} = 7.5 \text{ s}$$

Final Answer

7.5 s

MCQ 48

A 180 m train at 54 km/h crosses a 120 m platform. Find the time.

- A. 15 s B. 18 s
C. 20 s D. 24 s

Solution

$$\text{Total distance} = 180 + 120 = 300 \text{ m}$$

$$54 \text{ km/h} = 15 \text{ m/s}$$

$$T = \frac{300}{15} = 20 \text{ s}$$

Final Answer

20 s

MCQ 49

A 100 m train at 72 km/h crosses a 200 m platform. Find the time.

- A. 12 s B. 15 s
C. 18 s D. 20 s

Solution

$$D = 100 + 200 = 300 \text{ m}$$

$$72 \text{ km/h} = 20 \text{ m/s}$$

$$T = \frac{300}{20} = 15 \text{ s}$$

Final Answer

15 s

MCQ 50

A 150 m train moving at 54 km/h passes a man walking at 6 km/h in the opposite direction. Find the time.

- A. 8 s B. 9 s
C. 10 s D. 12 s

Solution

$$S_{rel} = 54 + 6 = 60 \text{ km/h}$$

$$60 \text{ km/h} = \frac{50}{3} \text{ m/s}$$

$$T = \frac{150}{50/3} = 150 \left(\frac{3}{50} \right) = 9 \text{ s}$$

Final Answer

9 s

MCQ 51

A 150 m train moving at 54 km/h overtakes a man walking at 6 km/h in the same direction. Find the time.

- A. 9 s B. 10 s
C. 11.25 s D. 12.5 s

Solution

$$S_{rel} = 54 - 6 = 48 \text{ km/h}$$

$$48 \text{ km/h} = \frac{40}{3} \text{ m/s}$$

$$T = \frac{150}{40/3} = 150 \left(\frac{3}{40} \right) = 11.25 \text{ s}$$

Final Answer

11.25 s

MCQ 52

Two trains of lengths 120 m and 180 m move in opposite directions at 54 km/h and 36 km/h. Find the crossing time.

- A. 10 s B. 12 s
C. 15 s D. 18 s

Solution

$$D = 120 + 180 = 300 \text{ m}$$

$$S_{rel} = 54 + 36 = 90 \text{ km/h} = 25 \text{ m/s}$$

$$T = \frac{300}{25} = 12 \text{ s}$$

Final Answer

12 s

MCQ 53

Two trains of lengths 150 m and 100 m move in the same direction at 72 km/h and 54 km/h. How long does the faster train take to completely overtake the slower?

- A. 40 s B. 45 s
C. 50 s D. 60 s

Solution

$$D = 150 + 100 = 250 \text{ m}$$

$$S_{rel} = 72 - 54 = 18 \text{ km/h} = 5 \text{ m/s}$$

$$T = \frac{250}{5} = 50 \text{ s}$$

Final Answer

50 s

MCQ 54

Two trains move in opposite directions at 62 km/h and 40 km/h. One train is 260 m long and they cross in 18 s. Find the length of the other train.

- A. 220 m B. 240 m
C. 250 m D. 260 m

Past-paper pattern (adapted).

Solution

$$S_{rel} = 62 + 40 = 102 \text{ km/h}$$

$$102 \left(\frac{5}{18} \right) = \frac{85}{3} \text{ m/s}$$

$$\text{Total length} = \frac{85}{3} (18) = 510 \text{ m}$$

$$L = 510 - 260 = 250 \text{ m}$$

Final Answer

250 m

MCQ 55

A 180 m train moves at 54 km/h and crosses a platform in 24 s. Find the platform length.

- A. 160 m B. 180 m
C. 200 m D. 220 m

Solution

$$54 \text{ km/h} = 15 \text{ m/s}$$

$$\text{Total distance} = 15(24) = 360 \text{ m}$$

$$\text{Platform} = 360 - 180 = 180 \text{ m}$$

Final Answer

180 m

MCQ 56

A train at 54 km/h passes a pole in 12 s. How long will it take to cross a 180 m platform?

- A. 18 s B. 20 s
C. 22 s D. 24 s

Solution

$$54 \text{ km/h} = 15 \text{ m/s}$$

$$L_{\text{train}} = 15(12) = 180 \text{ m}$$

$$D = 180 + 180 = 360 \text{ m}$$

$$T = \frac{360}{15} = 24 \text{ s}$$

Final Answer

24 s

MCQ 57

A train at 72 km/h crosses a 300 m bridge in 25 s. Find the train length.

- A. 180 m B. 200 m
C. 220 m D. 250 m

Solution

$$72 \text{ km/h} = 20 \text{ m/s}$$

$$\text{Total distance} = 20(25) = 500 \text{ m}$$

$$L_{\text{train}} = 500 - 300 = 200 \text{ m}$$

Final Answer

200 m

MCQ 58

Two equal-length trains move in opposite directions at 45 km/h and 63 km/h and cross in 10 s. Find the length of each train.

- A. 120 m B. 135 m
C. 150 m D. 180 m

Solution

$$S_{\text{rel}} = 45 + 63 = 108 \text{ km/h} = 30 \text{ m/s}$$

$$\text{Total length} = 30(10) = 300 \text{ m}$$

$$2L = 300$$

$$L = 150 \text{ m}$$

Final Answer

150 m

MCQ 59

Two trains, 180 m and 220 m long, move in the same direction at 72 km/h and 54 km/h. Find the complete overtaking time.

- A. 60 s B. 70 s
C. 80 s D. 90 s

Solution

$$D = 180 + 220 = 400 \text{ m}$$

$$S_{\text{rel}} = 18 \text{ km/h} = 5 \text{ m/s}$$

$$T = \frac{400}{5} = 80 \text{ s}$$

Final Answer

80 s

MCQ 60

A 250 m train passes a pole in 10 s. Find its speed.

- A. 72 km/h B. 80 km/h
C. 90 km/h D. 100 km/h

Solution

$$S = \frac{250}{10} = 25 \text{ m/s}$$

$$25 \left(\frac{18}{5} \right) = 90 \text{ km/h}$$

Final Answer

90 km/h

Boats & Streams**MCQ 61**

A boat moves downstream at 6 km/h and upstream at 4 km/h. Find the speed of the stream.

- A. 1 km/h B. 2 km/h
C. 3 km/h D. 5 km/h

Past-paper pattern (adapted).

Solution

$$S_{\text{stream}} = \frac{D - U}{2}$$

$$= \frac{6 - 4}{2} = 1 \text{ km/h}$$

Final Answer

1 km/h

MCQ 62

A boat moves downstream at 10 km/h and upstream at 6 km/h. Find its speed in still water.

- A. 7 km/h B. 8 km/h
C. 9 km/h D. 10 km/h

Solution

$$S_{\text{boat}} = \frac{D + U}{2}$$

$$= \frac{10 + 6}{2} = 8 \text{ km/h}$$

Final Answer

8 km/h

MCQ 63

A boat moves at 12 km/h in still water and the stream speed is 3 km/h. Find downstream and upstream speeds.

- A. 15, 9 km/h B. 14, 10 km/h
C. 12, 3 km/h D. 9, 15 km/h

Solution

$$D = 12 + 3 = 15 \text{ km/h}$$

$$U = 12 - 3 = 9 \text{ km/h}$$

Final Answer

15 km/h, 9 km/h

MCQ 64

A boat covers 72 km downstream at 12 km/h. Find the time.

- A. 5 h B. 6 h
C. 7 h D. 8 h

Solution

$$T = \frac{72}{12} = 6 \text{ h}$$

Final Answer

6 h

MCQ 65

A boat covers 48 km upstream at 8 km/h. Find the time.

- A. 4 h B. 5 h
C. 6 h D. 8 h

Solution

$$T = \frac{48}{8} = 6 \text{ h}$$

Final Answer

6 h

MCQ 66

A boat moves at 10 km/h in still water and the stream at 2 km/h. How long does it take to go 36 km downstream and 24 km upstream?

- A. 5 h B. 6 h
C. 7 h D. 8 h

Solution

$$D = 10 + 2 = 12 \text{ km/h}$$

$$U = 10 - 2 = 8 \text{ km/h}$$

$$T = \frac{36}{12} + \frac{24}{8} = 3 + 3 = 6 \text{ h}$$

Final Answer

6 h

MCQ 67

A boat covers 60 km downstream in 5 hours and the same distance upstream in 10 hours. Find the speed in still water.

- A. 8 km/h B. 9 km/h
C. 10 km/h D. 12 km/h

Solution

$$D = \frac{60}{5} = 12 \text{ km/h}$$

$$U = \frac{60}{10} = 6 \text{ km/h}$$

$$S_{\text{boat}} = \frac{12 + 6}{2} = 9 \text{ km/h}$$

Final Answer

9 km/h

MCQ 68

A rower covers 30 km downstream in 2 hours and 30 km upstream in 3 hours. Find the stream speed.

- A. 2 km/h B. 2.5 km/h
C. 3 km/h D. 5 km/h

Solution

$$D = \frac{30}{2} = 15 \text{ km/h}$$

$$U = \frac{30}{3} = 10 \text{ km/h}$$

$$S_{\text{stream}} = \frac{15 - 10}{2} = 2.5 \text{ km/h}$$

Final Answer

2.5 km/h

MCQ 69

A boat has downstream speed 10 km/h and the stream speed is 2 km/h. Find its upstream speed.

- A. 4 km/h B. 6 km/h
C. 8 km/h D. 12 km/h

Solution

$$S_{\text{boat}} = 10 - 2 = 8 \text{ km/h}$$

$$U = 8 - 2 = 6 \text{ km/h}$$

Final Answer

6 km/h

MCQ 70

A boat moves at 15 km/h in still water and the stream at 5 km/h. Find the total time for 80 km downstream and 40 km upstream.

- A. 6 h B. 7 h
C. 8 h D. 9 h

Solution

$$D = 15 + 5 = 20 \text{ km/h}$$

$$U = 15 - 5 = 10 \text{ km/h}$$

$$T = \frac{80}{20} + \frac{40}{10} = 4 + 4 = 8 \text{ h}$$

Final Answer

8 h

Races & Circular Tracks**MCQ 71**

In a 400 m race, A runs at 12 km/h and B at 10 km/h. By how many metres does A beat B?

- A. 50 m B. 60 m
C. $66\frac{2}{3}$ m D. 80 m

Solution

$$12 \text{ km/h} : 10 \text{ km/h} = 6 : 5$$

$$\text{When A runs 400, } B = 400 \left(\frac{5}{6} \right) = \frac{1000}{3} \text{ m}$$

$$\text{Lead} = 400 - \frac{1000}{3} = \frac{200}{3} = 66\frac{2}{3} \text{ m}$$

Final Answer

$$66\frac{2}{3} \text{ m}$$

MCQ 72

In a 100 m race, A runs at 10 m/s and B at 8 m/s. By how many metres does A beat B?

- A. 10 m B. 15 m
C. 20 m D. 25 m

Solution

$$T_A = \frac{100}{10} = 10 \text{ s}$$

$$D_B = 8(10) = 80 \text{ m}$$

$$\text{Lead} = 100 - 80 = 20 \text{ m}$$

Final Answer

$$20 \text{ m}$$

MCQ 73

A gives B a 20 m start in a 100 m race and they finish together. Find the speed ratio A : B.

- A. 4:5 B. 5:4
C. 3:2 D. 2:1

Solution

$$\begin{aligned} \text{Same time} \Rightarrow S_A : S_B &= D_A : D_B \\ &= 100 : 80 = 5 : 4 \end{aligned}$$

Final Answer

$$5 : 4$$

MCQ 74

Two runners move on a 400 m circular track in the same direction at 5 m/s and 3 m/s. After how long will the faster runner gain one complete lap?

- A. 150 s B. 180 s
C. 200 s D. 240 s

Solution

$$S_{rel} = 5 - 3 = 2 \text{ m/s}$$

$$T = \frac{400}{2} = 200 \text{ s}$$

Final Answer

$$200 \text{ s}$$

MCQ 75

Two runners move in opposite directions on a 360 m circular track at 4 m/s and 5 m/s. After how long do they meet?

- A. 36 s B. 40 s
C. 45 s D. 60 s

Solution

$$S_{rel} = 4 + 5 = 9 \text{ m/s}$$

$$T = \frac{360}{9} = 40 \text{ s}$$

Final Answer

$$40 \text{ s}$$

MCQ 76

Two runners move in the same direction on a 600 m track at 6 m/s and 4 m/s. Find the time for the faster runner to gain one lap.

- A. 4 min B. 5 min
C. 6 min D. 7 min

Solution

$$S_{rel} = 6 - 4 = 2 \text{ m/s}$$

$$T = \frac{600}{2} = 300 \text{ s}$$

$$300 \text{ s} = 5 \text{ min}$$

Final Answer

$$5 \text{ min}$$

MCQ 77

A and B run 1 km at 12 km/h and 10 km/h. What is the difference in their finishing times?

- A. 30 s B. 45 s
C. 1 min D. 1.5 min

Solution

$$T_A = \frac{1}{12} \text{ h} = 5 \text{ min}$$

$$T_B = \frac{1}{10} \text{ h} = 6 \text{ min}$$

$$\text{Difference} = 1 \text{ min}$$

Final Answer

1 min

MCQ 78

In an 800 m race, A runs at 8 m/s and B at 6.4 m/s. By how many metres does A beat B?

- A. 120 m B. 140 m
C. 160 m D. 180 m

Solution

$$T_A = \frac{800}{8} = 100 \text{ s}$$

$$D_B = 6.4(100) = 640 \text{ m}$$

$$\text{Lead} = 800 - 640 = 160 \text{ m}$$

Final Answer

160 m

MCQ 79

Two runners move in opposite directions on a 500 m track at 10 m/s and 15 m/s. Find their first meeting time.

- A. 15 s B. 20 s
C. 25 s D. 30 s

Solution

$$S_{rel} = 10 + 15 = 25 \text{ m/s}$$

$$T = \frac{500}{25} = 20 \text{ s}$$

Final Answer

20 s

MCQ 80

Two runners move in the same direction on a 300 m circular track at 5 m/s and 7 m/s. Find the time between successive meetings.

- A. 120 s B. 150 s
C. 180 s D. 210 s

Solution

$$S_{rel} = 7 - 5 = 2 \text{ m/s}$$

$$T = \frac{300}{2} = 150 \text{ s}$$

Final Answer

150 s

Wheels, Revolutions & Distance Applications**MCQ 81**

A wheel has diameter 70 cm. Using $\pi = \frac{22}{7}$, how many revolutions are needed to cover 220 m?

- A. 50 B. 75
C. 100 D. 125

Solution

$$\text{Circumference} = \pi d = \frac{22}{7}(70) = 220 \text{ cm} = 2.2 \text{ m}$$

$$N = \frac{220}{2.2} = 100$$

Final Answer

100 revolutions

MCQ 82

A wheel has diameter 28 cm. Using $\pi = \frac{22}{7}$, how many revolutions are needed to cover 88 m?

- A. 80 B. 90
C. 100 D. 110

Solution

$$C = \frac{22}{7}(28) = 88 \text{ cm} = 0.88 \text{ m}$$

$$N = \frac{88}{0.88} = 100$$

Final Answer

100 revolutions

MCQ 83

A wheel has radius 35 cm. Using $\pi = \frac{22}{7}$, what distance does it cover in 100 revolutions?

- A. 180 m B. 200 m
C. 220 m D. 240 m

Solution

$$C = 2\pi r = 2\left(\frac{22}{7}\right)(35) = 220 \text{ cm} = 2.2 \text{ m}$$

$$D = 100(2.2) = 220 \text{ m}$$

Final Answer

220 m

MCQ 84

A wheel of circumference 2 m rotates at 150 revolutions per minute. Find its linear speed in km/h.

- A. 15 km/h B. 18 km/h
C. 20 km/h D. 24 km/h

Solution

$$D \text{ per min} = 2(150) = 300 \text{ m}$$

$$300 \text{ m/min} = 0.3 \text{ km/min}$$

$$S = 0.3(60) = 18 \text{ km/h}$$

Final Answer

18 km/h

MCQ 85

A wheel has diameter 56 cm and makes 250 revolutions per minute. Using $\pi = \frac{22}{7}$, find the speed in km/h.

- A. 24 km/h B. 26.4 km/h
C. 28.8 km/h D. 30 km/h

Solution

$$C = \frac{22}{7}(56) = 176 \text{ cm} = 1.76 \text{ m}$$

$$D \text{ per min} = 1.76(250) = 440 \text{ m}$$

$$S = 440(60) = 26400 \text{ m/h} = 26.4 \text{ km/h}$$

Final Answer

26.4 km/h

MCQ 86

A car wheel has diameter 70 cm. Using $\pi = \frac{22}{7}$, how many revolutions does it make while travelling 1.1 km?

- A. 400 B. 450
C. 500 D. 550

Solution

$$C = \frac{22}{7}(70) = 220 \text{ cm} = 2.2 \text{ m}$$

$$1.1 \text{ km} = 1100 \text{ m}$$

$$N = \frac{1100}{2.2} = 500$$

Final Answer

500 revolutions

MCQ 87

Two wheels have circumferences 2 m and 2.5 m. Over 100 m, how many more revolutions does the smaller wheel make?

- A. 5 B. 10
C. 15 D. 20

Solution

$$N_1 = \frac{100}{2} = 50$$

$$N_2 = \frac{100}{2.5} = 40$$

$$\text{Difference} = 50 - 40 = 10$$

Final Answer

10 revolutions

MCQ 88

A vehicle moves at 60 km/h. If the wheel circumference is 2 m, approximately how many revolutions per second does the wheel make?

- A. 6.67 B. 8.33
C. 10 D. 12.5

Solution

$$60 \text{ km/h} = \frac{50}{3} \text{ m/s}$$

$$N = \frac{50/3}{2} = \frac{25}{3}$$

$$\approx 8.33 \text{ rev/s}$$

Final Answer

8.33 rev/s (approx.)

MCQ 89

A ball is dropped from a height of 75 m and rebounds each time to $\frac{2}{5}$ of the previous fall. Find the total distance before coming to rest.

- A. 165 m B. 170 m
C. 175 m D. 180 m

Past-paper pattern (adapted).

Solution

$$H = 75, \quad r = \frac{2}{5}$$

$$D = H + 2Hr + 2Hr^2 + \dots$$

$$= H + 2H \left(\frac{r}{1-r} \right)$$

$$= 75 + 150 \left(\frac{2/5}{3/5} \right)$$

$$= 75 + 150 \left(\frac{2}{3} \right) = 175 \text{ m}$$

Final Answer

175 m

MCQ 90

A person walks around a square park of side 200 m in 8 minutes. Find the speed in km/h.

- A. 5 km/h B. 6 km/h
C. 7.5 km/h D. 8 km/h

Solution

$$\text{Perimeter} = 4(200) = 800 \text{ m} = 0.8 \text{ km}$$

$$8 \text{ min} = \frac{8}{60} = \frac{2}{15} \text{ h}$$

$$S = \frac{0.8}{2/15} = 0.8 \left(\frac{15}{2} \right) = 6 \text{ km/h}$$

Final Answer

6 km/h

Mixed High-Yield One-Paper Problems**MCQ 91**

One-third of a journey is covered at 30 km/h and the remaining two-thirds at 60 km/h. Find the average speed.

- A. 40 km/h B. 45 km/h
C. 48 km/h D. 50 km/h

Solution

Take total distance = 90 km

$$30 \text{ km at } 30 \Rightarrow T_1 = 1 \text{ h}$$

$$60 \text{ km at } 60 \Rightarrow T_2 = 1 \text{ h}$$

$$\bar{S} = \frac{90}{2} = 45 \text{ km/h}$$

Final Answer

45 km/h

MCQ 92

A car covers the first 100 km at 50 km/h and the next 100 km at 100 km/h. Find the average speed.

- A. 60 km/h B. $66\frac{2}{3}$ km/h
C. 70 km/h D. 75 km/h

Solution

$$T_1 = \frac{100}{50} = 2 \text{ h}$$

$$T_2 = \frac{100}{100} = 1 \text{ h}$$

$$\bar{S} = \frac{200}{3} = 66\frac{2}{3} \text{ km/h}$$

Final Answer $66\frac{2}{3} \text{ km/h}$ **MCQ 93**

A bus moves at 60 km/h when running, but its average speed including stoppages is 50 km/h. How many minutes does it stop per hour of running time?

- A. 6 min B. 10 min
C. 12 min D. 15 min

Solution

In 1 running hour, distance = 60 km

$$\text{Total elapsed time} = \frac{60}{50} = 1.2 \text{ h}$$

$$\text{Stoppage} = 1.2 - 1 = 0.2 \text{ h}$$

$$0.2(60) = 12 \text{ min}$$

Final Answer

12 min

MCQ 94

A journey of 120 km takes 1 hour longer at 40 km/h than at 60 km/h. Which calculation verifies this?

- A. $3 - 2 = 1 \text{ h}$ B. $4 - 2 = 2 \text{ h}$
C. $3 - 1 = 2 \text{ h}$ D. $2.5 - 2 = 0.5 \text{ h}$

Solution

$$T_{40} = \frac{120}{40} = 3 \text{ h}$$

$$T_{60} = \frac{120}{60} = 2 \text{ h}$$

$$T_{40} - T_{60} = 3 - 2 = 1 \text{ h}$$

Final Answer $3 - 2 = 1 \text{ h}$ **MCQ 95**

A car must travel 300 km. It drives the first 2 hours at 60 km/h, then the rest at 80 km/h. Find the total time.

- A. 4 h B. 4 h 15 min
C. 4 h 30 min D. 5 h

Solution

$$D_1 = 60(2) = 120 \text{ km}$$

$$D_{\text{rem}} = 300 - 120 = 180 \text{ km}$$

$$T_{\text{rem}} = \frac{180}{80} = 2.25 \text{ h} = 2 \text{ h } 15 \text{ min}$$

$$T = 2 + 2.25 = 4.25 \text{ h}$$

Final Answer

4 h 15 min

MCQ 96

A car moves for 2 hours at 50 km/h, stops for 30 minutes, then moves for 2 hours at 75 km/h. Find the average speed for the whole elapsed time.

- A. 50 km/h B. 55.56 km/h
C. 60 km/h D. 62.5 km/h

Solution

$$D = 50(2) + 75(2) = 100 + 150 = 250 \text{ km}$$

$$T = 2 + 0.5 + 2 = 4.5 \text{ h}$$

$$\bar{S} = \frac{250}{4.5} = 55.56 \text{ km/h (approx.)}$$

Final Answer

55.56 km/h (approx.)

MCQ 97

For a 120 km journey, increasing speed by 10 km/h reduces time by 1 hour. Find the original speed.

- A. 20 km/h B. 30 km/h
C. 40 km/h D. 50 km/h

Solution

$$\frac{120}{v} - \frac{120}{v+10} = 1$$

$$\frac{1200}{v(v+10)} = 1$$

$$v(v+10) = 1200$$

$$v^2 + 10v - 1200 = 0$$

$$(v-30)(v+40) = 0$$

$$v = 30 \text{ km/h}$$

Final Answer

30 km/h

MCQ 98

If speed is reduced by 20%, a journey takes 30 minutes longer. What was the original journey time?

- A. 1.5 h B. 2 h
C. 2.5 h D. 3 h

Solution

$$\text{New speed} = 0.8 \times \text{old speed}$$

$$\text{New time} = \frac{100}{80}T = 1.25T$$

$$1.25T - T = 0.5 \text{ h}$$

$$0.25T = 0.5$$

$$T = 2 \text{ h}$$

Final Answer

2 h

MCQ 99

Two-thirds of a journey is covered at 40 km/h and the remaining one-third at 60 km/h. Find the average speed.

- A. 42 km/h B. 45 km/h
C. 48 km/h D. 50 km/h

Solution

Take total distance = 120 km

$$80 \text{ km at } 40 \Rightarrow T_1 = 2 \text{ h}$$

$$40 \text{ km at } 60 \Rightarrow T_2 = \frac{2}{3} \text{ h}$$

$$T = 2 + \frac{2}{3} = \frac{8}{3} \text{ h}$$

$$\bar{S} = \frac{120}{8/3} = 45 \text{ km/h}$$

Final Answer

45 km/h

MCQ 100

A traveller goes from A to B at 72 km/h and returns over the same distance at 48 km/h. Find the average speed for the round trip.

- A. 54 km/h B. 56 km/h
C. 57.6 km/h D. 60 km/h

Solution

$$\bar{S} = \frac{2xy}{x+y}$$

$$= \frac{2(72)(48)}{72+48}$$

$$= \frac{6912}{120} = 57.6 \text{ km/h}$$

Final Answer

57.6 km/h

RAPID REVISION GRID

Core

$$S = \frac{D}{T}, \quad D = ST, \quad T = \frac{D}{S}$$

Train distance

$$\text{Pole: } L \quad \text{Platform: } L + P$$

Boat/stream

$$B = \frac{D + U}{2}, \quad R = \frac{D - U}{2}$$

Quick unit pair

$$18 \text{ km/h} = 5 \text{ m/s}$$

$$36 \text{ km/h} = 10 \text{ m/s}$$

$$72 \text{ km/h} = 20 \text{ m/s}$$

Equal-distance round trip

$$\bar{S} = \frac{2xy}{x + y}$$

Relative speed

$$\text{Opposite: } x + y \quad \text{Same: } |x - y|$$



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AGE PROBLEMS MCQs

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AGE PROBLEMS | 100 FULLY SOLVED MCQs

Fast Age-Problems Foundation

Present, past and future If present age is x :

$$\text{After } n \text{ years} = x + n$$

$$\text{Before } n \text{ years} = x - n$$

Age difference never changes If two present ages are x and y , then

$$(x + n) - (y + n) = x - y$$

$$(x - n) - (y - n) = x - y$$

Ratio + sum If ages are $a : b$ and total is S :

$$\text{One part} = \frac{S}{a + b}$$

Ratio + difference If ages are $a : b$ and difference is D :

$$\text{One part} = \frac{D}{|a - b|}$$

Average age

$$\text{Total age} = \text{Average} \times \text{Number of persons}$$

If the same people remain, after n years the average also increases by n .

Exam-speed method Translate only the time phrase first: present x , past $x - n$, future $x + n$. Keep the age difference constant. For ratios, use parts instead of guessing actual ages. For family-average questions, convert the average into a total before doing anything else.

Two-person total shift After n years:

$$(x + y) + 2n$$

Before n years:

$$(x + y) - 2n$$

Future-ratio equation For present ages ax, bx :

$$\frac{ax + n}{bx + n} = \frac{p}{q}$$

Cross-multiply immediately.

Past-ratio equation For present ages ax, bx :

$$\frac{ax - n}{bx - n} = \frac{p}{q}$$

Check that every past age remains positive.

Equal birth interval For m children born every d years:

$$x, x + d, x + 2d, \dots, x + (m - 1)d$$

Present, Past & Future Age Basics**MCQ 1**

Ali is 14 years old. His sister is 6 years older. What is her present age?

- A. 18 years B. 20 years
C. 22 years D. 24 years

Solution

$$14 + 6 = 20$$

Final Answer

20 years

MCQ 2

Sara will be 25 years old after 7 years. What is her present age?

- A. 16 years B. 20 years
C. 18 years D. 22 years

Solution

$$x + 7 = 25$$

$$x = 25 - 7 = 18$$

Final Answer

18 years

MCQ 3

Eight years ago, Hamza was 21 years old. What is his present age?

- A. 26 years B. 32 years
C. 35 years D. 29 years

Solution

$$x - 8 = 21$$

$$x = 21 + 8 = 29$$

Final Answer

29 years

MCQ 4

A father is 32 years older than his 14-year-old son. What is the father's age?

- A. 46 years B. 41 years
C. 51 years D. 56 years

Solution

$$14 + 32 = 46$$

Final Answer

46 years

MCQ 5

A person's present age is three times the age he was 10 years ago. Find the present age.

- A. 13 years B. 15 years
C. 17 years D. 19 years

Solution

$$x = 3(x - 10)$$

$$x = 3x - 30$$

$$30 = 2x$$

$$x = 15$$

Final Answer

15 years

MCQ 6

Twelve years from now, a person will be twice as old as he was 6 years ago. Find his present age.

- A. 21 years B. 27 years
C. 24 years D. 30 years

Solution

$$x + 12 = 2(x - 6)$$

$$x + 12 = 2x - 12$$

$$x = 24$$

Final Answer

24 years

MCQ 7

The present ages of two friends add to 58 years. If one is 24 years old, how old is the other?

- A. 31 years B. 37 years
C. 40 years D. 34 years

Solution

$$x + 24 = 58$$

$$x = 58 - 24 = 34$$

Final Answer

34 years

MCQ 8

The difference between the ages of two brothers is 9 years. If the younger is 17, find the elder brother's age.

- A. 26 years B. 23 years
C. 29 years D. 32 years

Solution

$$17 + 9 = 26$$

Final Answer

26 years

MCQ 9

Five years from now, a person's age will be $\frac{4}{3}$ of the present age. Find the present age.

- A. 13 years B. 15 years
C. 17 years D. 19 years

Solution

$$\begin{aligned} x + 5 &= \frac{4}{3}x \\ 3x + 15 &= 4x \\ x &= 15 \end{aligned}$$

Final Answer

15 years

MCQ 10

Eight years ago, a person's age was $\frac{3}{5}$ of the present age. Find the present age.

- A. 18 years B. 22 years
C. 20 years D. 24 years

Solution

$$\begin{aligned} x - 8 &= \frac{3}{5}x \\ 5x - 40 &= 3x \\ 2x &= 40 \\ x &= 20 \end{aligned}$$

Final Answer

20 years

Ratio, Sum & Difference**MCQ 11**

The ages of two persons are in the ratio 3 : 2 and their sum is 50 years. Find the age of the elder person.

- A. 27 years B. 33 years
C. 36 years D. 30 years

Solution

$$3x + 2x = 50$$

$$5x = 50$$

$$x = 10$$

$$\text{Ages} = 3(10), 2(10)$$

Final Answer

30 years

MCQ 12

The ages of two persons are in the ratio 7 : 5 and their difference is 12 years. Find the age of the younger person.

- A. 30 years B. 27 years
C. 33 years D. 36 years

Solution

$$7x - 5x = 12$$

$$2x = 12$$

$$x = 6$$

$$\text{Ages} = 7(6), 5(6)$$

Final Answer

30 years

MCQ 13

The ages of two persons are in the ratio 5 : 3 and their sum is 64 years. Find the age of the elder person.

- A. 35 years B. 40 years
C. 45 years D. 50 years

Solution

$$5x + 3x = 64$$

$$8x = 64$$

$$x = 8$$

$$\text{Ages} = 5(8), 3(8)$$

Final Answer

40 years

MCQ 14

The ages of two persons are in the ratio 9 : 4 and their difference is 25 years. Find the age of the younger person.

- A. 18 years B. 22 years
C. 20 years D. 24 years

Solution

$$9x - 4x = 25$$

$$5x = 25$$

$$x = 5$$

$$\text{Ages} = 9(5), 4(5)$$

Final Answer

20 years

MCQ 15

The ages of two persons are in the ratio 4 : 3 and their sum is 49 years. Find the age of the elder person.

- A. 25 years B. 31 years
C. 34 years D. 28 years

Solution

$$4x + 3x = 49$$

$$7x = 49$$

$$x = 7$$

$$\text{Ages} = 4(7), 3(7)$$

Final Answer

28 years

MCQ 16

The ages of two persons are in the ratio 11 : 7 and their difference is 16 years. Find the age of the younger person.

- A. 28 years B. 25 years
C. 31 years D. 34 years

Solution

$$11x - 7x = 16$$

$$4x = 16$$

$$x = 4$$

$$\text{Ages} = 11(4), 7(4)$$

Final Answer

28 years

MCQ 17

The ages of two persons are in the ratio 7 : 3 and their sum is 60 years. Find the difference between their ages.

- A. 21 years B. 24 years
C. 27 years D. 30 years

Reported PPSC/one-paper age pattern (adapted).

Solution

$$7x + 3x = 60$$

$$10x = 60$$

$$x = 6$$

$$\text{Ages} = 7(6), 3(6)$$

Final Answer

24 years

MCQ 18

The ages of two persons are in the ratio 5 : 2 and their difference is 27 years. Find the age of the elder person.

- A. 40 years B. 50 years
C. 45 years D. 55 years

Solution

$$5x - 2x = 27$$

$$3x = 27$$

$$x = 9$$

$$\text{Ages} = 5(9), 2(9)$$

Final Answer

45 years

MCQ 19

The ages of two persons are in the ratio 6 : 5 and their sum is 66 years. Find the age of the younger person.

- A. 27 years B. 33 years
C. 36 years D. 30 years

Solution

$$6x + 5x = 66$$

$$11x = 66$$

$$x = 6$$

$$\text{Ages} = 6(6), 5(6)$$

Final Answer

30 years

MCQ 20

The ages of two persons are in the ratio 8 : 7 and their difference is 4 years. Find the age of the elder person.

- A. 32 years B. 29 years
C. 35 years D. 38 years

Solution

$$8x - 7x = 4$$

$$1x = 4$$

$$x = 4$$

$$\text{Ages} = 8(4), 7(4)$$

Final Answer

32 years

Present Ratio with Future/Past Ratio**MCQ 21**

The present age ratio of a father to his son is 5 : 2. 6 years from now, their age ratio is 2 : 1. Find the present age of the son.

- A. 10 years B. 12 years
C. 14 years D. 16 years

Solution

$$F : S = 5 : 2$$

$$F = 5x, \quad S = 2x$$

$$\frac{5x + 6}{2x + 6} = \frac{2}{1}$$

$$1(5x + 6) = 2(2x + 6)$$

$$5x + 6 = 4x + 12$$

$$1x = 6$$

$$x = 6$$

$$F = 5(6) = 30, \quad S = 2(6) = 12$$

Final Answer

12 years

MCQ 22

The present age ratio of a father to his son is 2 : 1. 8 years from now, their age ratio is 5 : 3. Find the present age of the father.

- A. 29 years B. 35 years
C. 32 years D. 38 years

Solution

$$F : S = 2 : 1$$

$$F = 2x, \quad S = 1x$$

$$\frac{2x + 8}{1x + 8} = \frac{5}{3}$$

$$3(2x + 8) = 5(1x + 8)$$

$$6x + 24 = 5x + 40$$

$$1x = 16$$

$$x = 16$$

$$F = 2(16) = 32, \quad S = 1(16) = 16$$

Final Answer

32 years

MCQ 23

The present age ratio of a father to his son is 5 : 3. 7 years from now, their age ratio is 3 : 2. Find the present age of the son.

- A. 18 years B. 24 years
C. 27 years D. 21 years

Solution

$$F : S = 5 : 3$$

$$F = 5x, \quad S = 3x$$

$$\frac{5x + 7}{3x + 7} = \frac{3}{2}$$

$$2(5x + 7) = 3(3x + 7)$$

$$10x + 14 = 9x + 21$$

$$1x = 7$$

$$x = 7$$

$$F = 5(7) = 35, \quad S = 3(7) = 21$$

Final Answer

21 years

MCQ 24

The present age ratio of a father to his son is 5 : 2. 8 years from now, their age ratio is 2 : 1. Find the present age of the father.

- A. 40 years B. 35 years
C. 45 years D. 50 years

Solution

$$F : S = 5 : 2$$

$$F = 5x, \quad S = 2x$$

$$\frac{5x + 8}{2x + 8} = \frac{2}{1}$$

$$1(5x + 8) = 2(2x + 8)$$

$$5x + 8 = 4x + 16$$

$$1x = 8$$

$$x = 8$$

$$F = 5(8) = 40, \quad S = 2(8) = 16$$

Final Answer

40 years

MCQ 25

The present age ratio of a father to his son is 7 : 3. 6 years from now, their age ratio is 2 : 1. Find the present age of the son.

- A. 16 years B. 18 years
C. 20 years D. 22 years

Solution

$$F : S = 7 : 3$$

$$F = 7x, \quad S = 3x$$

$$\frac{7x + 6}{3x + 6} = \frac{2}{1}$$

$$1(7x + 6) = 2(3x + 6)$$

$$7x + 6 = 6x + 12$$

$$1x = 6$$

$$x = 6$$

$$F = 7(6) = 42, \quad S = 3(6) = 18$$

Final Answer

18 years

MCQ 26

The present age ratio of a father to his son is 3 : 1. 15 years from now, their age ratio is 2 : 1. Find the present age of the father.

- A. 40 years B. 50 years
C. 45 years D. 55 years

Solution

$$F : S = 3 : 1$$

$$F = 3x, \quad S = 1x$$

$$\frac{3x + 15}{1x + 15} = \frac{2}{1}$$

$$1(3x + 15) = 2(1x + 15)$$

$$3x + 15 = 2x + 30$$

$$1x = 15$$

$$x = 15$$

$$F = 3(15) = 45, \quad S = 1(15) = 15$$

Final Answer

45 years

MCQ 27

The present age ratio of a father to his son is 2 : 1. 12 years from now, their age ratio is 5 : 3. Find the present age of the son.

- A. 21 years B. 27 years
C. 30 years D. 24 years

Solution

$$F : S = 2 : 1$$

$$F = 2x, \quad S = 1x$$

$$\frac{2x + 12}{1x + 12} = \frac{5}{3}$$

$$3(2x + 12) = 5(1x + 12)$$

$$6x + 36 = 5x + 60$$

$$1x = 24$$

$$x = 24$$

$$F = 2(24) = 48, \quad S = 1(24) = 24$$

Final Answer

24 years

MCQ 28

The present age ratio of a father to his son is 5 : 3. 10 years from now, their age ratio is 3 : 2. Find the present age of the father.

- A. 50 years B. 45 years
C. 55 years D. 60 years

Solution

$$F : S = 5 : 3$$

$$F = 5x, \quad S = 3x$$

$$\frac{5x + 10}{3x + 10} = \frac{3}{2}$$

$$2(5x + 10) = 3(3x + 10)$$

$$10x + 20 = 9x + 30$$

$$1x = 10$$

$$x = 10$$

$$F = 5(10) = 50, \quad S = 3(10) = 30$$

Final Answer

50 years

MCQ 29

The present age ratio of a father to his son is 3 : 1. 18 years from now, their age ratio is 2 : 1. Find the present age of the son.

- A. 16 years B. 18 years
C. 20 years D. 22 years

Solution

$$F : S = 3 : 1$$

$$F = 3x, \quad S = 1x$$

$$\frac{3x + 18}{1x + 18} = \frac{2}{1}$$

$$1(3x + 18) = 2(1x + 18)$$

$$3x + 18 = 2x + 36$$

$$1x = 18$$

$$x = 18$$

$$F = 3(18) = 54, \quad S = 1(18) = 18$$

Final Answer

18 years

MCQ 30

The present age ratio of a father to his son is 7 : 4. 8 years from now, their age ratio is 8 : 5. Find the present age of the father.

- A. 51 years B. 61 years
C. 56 years D. 66 years

Solution

$$F : S = 7 : 4$$

$$F = 7x, \quad S = 4x$$

$$\frac{7x + 8}{4x + 8} = \frac{8}{5}$$

$$5(7x + 8) = 8(4x + 8)$$

$$35x + 40 = 32x + 64$$

$$3x = 24$$

$$x = 8$$

$$F = 7(8) = 56, \quad S = 4(8) = 32$$

Final Answer

56 years

MCQ 31

The present age ratio of a father to his son is 3 : 1. 5 years ago, their age ratio is 5 : 1. Find the present age of the son.

- A. 8 years B. 12 years
C. 14 years D. 10 years

Solution

$$F : S = 3 : 1$$

$$F = 3x, \quad S = 1x$$

$$\frac{3x - 5}{1x - 5} = \frac{5}{1}$$

$$1(3x - 5) = 5(1x - 5)$$

$$3x - 5 = 5x - 25$$

$$-2x = -20$$

$$x = 10$$

$$F = 3(10) = 30, \quad S = 1(10) = 10$$

Final Answer

10 years

MCQ 32

The present age ratio of a father to his son is 2 : 1. 5 years ago, their age ratio is 5 : 2. Find the present age of the father.

- A. 30 years B. 27 years
C. 33 years D. 36 years

Solution

$$F : S = 2 : 1$$

$$F = 2x, \quad S = 1x$$

$$\frac{2x-5}{1x-5} = \frac{5}{2}$$

$$2(2x-5) = 5(1x-5)$$

$$4x-10 = 5x-25$$

$$-1x = -15$$

$$x = 15$$

$$F = 2(15) = 30, \quad S = 1(15) = 15$$

Final Answer

30 years

MCQ 33

The present age ratio of a father to his son is 7 : 4. 5 years ago, their age ratio is 2 : 1. Find the present age of the son.

- A. 18 years B. 20 years
C. 22 years D. 24 years

Solution

$$F : S = 7 : 4$$

$$F = 7x, \quad S = 4x$$

$$\frac{7x-5}{4x-5} = \frac{2}{1}$$

$$1(7x-5) = 2(4x-5)$$

$$7x-5 = 8x-10$$

$$-1x = -5$$

$$x = 5$$

$$F = 7(5) = 35, \quad S = 4(5) = 20$$

Final Answer

20 years

MCQ 34

The present age ratio of a father to his son is 3 : 1. 6 years ago, their age ratio is 5 : 1. Find the present age of the father.

- A. 31 years B. 41 years
C. 36 years D. 46 years

Solution

$$F : S = 3 : 1$$

$$F = 3x, \quad S = 1x$$

$$\frac{3x-6}{1x-6} = \frac{5}{1}$$

$$1(3x-6) = 5(1x-6)$$

$$3x-6 = 5x-30$$

$$-2x = -24$$

$$x = 12$$

$$F = 3(12) = 36, \quad S = 1(12) = 12$$

Final Answer

36 years

MCQ 35

The present age ratio of a father to his son is 2 : 1. 10 years ago, their age ratio is 3 : 1. Find the present age of the son.

- A. 18 years B. 22 years
C. 24 years D. 20 years

Solution

$$F : S = 2 : 1$$

$$F = 2x, \quad S = 1x$$

$$\frac{2x-10}{1x-10} = \frac{3}{1}$$

$$1(2x-10) = 3(1x-10)$$

$$2x-10 = 3x-30$$

$$-1x = -20$$

$$x = 20$$

$$F = 2(20) = 40, \quad S = 1(20) = 20$$

Final Answer

20 years

MCQ 36

The present age ratio of a father to his son is 2 : 1. 7 years ago, their age ratio is 5 : 2. Find the present age of the father.

- A. 42 years B. 37 years
C. 47 years D. 52 years

Solution

$$F : S = 2 : 1$$

$$F = 2x, \quad S = 1x$$

$$\frac{2x-7}{1x-7} = \frac{5}{2}$$

$$2(2x-7) = 5(1x-7)$$

$$4x-14 = 5x-35$$

$$-1x = -21$$

$$x = 21$$

$$F = 2(21) = 42, \quad S = 1(21) = 21$$

Final Answer

42 years

MCQ 37

The present age ratio of a father to his son is 9 : 5. 5 years ago, their age ratio is 2 : 1. Find the present age of the son.

- A. 22 years B. 25 years
C. 28 years D. 31 years

Solution

$$F : S = 9 : 5$$

$$F = 9x, \quad S = 5x$$

$$\frac{9x-5}{5x-5} = \frac{2}{1}$$

$$1(9x-5) = 2(5x-5)$$

$$9x-5 = 10x-10$$

$$-1x = -5$$

$$x = 5$$

$$F = 9(5) = 45, \quad S = 5(5) = 25$$

Final Answer

25 years

MCQ 38

The present age ratio of a father to his son is 2 : 1. 8 years ago, their age ratio is 5 : 2. Find the present age of the father.

- A. 43 years B. 53 years
C. 48 years D. 58 years

Solution

$$F : S = 2 : 1$$

$$F = 2x, \quad S = 1x$$

$$\frac{2x-8}{1x-8} = \frac{5}{2}$$

$$2(2x-8) = 5(1x-8)$$

$$4x-16 = 5x-40$$

$$-1x = -24$$

$$x = 24$$

$$F = 2(24) = 48, \quad S = 1(24) = 24$$

Final Answer

48 years

MCQ 39

The present age ratio of a father to his son is 5 : 2. 10 years ago, their age ratio is 4 : 1. Find the present age of the son.

- A. 18 years B. 22 years
C. 24 years D. 20 years

Solution

$$F : S = 5 : 2$$

$$F = 5x, \quad S = 2x$$

$$\frac{5x-10}{2x-10} = \frac{4}{1}$$

$$1(5x-10) = 4(2x-10)$$

$$5x-10 = 8x-40$$

$$-3x = -30$$

$$x = 10$$

$$F = 5(10) = 50, \quad S = 2(10) = 20$$

Final Answer

20 years

MCQ 40

The present age ratio of a father to his son is 2 : 1. 10 years ago, their age ratio is 5 : 2. Find the present age of the father.

- A. 60 years B. 55 years
C. 65 years D. 70 years

Solution

$$F : S = 2 : 1$$

$$F = 2x, \quad S = 1x$$

$$\frac{2x - 10}{1x - 10} = \frac{5}{2}$$

$$2(2x - 10) = 5(1x - 10)$$

$$4x - 20 = 5x - 50$$

$$-1x = -30$$

$$x = 30$$

$$F = 2(30) = 60, \quad S = 1(30) = 30$$

Final Answer

60 years

Father-Son & Family Age Equations**MCQ 41**

A father is three times as old as his son. After 15 years, the father will be twice as old as the son. Find the father's present age.

- A. 40 years B. 45 years
C. 50 years D. 55 years

Reported one-paper age pattern (adapted).

Solution

$$F = 3S$$

$$F + 15 = 2(S + 15)$$

$$3S + 15 = 2S + 30$$

$$S = 15$$

$$F = 3(15) = 45$$

Final Answer

45 years

MCQ 42

Tanveer is 10 years older than Ali. Five years ago, Tanveer was twice as old as Ali. Find Ali's present age.

- A. 13 years B. 17 years
C. 15 years D. 19 years

Reported PPSC/FPSC preparation pattern (adapted).

Solution

$$T = A + 10$$

$$T - 5 = 2(A - 5)$$

$$A + 10 - 5 = 2A - 10$$

$$A + 5 = 2A - 10$$

$$A = 15$$

Final Answer

15 years

MCQ 43

Aslam is now three times as old as Javed. Five years ago, Aslam was five times as old as Javed. Find Aslam's present age.

- A. 27 years B. 33 years
C. 36 years D. 30 years

Reported PPSC/FPSC preparation pattern (adapted).

Solution

$$A = 3J$$

$$A - 5 = 5(J - 5)$$

$$3J - 5 = 5J - 25$$

$$20 = 2J$$

$$J = 10$$

$$A = 30$$

Final Answer

30 years

MCQ 44

The sum of the present ages of a father and son is 82 years. After 4 years, the father will be twice as old as the son. Find the father's present age.

- A. 56 years B. 51 years
C. 61 years D. 66 years

Solution

$$F + S = 82$$

$$F + 4 = 2(S + 4)$$

$$F = 2S + 4$$

$$2S + 4 + S = 82$$

$$3S = 78$$

$$S = 26$$

$$F = 56$$

Final Answer

56 years

MCQ 45

A father is 54 years old. Four years ago, he was five times as old as his son. How old will the son be after 5 years?

- A. 17 years B. 19 years
C. 21 years D. 23 years

Reported age-problem pattern (adapted).

Solution

$$54 - 4 = 5(S - 4)$$

$$50 = 5(S - 4)$$

$$10 = S - 4$$

$$S = 14$$

$$S + 5 = 19$$

Final Answer

19 years

MCQ 46

A man is 45 years old. Five years ago, he was five times as old as his son. Find the son's present age.

- A. 11 years B. 15 years
C. 13 years D. 17 years

Reported age-problem pattern (adapted).

Solution

$$45 - 5 = 5(S - 5)$$

$$40 = 5(S - 5)$$

$$8 = S - 5$$

$$S = 13$$

Final Answer

13 years

MCQ 47

A father is four times as old as his son and the sum of their ages is 50 years. Find the father's age.

- A. 35 years B. 45 years
C. 50 years D. 40 years

Reported one-paper age pattern (adapted).

Solution

$$F = 4S$$

$$F + S = 50$$

$$4S + S = 50$$

$$5S = 50$$

$$S = 10$$

$$F = 40$$

Final Answer

40 years

MCQ 48

Sohail is four times as old as his son. Four years from now, the sum of their ages will be 43 years. Find the son's present age.

- A. 7 years B. 5 years
C. 9 years D. 11 years

Reported one-paper age pattern (adapted).

Solution

$$F = 4S$$

$$(F + 4) + (S + 4) = 43$$

$$4S + S + 8 = 43$$

$$5S = 35$$

$$S = 7$$

Final Answer

7 years

MCQ 49

Ahmad is 12 years old and his father is 40 years old. After how many years will the father be twice as old as Ahmad?

- A. 14 years B. 16 years
C. 18 years D. 20 years

Reported one-paper age pattern (adapted).

Solution

$$40 + x = 2(12 + x)$$

$$40 + x = 24 + 2x$$

$$x = 16$$

Final Answer

16 years

MCQ 50

A is 3 years older than B. Seven years from now, the sum of their ages will be 79. Find B's present age.

- A. 28 years B. 34 years
C. 31 years D. 37 years

Reported one-paper age pattern (adapted).

Solution

$$A = B + 3$$

$$(A + 7) + (B + 7) = 79$$

$$B + 3 + B + 14 = 79$$

$$2B = 62$$

$$B = 31$$

Final Answer

31 years

MCQ 51

A son's present age is one-third of his father's present age. Five years ago, the son was 7 years old. Find the father's present age.

- A. 31 years B. 41 years
C. 46 years D. 36 years

Reported one-paper age pattern (adapted).

Solution

$$S - 5 = 7$$

$$S = 12$$

$$S = \frac{1}{3}F$$

$$F = 3S = 3(12) = 36$$

Final Answer

36 years

MCQ 52

Ten years ago, the average age of a father and son was 27.5 years. Their present ages are in the ratio 4 : 1. Find the son's present age.

- A. 15 years B. 13 years
C. 17 years D. 19 years

Adapted from a common age-ratio pattern.

Solution

$$\text{Past total} = 2(27.5) = 55$$

$$\text{Present total} = 55 + 2(10) = 75$$

$$F : S = 4 : 1$$

$$4x + x = 75$$

$$5x = 75$$

$$x = 15$$

$$S = 15$$

Final Answer

15 years

MCQ 53

A father is twice as old as his son. Twenty years ago, the father was twelve times as old as the son. Find the father's present age.

- A. 39 years B. 44 years
C. 49 years D. 54 years

Reported one-paper age pattern (adapted).

Solution

$$F = 2S$$

$$F - 20 = 12(S - 20)$$

$$2S - 20 = 12S - 240$$

$$220 = 10S$$

$$S = 22$$

$$F = 44$$

Final Answer

44 years

MCQ 54

A person's present age is $\frac{2}{5}$ of his mother's present age. After 8 years, his age will be one-half of his mother's age. Find the mother's present age.

- A. 35 years B. 45 years
C. 40 years D. 50 years

Reported one-paper age pattern (adapted).

Solution

$$P = \frac{2}{5}M$$

$$P + 8 = \frac{1}{2}(M + 8)$$

$$2P + 16 = M + 8$$

$$2P + 8 = M$$

$$2\left(\frac{2}{5}M\right) + 8 = M$$

$$\frac{4}{5}M + 8 = M$$

$$8 = \frac{1}{5}M$$

$$M = 40$$

Final Answer

40 years

MCQ 55

A's mother is twice as old as A's brother. A is 6 years younger than his brother and 4 years older than his sister. If A's sister is 15, find the mother's age.

- A. 45 years B. 55 years
C. 60 years D. 50 years

Reported one-paper age pattern (adapted).

Solution

$$\text{Sister} = 15$$

$$A = 15 + 4 = 19$$

$$\text{Brother} = 19 + 6 = 25$$

$$\text{Mother} = 2(25) = 50$$

Final Answer

50 years

Siblings & Multiple-Person Age Problems

MCQ 56

Five children are born at intervals of 3 years. The sum of their ages is 50 years. Find the age of the youngest child.

- A. 4 years B. 2 years
C. 6 years D. 8 years

Common competitive-exam age pattern (adapted).

Solution

$$x + (x + 3) + (x + 6) + (x + 9) + (x + 12) = 50$$

$$5x + 30 = 50$$

$$5x = 20$$

$$x = 4$$

Final Answer

4 years

MCQ 57

Four siblings have consecutive even ages and their ages add to 52 years. Find the oldest age.

- A. 14 years B. 16 years
C. 18 years D. 20 years

Solution

$$x + (x + 2) + (x + 4) + (x + 6) = 52$$

$$4x + 12 = 52$$

$$4x = 40$$

$$x = 10$$

$$\text{Oldest} = x + 6 = 16$$

Final Answer

16 years

MCQ 58

The ages of three siblings are in the ratio 2 : 3 : 5 and their sum is 50 years. Find the middle sibling's age.

- A. 13 years B. 17 years
C. 15 years D. 19 years

Solution

$$2x + 3x + 5x = 50$$

$$10x = 50$$

$$x = 5$$

$$\text{Middle} = 3x = 15$$

Final Answer

15 years

MCQ 59

A is 2 years older than B, and B is twice as old as C. If the sum of their ages is 27, find B's age.

- A. 8 years B. 12 years
C. 14 years D. 10 years

Common age-problem pattern (adapted).

Solution

$$B = 2C$$

$$A = B + 2 = 2C + 2$$

$$(2C + 2) + 2C + C = 27$$

$$5C + 2 = 27$$

$$5C = 25$$

$$C = 5$$

$$B = 10$$

Final Answer

10 years

MCQ 60

The ages of three friends are in the ratio 4 : 5 : 6. Their total age is 75 years. Find the youngest friend's age.

- A. 20 years B. 18 years
C. 22 years D. 24 years

Solution

$$4x + 5x + 6x = 75$$

$$15x = 75$$

$$x = 5$$

$$\text{Youngest} = 4x = 20$$

Final Answer

20 years

MCQ 61

The sum of the ages of two children is 12 years and the product of their ages is 32. Find the elder child's age.

- A. 6 years B. 8 years
C. 10 years D. 12 years

Reported one-paper age pattern (adapted).

Solution

$$x + y = 12, \quad xy = 32$$

$$t^2 - 12t + 32 = 0$$

$$(t - 4)(t - 8) = 0$$

$$t = 4, 8$$

$$\text{Elder} = 8$$

Final Answer

8 years

MCQ 62

The difference between the ages of two brothers is 2 years. The difference of the squares of their ages is 20. Find the younger brother's age.

- A. 2 years B. 6 years
C. 4 years D. 8 years

Reported one-paper age pattern (adapted).

Solution

$$E - Y = 2$$

$$E^2 - Y^2 = 20$$

$$(E - Y)(E + Y) = 20$$

$$2(E + Y) = 20$$

$$E + Y = 10$$

$$E - Y = 2$$

$$2E = 12 \Rightarrow E = 6$$

$$Y = 4$$

Final Answer

4 years

MCQ 63

Ahmad is as much younger than Saeed as he is older than Tanveer. If the sum of Saeed's and Tanveer's ages is 48, find Ahmad's age.

- A. 21 years B. 27 years
C. 30 years D. 24 years

Reported PPSC-style age pattern (adapted).

Solution

$$S - A = A - T$$

$$S + T = 2A$$

$$48 = 2A$$

$$A = 24$$

Final Answer

24 years

MCQ 64

An elder sister is 5 years older than her younger sister. Four years ago, the elder sister was twice the younger sister's age. Find the elder sister's present age.

- A. 14 years B. 12 years
C. 16 years D. 18 years

Solution

$$E = Y + 5$$

$$E - 4 = 2(Y - 4)$$

$$Y + 1 = 2Y - 8$$

$$Y = 9$$

$$E = 14$$

Final Answer

14 years

MCQ 65

The ages of a grandfather, father and son are in the ratio 8 : 5 : 2. Their total age is 105 years. Find the father's age.

- A. 32 years B. 35 years
C. 38 years D. 41 years

Solution

$$8x + 5x + 2x = 105$$

$$15x = 105$$

$$x = 7$$

$$\text{Father} = 5x = 35$$

Final Answer

35 years

Average Age Problems**MCQ 66**

The average age of 5 members of a family is 24 years. A newborn baby is added to the family. What is the new average age immediately after the birth?

- A. 18 years B. 22 years
C. 20 years D. 24 years

Solution

$$\text{Old total} = 5(24) = 120$$

$$\text{New total} = 120 + 0 = 120$$

$$\text{New average} = \frac{120}{6} = 20$$

Final Answer

20 years

MCQ 67

The average age of 4 persons is 30 years. A 40-year-old person leaves and another person joins. If the new average is 28 years, find the new person's age.

- A. 29 years B. 35 years
C. 38 years D. 32 years

Solution

$$\text{Old total} = 4(30) = 120$$

$$\text{Total after leaving} = 120 - 40 = 80$$

$$\text{New total} = 4(28) = 112$$

$$\text{New age} = 112 - 80 = 32$$

Final Answer

32 years

MCQ 68

The average age of 6 students is 15 years. A teacher joins them and the average becomes 18 years. Find the teacher's age.

- A. 36 years B. 31 years
C. 41 years D. 46 years

Solution

$$\text{Student total} = 6(15) = 90$$

$$\text{New total} = 7(18) = 126$$

$$\text{Teacher} = 126 - 90 = 36$$

Final Answer

36 years

MCQ 69

The average age of a husband and wife is 28 years. Their child is 4 years old. Find the average age of the three family members.

- A. 18 years B. 20 years
C. 22 years D. 24 years

Solution

$$\text{Husband+wife} = 2(28) = 56$$

$$\text{Family total} = 56 + 4 = 60$$

$$\text{Average} = \frac{60}{3} = 20$$

Final Answer

20 years

MCQ 70

The average age of 8 persons is 22 years. A 34-year-old person is replaced by a 26-year-old person. Find the new average age.

- A. 18 years B. 24 years
C. 21 years D. 27 years

Solution

$$\text{Old total} = 8(22) = 176$$

$$\text{New total} = 176 - 34 + 26 = 168$$

$$\text{New average} = \frac{168}{8} = 21$$

Final Answer

21 years

MCQ 71

The average age of 5 children is 12 years. What will their average age be after 3 years?

- A. 13 years B. 17 years
C. 19 years D. 15 years

Solution

Each age increases by 3

Average also increases by 3

$$12 + 3 = 15$$

Final Answer

15 years

MCQ 72

The average age of a father and son is 30 years. The father is three times as old as the son. Find the father's age.

- A. 45 years B. 40 years
C. 50 years D. 55 years

Solution

$$F + S = 2(30) = 60$$

$$F = 3S$$

$$3S + S = 60$$

$$4S = 60$$

$$S = 15$$

$$F = 45$$

Final Answer

45 years

MCQ 73

The average age of a mother and daughter is 27 years and the difference of their ages is 18 years. Find the mother's age.

- A. 31 years B. 36 years
C. 41 years D. 46 years

Solution

$$M + D = 2(27) = 54$$

$$M - D = 18$$

$$2M = 72$$

$$M = 36$$

Final Answer

36 years

MCQ 74

The average age of three siblings is 18 years. The youngest is 12 and the oldest is 24. Find the middle sibling's age.

- A. 16 years B. 20 years
C. 18 years D. 22 years

Solution

$$\text{Total} = 3(18) = 54$$

$$\text{Middle} = 54 - 12 - 24 = 18$$

Final Answer

18 years

MCQ 75

The average age of 10 students is 14 years. Two students aged 16 and 18 join the group. Find the new average age.

- A. 13.5 years B. 14.5 years
C. 15.5 years D. 16.5 years

Solution

$$\text{Old total} = 10(14) = 140$$

$$\text{New total} = 140 + 16 + 18 = 174$$

$$\text{New count} = 12$$

$$\text{New average} = \frac{174}{12} = 14.5$$

Final Answer

14.5 years

Intervals & Consecutive Ages**MCQ 76**

Five children are born at intervals of 2 years. Their total age is 60 years. Find the youngest child's age.

- A. 8 years B. 6 years
C. 10 years D. 12 years

Solution

$$x + (x + 2) + (x + 4) + (x + 6) + (x + 8) = 60$$

$$5x + 20 = 60$$

$$5x = 40$$

$$x = 8$$

Final Answer

8 years

MCQ 77

Four children are born at intervals of 3 years. If the oldest is 20 years old, find the youngest age.

- A. 9 years B. 11 years
C. 13 years D. 15 years

Solution

$$\text{Age gap from youngest to oldest} = 3(3) = 9$$

$$\text{Youngest} = 20 - 9 = 11$$

Final Answer

11 years

MCQ 78

Three children have consecutive ages and their total age is 45 years. Find the youngest age.

- A. 12 years B. 16 years
C. 14 years D. 18 years

Solution

$$x + (x + 1) + (x + 2) = 45$$

$$3x + 3 = 45$$

$$3x = 42$$

$$x = 14$$

Final Answer

14 years

MCQ 79

Four persons have consecutive ages and their sum is 70 years. Find the oldest age.

- A. 17 years B. 21 years
C. 23 years D. 19 years

Solution

$$x + (x + 1) + (x + 2) + (x + 3) = 70$$

$$4x + 6 = 70$$

$$4x = 64$$

$$x = 16$$

$$\text{Oldest} = 19$$

Final Answer

19 years

MCQ 80

Three siblings have consecutive odd ages and their sum is 51 years. Find the oldest age.

- A. 19 years B. 17 years
C. 21 years D. 23 years

Solution

$$x + (x + 2) + (x + 4) = 51$$

$$3x + 6 = 51$$

$$3x = 45$$

$$x = 15$$

$$\text{Oldest} = 19$$

Final Answer

19 years

MCQ 81

Three friends have consecutive even ages and their sum is 42 years. Find the youngest age.

- A. 10 years B. 12 years
C. 14 years D. 16 years

Solution

$$x + (x + 2) + (x + 4) = 42$$

$$3x + 6 = 42$$

$$3x = 36$$

$$x = 12$$

Final Answer

12 years

MCQ 82

Three children have ages in arithmetic progression with common difference 4 years. Their total age is 60 years. Find the youngest age.

- A. 14 years B. 18 years
C. 16 years D. 20 years

Solution

$$x + (x + 4) + (x + 8) = 60$$

$$3x + 12 = 60$$

$$3x = 48$$

$$x = 16$$

Final Answer

16 years

MCQ 83

Six children are born at intervals of 2 years. Their total age is 66 years. Find the youngest child's age.

- A. 4 years B. 8 years
C. 10 years D. 6 years

Solution

$$x + (x + 2) + (x + 4) + (x + 6) + (x + 8) + (x + 10) = 66$$

$$6x + 30 = 66$$

$$6x = 36$$

$$x = 6$$

Final Answer

6 years

MCQ 84

Twins have the same age. Their elder sibling is 4 years older than each twin. If the sum of the three ages is 40, find the age of each twin.

- A. 12 years B. 10 years
C. 14 years D. 16 years

Solution

$$x + x + (x + 4) = 40$$

$$3x + 4 = 40$$

$$3x = 36$$

$$x = 12$$

Final Answer

12 years

MCQ 85

A mother is 42 years old and her child is 18 years old. How old was the mother when the child was born?

- A. 21 years B. 24 years
C. 27 years D. 30 years

Solution

$$\text{Age difference} = 42 - 18 = 24$$

$$\text{At child's birth, child age} = 0$$

$$\text{Mother's age} = 24$$

Final Answer

24 years

Algebraic & Special Age Patterns**MCQ 86**

Twenty years ago, a person's age was one-third of the present age. Find the present age.

- A. 27 years B. 33 years
C. 30 years D. 36 years

Common competitive age pattern (adapted).

Solution

$$x - 20 = \frac{1}{3}x$$

$$3x - 60 = x$$

$$2x = 60$$

$$x = 30$$

Final Answer

30 years

MCQ 87

Seven years from now, Asim will be twice as old as he was 8 years ago. Find Asim's present age.

- A. 20 years B. 26 years
C. 29 years D. 23 years

Reported one-paper age pattern (adapted).

Solution

$$x + 7 = 2(x - 8)$$

$$x + 7 = 2x - 16$$

$$x = 23$$

Final Answer

23 years

MCQ 88

If 12 years are added to two-thirds of Rani's present age, the result is 3 years more than her present age. Find Rani's age.

- A. 27 years B. 24 years
C. 30 years D. 33 years

Reported one-paper age pattern (adapted).

Solution

$$\frac{2}{3}x + 12 = x + 3$$

$$12 - 3 = x - \frac{2}{3}x$$

$$9 = \frac{1}{3}x$$

$$x = 27$$

Final Answer

27 years

MCQ 89

Laila is four times as old as her 2-year-old brother. How old will the brother be when he becomes half as old as Laila?

- A. 4 years B. 6 years
C. 8 years D. 10 years

Reported one-paper age pattern (adapted).

Solution

$$L = 4(2) = 8$$

$$2 + t = \frac{1}{2}(8 + t)$$

$$4 + 2t = 8 + t$$

$$t = 4$$

$$\text{Brother's age} = 2 + 4 = 6$$

Final Answer

6 years

MCQ 90

Five years ago, a person's age was four-fifths of the age he will be five years from now. Find the present age.

- A. 40 years B. 50 years
C. 45 years D. 55 years

Solution

$$x - 5 = \frac{4}{5}(x + 5)$$

$$5x - 25 = 4x + 20$$

$$x = 45$$

Final Answer

45 years

MCQ 91

The sum of the ages of a father and son is 100 years. Five years ago, their ages were in the ratio 2 : 1. What will be their age ratio after 10 years?

- A. 7:5 B. 5:3
C. 4:3 D. 3:2

Reported PPSC-style age pattern (adapted).

Solution

$$F + S = 100$$

$$\frac{F - 5}{S - 5} = \frac{2}{1}$$

$$F - 5 = 2S - 10$$

$$F = 2S - 5$$

$$2S - 5 + S = 100$$

$$3S = 105$$

$$S = 35, \quad F = 65$$

$$\text{After 10 years: } 75 : 45$$

$$75 : 45 = 5 : 3$$

Final Answer

5 : 3

MCQ 92

A father says to his son: "At the time of your birth, I was as old as you are now." If the father is 38 years old now, how old was the son 5 years ago?

- A. 14 years B. 12 years
C. 16 years D. 18 years

Common age-problem pattern (adapted).

Solution

$$\text{Son's present age} = S$$

$$\text{Father's age at son's birth} = 38 - S$$

$$38 - S = S$$

$$2S = 38$$

$$S = 19$$

$$19 - 5 = 14$$

Final Answer

14 years

MCQ 93

A father is 30 years older than his son. After 5 years, the father will be three times as old as the son. Find the father's present age.

- A. 35 years B. 40 years
C. 45 years D. 50 years

Common age-problem pattern (adapted).

Solution

$$F = S + 30$$

$$F + 5 = 3(S + 5)$$

$$S + 35 = 3S + 15$$

$$20 = 2S$$

$$S = 10$$

$$F = 40$$

Final Answer

40 years

MCQ 94

A mother and daughter are presently in the age ratio 8 : 3, and their age difference is 35 years. What will their ratio be after 4 years?

- A. 8:3 B. 13:6
C. 12:5 D. 5:2

Common quantitative-aptitude age pattern (adapted).

Solution

$$M : D = 8 : 3$$

$$8x - 3x = 35$$

$$5x = 35$$

$$x = 7$$

$$M = 56, \quad D = 21$$

After 4 years: 60 : 25

$$60 : 25 = 12 : 5$$

Final Answer

12 : 5

MCQ 95

B is 6 years older than A. Four years ago, B was twice as old as A. Find B's present age.

- A. 14 years B. 18 years
C. 20 years D. 16 years

Solution

$$B = A + 6$$

$$B - 4 = 2(A - 4)$$

$$A + 2 = 2A - 8$$

$$A = 10$$

$$B = 16$$

Final Answer

16 years

High-Yield Past-Paper-Style Mix**MCQ 96**

The sum of the present ages of a father and son is 50 years. Ten years ago, the father was 9 times as old as the son. Find the father's present age.

- A. 37 years B. 32 years
C. 42 years D. 47 years

Reported PPSC past-paper pattern (adapted).

Solution

$$F + S = 50$$

$$F - 10 = 9(S - 10)$$

$$F = 9S - 80$$

$$9S - 80 + S = 50$$

$$10S = 130$$

$$S = 13$$

$$F = 37$$

Final Answer

37 years

MCQ 97

The difference between the ages of two persons is 10 years. Fifteen years ago, the elder person was twice as old as the younger. Find the elder person's present age.

- A. 32 years B. 35 years
C. 38 years D. 41 years

Reported one-paper age pattern (adapted).

Solution

$$E = Y + 10$$

$$E - 15 = 2(Y - 15)$$

$$Y - 5 = 2Y - 30$$

$$Y = 25$$

$$E = 35$$

Final Answer

35 years

MCQ 98

The present ages of two friends are in the ratio 6 : 5 and their total age is 66 years. After how many years will their ages be in the ratio 8 : 7?

- A. 10 years B. 14 years
C. 12 years D. 16 years

Reported one-paper age pattern (adapted).

Solution

$$6x + 5x = 66$$

$$11x = 66$$

$$x = 6$$

$$\text{Present ages} = 36, 30$$

$$\frac{36 + t}{30 + t} = \frac{8}{7}$$

$$7(36 + t) = 8(30 + t)$$

$$252 + 7t = 240 + 8t$$

$$t = 12$$

Final Answer

12 years

MCQ 99

A father is now three times as old as his son. Five years ago, he was four times as old as his son. Find the son's present age.

- A. 13 years B. 17 years
C. 19 years D. 15 years

Reported one-paper age pattern (adapted).

Solution

$$F = 3S$$

$$F - 5 = 4(S - 5)$$

$$3S - 5 = 4S - 20$$

$$S = 15$$

Final Answer

15 years

MCQ 100

A father is 9 times as old as his son and a mother is 8 times as old as the son. If the sum of the parents' ages is 51 years, find the son's age.

- A. 3 years B. 1 years
C. 5 years D. 7 years

Reported PPSC past-paper pattern (adapted).

Solution

$$F = 9S, \quad M = 8S$$

$$F + M = 51$$

$$9S + 8S = 51$$

$$17S = 51$$

$$S = 3$$

Final Answer

3 years

AGE PROBLEMS | RAPID REVISION GRID

Core translations

$$\text{Present} = x$$

$$n \text{ years ago} = x - n$$

$$n \text{ years later} = x + n$$

Two-person total shift After n years:

$$(x + n) + (y + n) = x + y + 2n$$

Before n years:

$$(x - n) + (y - n) = x + y - 2n$$

Ratio shortcut For $a : b$: write ages as ax, bx . Do not invent two separate variables unless needed.

Average shortcut

$$\text{Total} = \bar{x} n$$

Replacement:

$$\text{New total} = \text{Old total} - \text{Leaving age} + \text{Joining age}$$

Birth interval pattern For m children born every d years:

$$x, x + d, x + 2d, \dots, x + (m - 1)d$$

One-paper check After solving, substitute the ages back into the original past/future ratio. A correct age solution must satisfy every stated condition and must keep all past ages non-negative.

Ratio + sum For ratio $a : b$ and total S :

$$x = \frac{S}{a + b}, \quad \text{ages} = ax, bx$$

Ratio + difference For ratio $a : b$ and difference D :

$$x = \frac{D}{|a - b|}$$

Difference check No matter how many years pass:

$$(x + n) - (y + n) = x - y$$

The age gap never changes.

Same-member average If nobody joins or leaves, after n years:

$$\bar{x}_{\text{new}} = \bar{x}_{\text{old}} + n$$



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Fast Partnership Foundation

Basic partnership rule

$$\text{Profit share} \propto \text{Capital} \times \text{Time}$$

For partner i :

$$W_i = C_i T_i$$

Same investment period If all partners invest for equal time:

$$A : B = C_A : C_B$$

Time cancels completely.

Different investment periods

$$A : B = (C_A T_A) : (C_B T_B)$$

Use months consistently for every partner.

Individual profit share If the ratio is $a : b : c$ and total profit is P :

$$A = P \frac{a}{a + b + c}$$

Joining later If B joins after m months in a one-year business:

$$T_B = 12 - m$$

Do not use m as B's investment time.

Leaving early If a partner leaves after m months:

$$T = m$$

Only the months actually invested count.

Capital changes during the year Add capital-months period by period:

$$W = C_1 T_1 + C_2 T_2 + \dots$$

Working partner salary If salary/commission is allowed before division:

$$\text{Balance profit} = P - \text{Salary/Commission}$$

Then divide the balance by the partnership ratio.

Loss sharing Unless stated otherwise, loss follows the same ratio as profit:

$$\text{Loss ratio} = \text{Capital-Time ratio}$$

Exam-speed method Reduce $C \times T$ values before using the total profit. For two partners, find only the required partner's fraction of the total; do not calculate both shares unless needed.

Equal-Time Investment & Direct Profit Sharing

MCQ 1

A and B invest Rs. 20,000 and Rs. 30,000 for the same period. If the total profit is Rs. 25,000, what is A's share?

- A. Rs. 8,000 B. Rs. 10,000
C. Rs. 12,500 D. Rs. 13,333

Solution

$$A : B = 20000 : 30000 = 2 : 3$$

$$\text{Total parts} = 5$$

$$\begin{aligned} A's \text{ share} &= \text{Rs. } 25,000 \times \frac{2}{5} \\ &= \text{Rs. } 10,000 \end{aligned}$$

Final Answer

Rs. 10,000

MCQ 2

A and B invest Rs. 24,000 and Rs. 36,000 for the same period. If the total profit is Rs. 30,000, what is A's share?

- A. Rs. 9,600 B. Rs. 15,000
C. Rs. 12,000 D. Rs. 16,000

Solution

$$A : B = 24000 : 36000 = 2 : 3$$

$$\text{Total parts} = 5$$

$$\begin{aligned} A's \text{ share} &= \text{Rs. } 30,000 \times \frac{2}{5} \\ &= \text{Rs. } 12,000 \end{aligned}$$

Final Answer

Rs. 12,000

MCQ 3

A and B invest Rs. 35,000 and Rs. 49,000 for the same period. If the total profit is Rs. 42,000, what is A's share?

- A. Rs. 14,000 B. Rs. 21,875
C. Rs. 23,333 D. Rs. 17,500

Solution

$$A : B = 35000 : 49000 = 5 : 7$$

$$\text{Total parts} = 12$$

$$\begin{aligned} A's \text{ share} &= \text{Rs. } 42,000 \times \frac{5}{12} \\ &= \text{Rs. } 17,500 \end{aligned}$$

Final Answer

Rs. 17,500

MCQ 4

A and B invest Rs. 18,000 and Rs. 27,000 for the same period. If the total profit is Rs. 22,500, what is A's share?

- A. Rs. 9,000 B. Rs. 7,200
C. Rs. 11,250 D. Rs. 12,000

Solution

$$A : B = 18000 : 27000 = 2 : 3$$

$$\text{Total parts} = 5$$

$$\begin{aligned} A's \text{ share} &= \text{Rs. } 22,500 \times \frac{2}{5} \\ &= \text{Rs. } 9,000 \end{aligned}$$

Final Answer

Rs. 9,000

MCQ 5

A and B invest Rs. 40,000 and Rs. 60,000 for the same period. If the total profit is Rs. 50,000, what is A's share?

- A. Rs. 16,000 B. Rs. 20,000
C. Rs. 25,000 D. Rs. 26,666

Solution

$$A : B = 40000 : 60000 = 2 : 3$$

$$\text{Total parts} = 5$$

$$\begin{aligned} A's \text{ share} &= \text{Rs. } 50,000 \times \frac{2}{5} \\ &= \text{Rs. } 20,000 \end{aligned}$$

Final Answer

Rs. 20,000

MCQ 6

A and B invest Rs. 45,000 and Rs. 75,000 for the same period. If the total profit is Rs. 32,000, what is A's share?

- A. Rs. 9,600 B. Rs. 15,000
C. Rs. 12,000 D. Rs. 16,000

Solution

$$A : B = 45000 : 75000 = 3 : 5$$

$$\text{Total parts} = 8$$

$$\begin{aligned} \text{A's share} &= \text{Rs. } 32,000 \times \frac{3}{8} \\ &= \text{Rs. } 12,000 \end{aligned}$$

Final Answer

Rs. 12,000

MCQ 7

A and B invest Rs. 28,000 and Rs. 42,000 for the same period. If the total profit is Rs. 25,000, what is A's share?

- A. Rs. 8,000 B. Rs. 12,500
C. Rs. 13,333 D. Rs. 10,000

Solution

$$A : B = 28000 : 42000 = 2 : 3$$

$$\text{Total parts} = 5$$

$$\begin{aligned} \text{A's share} &= \text{Rs. } 25,000 \times \frac{2}{5} \\ &= \text{Rs. } 10,000 \end{aligned}$$

Final Answer

Rs. 10,000

MCQ 8

A and B invest Rs. 32,000 and Rs. 48,000 for the same period. If the total profit is Rs. 35,000, what is A's share?

- A. Rs. 14,000 B. Rs. 11,200
C. Rs. 17,500 D. Rs. 18,666

Solution

$$A : B = 32000 : 48000 = 2 : 3$$

$$\text{Total parts} = 5$$

$$\begin{aligned} \text{A's share} &= \text{Rs. } 35,000 \times \frac{2}{5} \\ &= \text{Rs. } 14,000 \end{aligned}$$

Final Answer

Rs. 14,000

MCQ 9

A and B invest Rs. 25,000 and Rs. 40,000 for the same period. If the total profit is Rs. 39,000, what is A's share?

- A. Rs. 12,000 B. Rs. 15,000
C. Rs. 18,750 D. Rs. 20,000

Solution

$$A : B = 25000 : 40000 = 5 : 8$$

$$\text{Total parts} = 13$$

$$\begin{aligned} \text{A's share} &= \text{Rs. } 39,000 \times \frac{5}{13} \\ &= \text{Rs. } 15,000 \end{aligned}$$

Final Answer

Rs. 15,000

MCQ 10

A and B invest Rs. 36,000 and Rs. 54,000 for the same period. If the total profit is Rs. 45,000, what is A's share?

- A. Rs. 14,400 B. Rs. 22,500
C. Rs. 18,000 D. Rs. 24,000

Solution

$$A : B = 36000 : 54000 = 2 : 3$$

$$\text{Total parts} = 5$$

$$\begin{aligned} \text{A's share} &= \text{Rs. } 45,000 \times \frac{2}{5} \\ &= \text{Rs. } 18,000 \end{aligned}$$

Final Answer

Rs. 18,000

MCQ 11

A and B invest Rs. 42,000 and Rs. 63,000 for the same period. If the total profit is Rs. 56,000, what is A's share?

- A. Rs. 17,920 B. Rs. 28,000
C. Rs. 29,866 D. Rs. 22,400

Solution

$$A : B = 42000 : 63000 = 2 : 3$$

$$\text{Total parts} = 5$$

$$\begin{aligned} \text{A's share} &= \text{Rs. } 56,000 \times \frac{2}{5} \\ &= \text{Rs. } 22,400 \end{aligned}$$

Final Answer

Rs. 22,400

MCQ 12

A and B invest Rs. 30,000 and Rs. 50,000 for the same period. If the total profit is Rs. 32,000, what is A's share?

- A. Rs. 12,000 B. Rs. 9,600
C. Rs. 15,000 D. Rs. 16,000

Solution

$$A : B = 30000 : 50000 = 3 : 5$$

$$\text{Total parts} = 8$$

$$\begin{aligned} \text{A's share} &= \text{Rs. } 32,000 \times \frac{3}{8} \\ &= \text{Rs. } 12,000 \end{aligned}$$

Final Answer

Rs. 12,000

MCQ 13

A and B invest Rs. 55,000 and Rs. 77,000 for the same period. If the total profit is Rs. 48,000, what is A's share?

- A. Rs. 16,000 B. Rs. 20,000
C. Rs. 25,000 D. Rs. 26,666

Solution

$$A : B = 55000 : 77000 = 5 : 7$$

$$\text{Total parts} = 12$$

$$\begin{aligned} \text{A's share} &= \text{Rs. } 48,000 \times \frac{5}{12} \\ &= \text{Rs. } 20,000 \end{aligned}$$

Final Answer

Rs. 20,000

MCQ 14

A and B invest Rs. 48,000 and Rs. 72,000 for the same period. If the total profit is Rs. 60,000, what is A's share?

- A. Rs. 19,200 B. Rs. 30,000
C. Rs. 24,000 D. Rs. 32,000

Solution

$$A : B = 48000 : 72000 = 2 : 3$$

$$\text{Total parts} = 5$$

$$\begin{aligned} \text{A's share} &= \text{Rs. } 60,000 \times \frac{2}{5} \\ &= \text{Rs. } 24,000 \end{aligned}$$

Final Answer

Rs. 24,000

MCQ 15

A and B invest Rs. 60,000 and Rs. 90,000 for the same period. If the total profit is Rs. 75,000, what is A's share?

- A. Rs. 24,000 B. Rs. 37,500
C. Rs. 40,000 D. Rs. 30,000

Solution

$$A : B = 60000 : 90000 = 2 : 3$$

$$\text{Total parts} = 5$$

$$\begin{aligned} \text{A's share} &= \text{Rs. } 75,000 \times \frac{2}{5} \\ &= \text{Rs. } 30,000 \end{aligned}$$

Final Answer

Rs. 30,000

MCQ 16

A and B invest Rs. 30,000 and Rs. 45,000 for one year. In what ratio should they share the profit?

- A. 2:3 B. 3:2
C. 3:3 D. 2:4

Solution

Profit ratio = Capital ratio

$$\begin{aligned} A : B &= 30000 : 45000 \\ &= 2 : 3 \end{aligned}$$

Final Answer

2:3

MCQ 17

A and B invest Rs. 24,000 and Rs. 36,000 for one year. In what ratio should they share the profit?

- A. 3:2 B. 2:3
C. 3:3 D. 2:4

Solution

Profit ratio = Capital ratio

$$\begin{aligned} A : B &= 24000 : 36000 \\ &= 2 : 3 \end{aligned}$$

Final Answer

2:3

MCQ 18

A and B invest Rs. 28,000 and Rs. 42,000 for one year. In what ratio should they share the profit?

- A. 3:2 B. 3:3
C. 2:3 D. 2:4

Solution

Profit ratio = Capital ratio

$$\begin{aligned} A : B &= 28000 : 42000 \\ &= 2 : 3 \end{aligned}$$

Final Answer**2:3****MCQ 19**

A and B invest Rs. 32,000 and Rs. 56,000 for one year. In what ratio should they share the profit?

- A. 7:4 B. 5:7
C. 4:8 D. 4:7

Solution

Profit ratio = Capital ratio

$$\begin{aligned} A : B &= 32000 : 56000 \\ &= 4 : 7 \end{aligned}$$

Final Answer**4:7****MCQ 20**

A and B invest Rs. 35,000 and Rs. 50,000 for one year. In what ratio should they share the profit?

- A. 7:10 B. 10:7
C. 8:10 D. 7:11

Solution

Profit ratio = Capital ratio

$$\begin{aligned} A : B &= 35000 : 50000 \\ &= 7 : 10 \end{aligned}$$

Final Answer**7:10****MCQ 21**

A and B invest Rs. 40,000 and Rs. 65,000 for one year. In what ratio should they share the profit?

- A. 13:8 B. 8:13
C. 9:13 D. 8:14

Solution

Profit ratio = Capital ratio

$$\begin{aligned} A : B &= 40000 : 65000 \\ &= 8 : 13 \end{aligned}$$

Final Answer**8:13****MCQ 22**

A and B invest Rs. 45,000 and Rs. 60,000 for one year. In what ratio should they share the profit?

- A. 4:3 B. 4:4
C. 3:4 D. 3:5

Solution

Profit ratio = Capital ratio

$$\begin{aligned} A : B &= 45000 : 60000 \\ &= 3 : 4 \end{aligned}$$

Final Answer**3:4****MCQ 23**

A and B invest Rs. 50,000 and Rs. 75,000 for one year. In what ratio should they share the profit?

- A. 3:2 B. 3:3
C. 2:4 D. 2:3

Solution

Profit ratio = Capital ratio

$$\begin{aligned} A : B &= 50000 : 75000 \\ &= 2 : 3 \end{aligned}$$

Final Answer**2:3**

MCQ 24

A and B invest Rs. 54,000 and Rs. 72,000 for one year. In what ratio should they share the profit?

- A. 3:4 B. 4:3
C. 4:4 D. 3:5

Solution

Profit ratio = Capital ratio

$$A : B = 54000 : 72000$$

$$= 3 : 4$$

Final Answer**3:4****MCQ 25**

A and B invest Rs. 60,000 and Rs. 84,000 for one year. In what ratio should they share the profit?

- A. 7:5 B. 5:7
C. 6:7 D. 5:8

Solution

Profit ratio = Capital ratio

$$A : B = 60000 : 84000$$

$$= 5 : 7$$

Final Answer**5:7****MCQ 26**

A and B invest Rs. 25,000 and Rs. 40,000 for one year. In what ratio should they share the profit?

- A. 8:5 B. 6:8
C. 5:8 D. 5:9

Solution

Profit ratio = Capital ratio

$$A : B = 25000 : 40000$$

$$= 5 : 8$$

Final Answer**5:8****MCQ 27**

A and B invest Rs. 33,000 and Rs. 55,000 for one year. In what ratio should they share the profit?

- A. 5:3 B. 4:5
C. 3:6 D. 3:5

Solution

Profit ratio = Capital ratio

$$A : B = 33000 : 55000$$

$$= 3 : 5$$

Final Answer**3:5****MCQ 28**

A and B invest Rs. 48,000 and Rs. 80,000 for one year. In what ratio should they share the profit?

- A. 3:5 B. 5:3
C. 4:5 D. 3:6

Solution

Profit ratio = Capital ratio

$$A : B = 48000 : 80000$$

$$= 3 : 5$$

Final Answer**3:5****Unequal Time, Joining Later & Leaving Early****MCQ 29**

A invests Rs. 40,000 for 12 months and B invests Rs. 30,000 for 8 months. If the profit is Rs. 42,000, find B's share.

- A. Rs. 11,200 B. Rs. 14,000
C. Rs. 17,500 D. Rs. 18,666

Solution

$$A : B = (40000 \times 12) : (30000 \times 8)$$

$$= 480000 : 240000 = 2 : 1$$

$$B's \text{ share} = Rs. 42,000 \times \frac{1}{3}$$

$$= Rs. 14,000$$

Final Answer**Rs. 14,000**

MCQ 30

A invests Rs. 50,000 for 12 months and B invests Rs. 40,000 for 9 months. If the profit is Rs. 66,000, find B's share.

- A. Rs. 19,800 B. Rs. 30,937
C. Rs. 24,750 D. Rs. 33,000

Solution

$$\begin{aligned} A : B &= (50000 \times 12) : (40000 \times 9) \\ &= 600000 : 360000 = 5 : 3 \\ B's \text{ share} &= \text{Rs. } 66,000 \times \frac{3}{8} \\ &= \text{Rs. } 24,750 \end{aligned}$$

Final Answer

Rs. 24,750

MCQ 31

A invests Rs. 60,000 for 12 months and B invests Rs. 45,000 for 8 months. If the profit is Rs. 69,000, find B's share.

- A. Rs. 18,400 B. Rs. 28,750
C. Rs. 30,666 D. Rs. 23,000

Solution

$$\begin{aligned} A : B &= (60000 \times 12) : (45000 \times 8) \\ &= 720000 : 360000 = 2 : 1 \\ B's \text{ share} &= \text{Rs. } 69,000 \times \frac{1}{3} \\ &= \text{Rs. } 23,000 \end{aligned}$$

Final Answer

Rs. 23,000

MCQ 32

A invests Rs. 30,000 for 12 months and B invests Rs. 50,000 for 6 months. If the profit is Rs. 44,000, find B's share.

- A. Rs. 20,000 B. Rs. 16,000
C. Rs. 25,000 D. Rs. 26,666

Solution

$$\begin{aligned} A : B &= (30000 \times 12) : (50000 \times 6) \\ &= 360000 : 300000 = 6 : 5 \\ B's \text{ share} &= \text{Rs. } 44,000 \times \frac{5}{11} \\ &= \text{Rs. } 20,000 \end{aligned}$$

Final Answer

Rs. 20,000

MCQ 33

A invests Rs. 48,000 for 12 months and B invests Rs. 32,000 for 9 months. If the profit is Rs. 9,000, find B's share.

- A. Rs. 2,000 B. Rs. 3,000
C. Rs. 4,000 D. Rs. 4,000

Solution

$$\begin{aligned} A : B &= (48000 \times 12) : (32000 \times 9) \\ &= 576000 : 288000 = 2 : 1 \\ B's \text{ share} &= \text{Rs. } 9,000 \times \frac{1}{3} \\ &= \text{Rs. } 3,000 \end{aligned}$$

Final Answer

Rs. 3,000

MCQ 34

A invests Rs. 45,000 for 10 months and B invests Rs. 60,000 for 6 months. If the profit is Rs. 27,000, find B's share.

- A. Rs. 9,600 B. Rs. 15,000
C. Rs. 12,000 D. Rs. 16,000

Solution

$$\begin{aligned} A : B &= (45000 \times 10) : (60000 \times 6) \\ &= 450000 : 360000 = 5 : 4 \\ B's \text{ share} &= \text{Rs. } 27,000 \times \frac{4}{9} \\ &= \text{Rs. } 12,000 \end{aligned}$$

Final Answer

Rs. 12,000

MCQ 35

A invests Rs. 36,000 for 12 months and B invests Rs. 54,000 for 8 months. If the profit is Rs. 60,000, find B's share.

- A. Rs. 24,000 B. Rs. 37,500
C. Rs. 40,000 D. Rs. 30,000

Solution

$$\begin{aligned} A : B &= (36000 \times 12) : (54000 \times 8) \\ &= 432000 : 432000 = 1 : 1 \\ B's \text{ share} &= \text{Rs. } 60,000 \times \frac{1}{2} \\ &= \text{Rs. } 30,000 \end{aligned}$$

Final Answer

Rs. 30,000

MCQ 36

A invests Rs. 72,000 for 12 months and B invests Rs. 48,000 for 9 months. If the profit is Rs. 78,000, find B's share.

- A. Rs. 26,000 B. Rs. 20,800
C. Rs. 32,500 D. Rs. 34,666

Solution

$$\begin{aligned} A : B &= (72000 \times 12) : (48000 \times 9) \\ &= 864000 : 432000 = 2 : 1 \\ B's \text{ share} &= \text{Rs. } 78,000 \times \frac{1}{3} \\ &= \text{Rs. } 26,000 \end{aligned}$$

Final Answer

Rs. 26,000

MCQ 37

A invests Rs. 50,000 for 8 months and B invests Rs. 30,000 for 12 months. If the profit is Rs. 57,000, find B's share.

- A. Rs. 21,600 B. Rs. 27,000
C. Rs. 33,750 D. Rs. 36,000

Solution

$$\begin{aligned} A : B &= (50000 \times 8) : (30000 \times 12) \\ &= 400000 : 360000 = 10 : 9 \\ B's \text{ share} &= \text{Rs. } 57,000 \times \frac{9}{19} \\ &= \text{Rs. } 27,000 \end{aligned}$$

Final Answer

Rs. 27,000

MCQ 38

A invests Rs. 42,000 for 12 months and B invests Rs. 63,000 for 6 months. If the profit is Rs. 21,000, find B's share.

- A. Rs. 7,200 B. Rs. 11,250
C. Rs. 9,000 D. Rs. 12,000

Solution

$$\begin{aligned} A : B &= (42000 \times 12) : (63000 \times 6) \\ &= 504000 : 378000 = 4 : 3 \\ B's \text{ share} &= \text{Rs. } 21,000 \times \frac{3}{7} \\ &= \text{Rs. } 9,000 \end{aligned}$$

Final Answer

Rs. 9,000

MCQ 39

A invests Rs. 64,000 for 9 months and B invests Rs. 48,000 for 12 months. If the profit is Rs. 69,000, find B's share.

- A. Rs. 27,600 B. Rs. 43,125
C. Rs. 46,000 D. Rs. 34,500

Solution

$$\begin{aligned} A : B &= (64000 \times 9) : (48000 \times 12) \\ &= 576000 : 576000 = 1 : 1 \\ B's \text{ share} &= \text{Rs. } 69,000 \times \frac{1}{2} \\ &= \text{Rs. } 34,500 \end{aligned}$$

Final Answer

Rs. 34,500

MCQ 40

A invests Rs. 75,000 for 12 months and B invests Rs. 50,000 for 6 months. If the profit is Rs. 72,000, find B's share.

- A. Rs. 18,000 B. Rs. 14,400
C. Rs. 22,500 D. Rs. 24,000

Solution

$$\begin{aligned} A : B &= (75000 \times 12) : (50000 \times 6) \\ &= 900000 : 300000 = 3 : 1 \\ B's \text{ share} &= \text{Rs. } 72,000 \times \frac{1}{4} \\ &= \text{Rs. } 18,000 \end{aligned}$$

Final Answer

Rs. 18,000

MCQ 41

A starts a business with Rs. 60,000. B joins with Rs. 40,000. At year-end the profit ratio A:B is 9:4. After how many months from the start did B join?

- A. 2 months B. 4 months
C. 6 months D. 8 months

Solution

$$\begin{aligned} (60000 \times 12) : (40000 \times m) &= 9 : 4 \\ \frac{720000}{40000m} &= \frac{9}{4} \\ 2880000 &= 360000m \\ m &= 8 \text{ months invested} \end{aligned}$$

Joined after = 12 - 8 = 4 months

Final Answer

4 months

MCQ 42

A starts a business with Rs. 80,000. B joins with Rs. 60,000. At year-end the profit ratio A:B is 2:1. After how many months from the start did B join?

- A. 2 months B. 6 months
C. 4 months D. 8 months

Solution

$$(80000 \times 12) : (60000 \times m) = 2 : 1$$

$$\frac{960000}{60000m} = \frac{2}{1}$$

$$960000 = 120000m$$

$$m = 8 \text{ months invested}$$

$$\text{Joined after} = 12 - 8 = 4 \text{ months}$$

Final Answer

4 months

MCQ 43

A starts a business with Rs. 50,000. B joins with Rs. 75,000. At year-end the profit ratio A:B is 4:3. After how many months from the start did B join?

- A. 4 months B. 8 months
C. 10 months D. 6 months

Solution

$$(50000 \times 12) : (75000 \times m) = 4 : 3$$

$$\frac{600000}{75000m} = \frac{4}{3}$$

$$1800000 = 300000m$$

$$m = 6 \text{ months invested}$$

$$\text{Joined after} = 12 - 6 = 6 \text{ months}$$

Final Answer

6 months

MCQ 44

A starts a business with Rs. 90,000. B joins with Rs. 60,000. At year-end the profit ratio A:B is 3:1. After how many months from the start did B join?

- A. 6 months B. 4 months
C. 8 months D. 10 months

Solution

$$(90000 \times 12) : (60000 \times m) = 3 : 1$$

$$\frac{1080000}{60000m} = \frac{3}{1}$$

$$1080000 = 180000m$$

$$m = 6 \text{ months invested}$$

$$\text{Joined after} = 12 - 6 = 6 \text{ months}$$

Final Answer

6 months

MCQ 45

A starts a business with Rs. 70,000. B joins with Rs. 42,000. At year-end the profit ratio A:B is 5:2. After how many months from the start did B join?

- A. 2 months B. 4 months
C. 6 months D. 8 months

Solution

$$(70000 \times 12) : (42000 \times m) = 5 : 2$$

$$\frac{840000}{42000m} = \frac{5}{2}$$

$$1680000 = 210000m$$

$$m = 8 \text{ months invested}$$

$$\text{Joined after} = 12 - 8 = 4 \text{ months}$$

Final Answer

4 months

MCQ 46

A starts a business with Rs. 40,000. B joins with Rs. 60,000. At year-end the profit ratio A:B is 4:3. After how many months from the start did B join?

- A. 4 months B. 8 months
C. 6 months D. 10 months

Solution

$$(40000 \times 12) : (60000 \times m) = 4 : 3$$

$$\frac{480000}{60000m} = \frac{4}{3}$$

$$1440000 = 240000m$$

$$m = 6 \text{ months invested}$$

$$\text{Joined after} = 12 - 6 = 6 \text{ months}$$

Final Answer

6 months

MCQ 47

A starts a business with Rs. 75,000. B joins with Rs. 50,000. At year-end the profit ratio A:B is 9:4. After how many months from the start did B join?

- A. 2 months B. 6 months
C. 8 months D. 4 months

Solution

$$(75000 \times 12) : (50000 \times m) = 9 : 4$$

$$\frac{900000}{50000m} = \frac{9}{4}$$

$$3600000 = 450000m$$

$$m = 8 \text{ months invested}$$

$$\text{Joined after} = 12 - 8 = 4 \text{ months}$$

Final Answer

4 months

MCQ 48

A starts a business with Rs. 96,000. B joins with Rs. 64,000. At year-end the profit ratio A:B is 9:4. After how many months from the start did B join?

- A. 4 months B. 2 months
C. 6 months D. 8 months

Solution

$$(96000 \times 12) : (64000 \times m) = 9 : 4$$

$$\frac{1152000}{64000m} = \frac{9}{4}$$

$$4608000 = 576000m$$

$$m = 8 \text{ months invested}$$

$$\text{Joined after} = 12 - 8 = 4 \text{ months}$$

Final Answer

4 months

MCQ 49

A starts a business with Rs. 54,000. B joins with Rs. 36,000. At year-end the profit ratio A:B is 9:4. After how many months from the start did B join?

- A. 2 months B. 4 months
C. 6 months D. 8 months

Solution

$$(54000 \times 12) : (36000 \times m) = 9 : 4$$

$$\frac{648000}{36000m} = \frac{9}{4}$$

$$2592000 = 324000m$$

$$m = 8 \text{ months invested}$$

$$\text{Joined after} = 12 - 8 = 4 \text{ months}$$

Final Answer

4 months

MCQ 50

A starts a business with Rs. 84,000. B joins with Rs. 56,000. At year-end the profit ratio A:B is 9:4. After how many months from the start did B join?

- A. 2 months B. 6 months
C. 4 months D. 8 months

Solution

$$(84000 \times 12) : (56000 \times m) = 9 : 4$$

$$\frac{1008000}{56000m} = \frac{9}{4}$$

$$4032000 = 504000m$$

$$m = 8 \text{ months invested}$$

$$\text{Joined after} = 12 - 8 = 4 \text{ months}$$

Final Answer

4 months

Three-Partner Profit Sharing**MCQ 51**

A, B and C invest Rs. 20,000, Rs. 30,000 and Rs. 50,000 for the same period. If total profit is Rs. 30,000, find C's share.

- A. Rs. 12,000 B. Rs. 18,750
C. Rs. 20,000 D. Rs. 15,000

Solution

$$A : B : C = 20000 : 30000 : 50000 = 2 : 3 : 5$$

$$\text{Total parts} = 10$$

$$\begin{aligned} \text{C's share} &= \text{Rs. } 30,000 \times \frac{5}{10} \\ &= \text{Rs. } 15,000 \end{aligned}$$

Final Answer

Rs. 15,000

MCQ 52

A, B and C invest Rs. 30,000, Rs. 45,000 and Rs. 75,000 for the same period. If total profit is Rs. 50,000, find C's share.

- A. Rs. 25,000 B. Rs. 20,000
C. Rs. 31,250 D. Rs. 33,333

Solution

$$A : B : C = 30000 : 45000 : 75000 = 2 : 3 : 5$$

$$\text{Total parts} = 10$$

$$\begin{aligned} \text{C's share} &= \text{Rs. } 50,000 \times \frac{5}{10} \\ &= \text{Rs. } 25,000 \end{aligned}$$

Final Answer

Rs. 25,000

MCQ 53

A, B and C invest Rs. 24,000, Rs. 36,000 and Rs. 60,000 for the same period. If total profit is Rs. 40,000, find C's share.

- A. Rs. 16,000 B. Rs. 20,000
C. Rs. 25,000 D. Rs. 26,666

Solution

$$A : B : C = 24000 : 36000 : 60000 = 2 : 3 : 5$$

$$\text{Total parts} = 10$$

$$\begin{aligned} \text{C's share} &= \text{Rs. } 40,000 \times \frac{5}{10} \\ &= \text{Rs. } 20,000 \end{aligned}$$

Final Answer

Rs. 20,000

MCQ 54

A, B and C invest Rs. 40,000, Rs. 50,000 and Rs. 70,000 for the same period. If total profit is Rs. 64,000, find C's share.

- A. Rs. 22,400 B. Rs. 35,000
C. Rs. 28,000 D. Rs. 37,333

Solution

$$A : B : C = 40000 : 50000 : 70000 = 4 : 5 : 7$$

$$\text{Total parts} = 16$$

$$\begin{aligned} \text{C's share} &= \text{Rs. } 64,000 \times \frac{7}{16} \\ &= \text{Rs. } 28,000 \end{aligned}$$

Final Answer

Rs. 28,000

MCQ 55

A, B and C invest Rs. 35,000, Rs. 49,000 and Rs. 56,000 for the same period. If total profit is Rs. 70,000, find C's share.

- A. Rs. 22,400 B. Rs. 35,000
C. Rs. 37,333 D. Rs. 28,000

Solution

$$A : B : C = 35000 : 49000 : 56000 = 5 : 7 : 8$$

$$\text{Total parts} = 20$$

$$\begin{aligned} \text{C's share} &= \text{Rs. } 70,000 \times \frac{8}{20} \\ &= \text{Rs. } 28,000 \end{aligned}$$

Final Answer

Rs. 28,000

MCQ 56

A, B and C invest Rs. 48,000, Rs. 72,000 and Rs. 96,000 for the same period. If total profit is Rs. 90,000, find C's share.

- A. Rs. 40,000 B. Rs. 32,000
C. Rs. 50,000 D. Rs. 53,333

Solution

$$A : B : C = 48000 : 72000 : 96000 = 2 : 3 : 4$$

$$\text{Total parts} = 9$$

$$\begin{aligned} \text{C's share} &= \text{Rs. } 90,000 \times \frac{4}{9} \\ &= \text{Rs. } 40,000 \end{aligned}$$

Final Answer

Rs. 40,000

MCQ 57

A, B and C invest Rs. 30,000, Rs. 50,000 and Rs. 70,000 for the same period. If total profit is Rs. 60,000, find C's share.

- A. Rs. 22,400 B. Rs. 28,000
C. Rs. 35,000 D. Rs. 37,333

Solution

$$A : B : C = 30000 : 50000 : 70000 = 3 : 5 : 7$$

$$\text{Total parts} = 15$$

$$\begin{aligned} \text{C's share} &= \text{Rs. } 60,000 \times \frac{7}{15} \\ &= \text{Rs. } 28,000 \end{aligned}$$

Final Answer

Rs. 28,000

MCQ 58

A, B and C invest Rs. 42,000, Rs. 63,000 and Rs. 84,000 for the same period. If total profit is Rs. 72,000, find C's share.

- A. Rs. 25,600 B. Rs. 40,000
C. Rs. 32,000 D. Rs. 42,666

Solution

$$A : B : C = 42000 : 63000 : 84000 = 2 : 3 : 4$$

$$\text{Total parts} = 9$$

$$\begin{aligned} \text{C's share} &= \text{Rs. } 72,000 \times \frac{4}{9} \\ &= \text{Rs. } 32,000 \end{aligned}$$

Final Answer

Rs. 32,000

MCQ 59

A, B and C invest Rs. 25,000, Rs. 40,000 and Rs. 55,000 for the same period. If total profit is Rs. 48,000, find C's share.

- A. Rs. 17,600 B. Rs. 27,500
C. Rs. 29,333 D. Rs. 22,000

Solution

$$A : B : C = 25000 : 40000 : 55000 = 5 : 8 : 11$$

$$\text{Total parts} = 24$$

$$\begin{aligned} \text{C's share} &= \text{Rs. } 48,000 \times \frac{11}{24} \\ &= \text{Rs. } 22,000 \end{aligned}$$

Final Answer

Rs. 22,000

MCQ 60

A, B and C invest Rs. 36,000, Rs. 54,000 and Rs. 90,000 for the same period. If total profit is Rs. 75,000, find C's share.

- A. Rs. 37,500 B. Rs. 30,000
C. Rs. 46,875 D. Rs. 50,000

Solution

$$A : B : C = 36000 : 54000 : 90000 = 2 : 3 : 5$$

$$\text{Total parts} = 10$$

$$\begin{aligned} \text{C's share} &= \text{Rs. } 75,000 \times \frac{5}{10} \\ &= \text{Rs. } 37,500 \end{aligned}$$

Final Answer

Rs. 37,500

MCQ 61

A, B and C invest Rs. 50,000, Rs. 70,000 and Rs. 80,000 for the same period. If total profit is Rs. 80,000, find C's share.

- A. Rs. 25,600 B. Rs. 32,000
C. Rs. 40,000 D. Rs. 42,666

Solution

$$A : B : C = 50000 : 70000 : 80000 = 5 : 7 : 8$$

$$\text{Total parts} = 20$$

$$\begin{aligned} \text{C's share} &= \text{Rs. } 80,000 \times \frac{8}{20} \\ &= \text{Rs. } 32,000 \end{aligned}$$

Final Answer

Rs. 32,000

MCQ 62

A, B and C invest Rs. 60,000, Rs. 90,000 and Rs. 120,000 for the same period. If total profit is Rs. 108,000, find C's share.

- A. Rs. 38,400 B. Rs. 60,000
C. Rs. 48,000 D. Rs. 64,000

Solution

$$A : B : C = 60000 : 90000 : 120000 = 2 : 3 : 4$$

$$\text{Total parts} = 9$$

$$\begin{aligned} \text{C's share} &= \text{Rs. } 108,000 \times \frac{4}{9} \\ &= \text{Rs. } 48,000 \end{aligned}$$

Final Answer

Rs. 48,000

MCQ 63

A, B and C invest Rs. 30,000 for 12 months, Rs. 40,000 for 9 months and Rs. 50,000 for 6 months. If profit is Rs. 51,000, find B's share.

- A. Rs. 14,400 B. Rs. 22,500
C. Rs. 24,000 D. Rs. 18,000

Solution

$$A : B : C = (30000 \times 12) : (40000 \times 9) : (50000 \times 6)$$

$$= 360000 : 360000 : 300000 = 6 : 6 : 5$$

$$\text{B's share} = \text{Rs. } 51,000 \times \frac{6}{17} = \text{Rs. } 18,000$$

Final Answer

Rs. 18,000

MCQ 64

A, B and C invest Rs. 40,000 for 12 months, Rs. 30,000 for 8 months and Rs. 60,000 for 6 months. If profit is Rs. 27,000, find B's share.

- A. Rs. 6,000 B. Rs. 4,800
C. Rs. 7,500 D. Rs. 8,000

Solution

$$A : B : C = (40000 \times 12) : (30000 \times 8) : (60000 \times 6)$$

$$= 480000 : 240000 : 360000 = 4 : 2 : 3$$

$$\text{B's share} = \text{Rs. } 27,000 \times \frac{2}{9} = \text{Rs. } 6,000$$

Final Answer

Rs. 6,000

MCQ 65

A, B and C invest Rs. 50,000 for 10 months, Rs. 60,000 for 8 months and Rs. 40,000 for 12 months. If profit is Rs. 219,000, find B's share.

- A. Rs. 57,600 B. Rs. 72,000
C. Rs. 90,000 D. Rs. 96,000

Solution

$$A : B : C = (50000 \times 10) : (60000 \times 8) : (40000 \times 12)$$

$$= 500000 : 480000 : 480000 = 25 : 24 : 24$$

$$\text{B's share} = \text{Rs. } 219,000 \times \frac{24}{73} = \text{Rs. } 72,000$$

Final Answer

Rs. 72,000

MCQ 66

A, B and C invest Rs. 24,000 for 12 months, Rs. 36,000 for 10 months and Rs. 48,000 for 8 months. If profit is Rs. 129,000, find B's share.

- A. Rs. 36,000 B. Rs. 56,250
C. Rs. 45,000 D. Rs. 60,000

Solution

$$A : B : C = (24000 \times 12) : (36000 \times 10) : (48000 \times 8)$$

$$= 288000 : 360000 : 384000 = 12 : 15 : 16$$

$$\text{B's share} = \text{Rs. } 129,000 \times \frac{15}{43} = \text{Rs. } 45,000$$

Final Answer

Rs. 45,000

MCQ 67

A, B and C invest Rs. 60,000 for 12 months, Rs. 50,000 for 9 months and Rs. 40,000 for 6 months. If profit is Rs. 141,000, find B's share.

- A. Rs. 36,000 B. Rs. 56,250
C. Rs. 60,000 D. Rs. 45,000

Solution

$$A : B : C = (60000 \times 12) : (50000 \times 9) : (40000 \times 6)$$

$$= 720000 : 450000 : 240000 = 24 : 15 : 8$$

$$B's \text{ share} = Rs. 141,000 \times \frac{15}{47} = Rs. 45,000$$

Final Answer

Rs. 45,000

MCQ 68

A, B and C invest Rs. 45,000 for 12 months, Rs. 60,000 for 6 months and Rs. 30,000 for 9 months. If profit is Rs. 39,000, find B's share.

- A. Rs. 12,000 B. Rs. 9,600
C. Rs. 15,000 D. Rs. 16,000

Solution

$$A : B : C = (45000 \times 12) : (60000 \times 6) : (30000 \times 9)$$

$$= 540000 : 360000 : 270000 = 6 : 4 : 3$$

$$B's \text{ share} = Rs. 39,000 \times \frac{4}{13} = Rs. 12,000$$

Final Answer

Rs. 12,000

MCQ 69

A, B and C invest Rs. 70,000 for 12 months, Rs. 35,000 for 8 months and Rs. 42,000 for 10 months. If profit is Rs. 66,000, find B's share.

- A. Rs. 9,600 B. Rs. 12,000
C. Rs. 15,000 D. Rs. 16,000

Solution

$$A : B : C = (70000 \times 12) : (35000 \times 8) : (42000 \times 10)$$

$$= 840000 : 280000 : 420000 = 6 : 2 : 3$$

$$B's \text{ share} = Rs. 66,000 \times \frac{2}{11} = Rs. 12,000$$

Final Answer

Rs. 12,000

MCQ 70

A, B and C invest Rs. 32,000 for 12 months, Rs. 48,000 for 9 months and Rs. 64,000 for 6 months. If profit is Rs. 60,000, find B's share.

- A. Rs. 17,280 B. Rs. 27,000
C. Rs. 21,600 D. Rs. 28,800

Solution

$$A : B : C = (32000 \times 12) : (48000 \times 9) : (64000 \times 6)$$

$$= 384000 : 432000 : 384000 = 8 : 9 : 8$$

$$B's \text{ share} = Rs. 60,000 \times \frac{9}{25} = Rs. 21,600$$

Final Answer

Rs. 21,600

MCQ 71

A, B and C invest Rs. 54,000 for 12 months, Rs. 36,000 for 6 months and Rs. 72,000 for 9 months. If profit is Rs. 21,000, find B's share.

- A. Rs. 2,400 B. Rs. 3,750
C. Rs. 4,000 D. Rs. 3,000

Solution

$$A : B : C = (54000 \times 12) : (36000 \times 6) : (72000 \times 9)$$

$$= 648000 : 216000 : 648000 = 3 : 1 : 3$$

$$B's \text{ share} = Rs. 21,000 \times \frac{1}{7} = Rs. 3,000$$

Final Answer

Rs. 3,000

MCQ 72

A, B and C invest Rs. 80,000 for 12 months, Rs. 60,000 for 8 months and Rs. 40,000 for 6 months. If profit is Rs. 84,000, find B's share.

- A. Rs. 24,000 B. Rs. 19,200
C. Rs. 30,000 D. Rs. 32,000

Solution

$$A : B : C = (80000 \times 12) : (60000 \times 8) : (40000 \times 6)$$

$$= 960000 : 480000 : 240000 = 4 : 2 : 1$$

$$B's \text{ share} = Rs. 84,000 \times \frac{2}{7} = Rs. 24,000$$

Final Answer

Rs. 24,000

Changing Capital During the Year

MCQ 73

A invests Rs. 40,000 for 6 months and then Rs. 60,000 for 6 months. B keeps Rs. 50,000 invested for 12 months. If profit is Rs. 66,000, find A's share.

- A. Rs. 26,400 B. Rs. 33,000
C. Rs. 41,250 D. Rs. 44,000

Solution

$$A \text{ capital-months} = 40000 \times 6 + 60000 \times 6 = 600000$$

$$B \text{ capital-months} = 50000 \times 12 = 600000$$

$$A : B = 600000 : 600000 = 1 : 1$$

$$A's \text{ share} = Rs. 66,000 \times \frac{1}{2} = Rs. 33,000$$

Final Answer

Rs. 33,000

MCQ 74

A invests Rs. 50,000 for 4 months and then Rs. 80,000 for 8 months. B keeps Rs. 60,000 invested for 12 months. If profit is Rs. 78,000, find A's share.

- A. Rs. 33,600 B. Rs. 52,500
C. Rs. 42,000 D. Rs. 56,000

Solution

$$A \text{ capital-months} = 50000 \times 4 + 80000 \times 8 = 840000$$

$$B \text{ capital-months} = 60000 \times 12 = 720000$$

$$A : B = 840000 : 720000 = 7 : 6$$

$$A's \text{ share} = Rs. 78,000 \times \frac{7}{13} = Rs. 42,000$$

Final Answer

Rs. 42,000

MCQ 75

A invests Rs. 30,000 for 8 months and then Rs. 45,000 for 4 months. B keeps Rs. 60,000 invested for 12 months. If profit is Rs. 57,000, find A's share.

- A. Rs. 16,800 B. Rs. 26,250
C. Rs. 28,000 D. Rs. 21,000

Solution

$$A \text{ capital-months} = 30000 \times 8 + 45000 \times 4 = 420000$$

$$B \text{ capital-months} = 60000 \times 12 = 720000$$

$$A : B = 420000 : 720000 = 7 : 12$$

$$A's \text{ share} = Rs. 57,000 \times \frac{7}{19} = Rs. 21,000$$

Final Answer

Rs. 21,000

MCQ 76

A invests Rs. 70,000 for 6 months and then Rs. 50,000 for 6 months. B keeps Rs. 60,000 invested for 12 months. If profit is Rs. 72,000, find A's share.

- A. Rs. 36,000 B. Rs. 28,800
C. Rs. 45,000 D. Rs. 48,000

Solution

$$A \text{ capital-months} = 70000 \times 6 + 50000 \times 6 = 720000$$

$$B \text{ capital-months} = 60000 \times 12 = 720000$$

$$A : B = 720000 : 720000 = 1 : 1$$

$$A's \text{ share} = Rs. 72,000 \times \frac{1}{2} = Rs. 36,000$$

Final Answer

Rs. 36,000

MCQ 77

A invests Rs. 45,000 for 3 months and then Rs. 75,000 for 9 months. B keeps Rs. 60,000 invested for 12 months. If profit is Rs. 51,000, find A's share.

- A. Rs. 21,600 B. Rs. 27,000
C. Rs. 33,750 D. Rs. 36,000

Solution

$$A \text{ capital-months} = 45000 \times 3 + 75000 \times 9 = 810000$$

$$B \text{ capital-months} = 60000 \times 12 = 720000$$

$$A : B = 810000 : 720000 = 9 : 8$$

$$A's \text{ share} = Rs. 51,000 \times \frac{9}{17} = Rs. 27,000$$

Final Answer

Rs. 27,000

MCQ 78

A invests Rs. 60,000 for 9 months and then Rs. 40,000 for 3 months. B keeps Rs. 50,000 invested for 12 months. If profit is Rs. 63,000, find A's share.

- A. Rs. 26,400 B. Rs. 41,250
C. Rs. 33,000 D. Rs. 44,000

Solution

$$A \text{ capital-months} = 60000 \times 9 + 40000 \times 3 = 660000$$

$$B \text{ capital-months} = 50000 \times 12 = 600000$$

$$A : B = 660000 : 600000 = 11 : 10$$

$$A's \text{ share} = Rs. 63,000 \times \frac{11}{21} = Rs. 33,000$$

Final Answer

Rs. 33,000

MCQ 79

A invests Rs. 80,000 for 6 months and then Rs. 100,000 for 6 months. B keeps Rs. 90,000 invested for 12 months. If profit is Rs. 90,000, find A's share.

- A. Rs. 36,000 B. Rs. 56,250
C. Rs. 60,000 D. Rs. 45,000

Solution

$$A \text{ capital-months} = 80000 \times 6 + 100000 \times 6 = 1080000$$

$$B \text{ capital-months} = 90000 \times 12 = 1080000$$

$$A : B = 1080000 : 1080000 = 1 : 1$$

$$A's \text{ share} = Rs. 90,000 \times \frac{1}{2} = Rs. 45,000$$

Final Answer

Rs. 45,000

MCQ 80

A invests Rs. 36,000 for 4 months and then Rs. 54,000 for 8 months. B keeps Rs. 48,000 invested for 12 months. If profit is Rs. 66,000, find A's share.

- A. Rs. 33,000 B. Rs. 26,400
C. Rs. 41,250 D. Rs. 44,000

Solution

$$A \text{ capital-months} = 36000 \times 4 + 54000 \times 8 = 576000$$

$$B \text{ capital-months} = 48000 \times 12 = 576000$$

$$A : B = 576000 : 576000 = 1 : 1$$

$$A's \text{ share} = Rs. 66,000 \times \frac{1}{2} = Rs. 33,000$$

Final Answer

Rs. 33,000

MCQ 81

A invests Rs. 50,000 for 6 months and then Rs. 70,000 for 6 months. B keeps Rs. 40,000 invested for 12 months. If profit is Rs. 60,000, find A's share.

- A. Rs. 28,800 B. Rs. 36,000
C. Rs. 45,000 D. Rs. 48,000

Solution

$$A \text{ capital-months} = 50000 \times 6 + 70000 \times 6 = 720000$$

$$B \text{ capital-months} = 40000 \times 12 = 480000$$

$$A : B = 720000 : 480000 = 3 : 2$$

$$A's \text{ share} = Rs. 60,000 \times \frac{3}{5} = Rs. 36,000$$

Final Answer

Rs. 36,000

MCQ 82

A invests Rs. 64,000 for 3 months and then Rs. 48,000 for 9 months. B keeps Rs. 56,000 invested for 12 months. If profit is Rs. 81,000, find A's share.

- A. Rs. 31,200 B. Rs. 48,750
C. Rs. 39,000 D. Rs. 52,000

Solution

$$A \text{ capital-months} = 64000 \times 3 + 48000 \times 9 = 624000$$

$$B \text{ capital-months} = 56000 \times 12 = 672000$$

$$A : B = 624000 : 672000 = 13 : 14$$

$$A's \text{ share} = Rs. 81,000 \times \frac{13}{27} = Rs. 39,000$$

Final Answer

Rs. 39,000

Working Partner, Salary & Commission**MCQ 83**

A and B invest Rs. 40,000 and Rs. 60,000 for equal time. A is the working partner and receives a salary of Rs. 5,000 from total profit Rs. 50,000 before the remainder is divided by capital ratio. Find A's total receipt.

- A. Rs. 19,167 B. Rs. 27,600
C. Rs. 28,750 D. Rs. 23,000

Solution

$$\text{Profit left} = Rs. 50,000 - Rs. 5,000 = Rs. 45,000$$

$$A : B = 40000 : 60000 = 2 : 3$$

$$A's \text{ profit share} = Rs. 45,000 \times \frac{2}{5} = Rs. 18,000$$

$$A's \text{ total} = Rs. 5,000 + Rs. 18,000 = Rs. 23,000$$

Final Answer

Rs. 23,000

MCQ 84

A and B invest Rs. 50,000 and Rs. 75,000 for equal time. A is the working partner and receives a salary of Rs. 5,000 from total profit Rs. 65,000 before the remainder is divided by capital ratio. Find A's total receipt.

- A. Rs. 29,000 B. Rs. 24,167
C. Rs. 34,800 D. Rs. 36,250

Solution

$$\text{Profit left} = Rs. 65,000 - Rs. 5,000 = Rs. 60,000$$

$$A : B = 50000 : 75000 = 2 : 3$$

$$A's \text{ profit share} = Rs. 60,000 \times \frac{2}{5} = Rs. 24,000$$

$$A's \text{ total} = Rs. 5,000 + Rs. 24,000 = Rs. 29,000$$

Final Answer

Rs. 29,000

MCQ 85

A and B invest Rs. 60,000 and Rs. 90,000 for equal time. A is the working partner and receives a salary of Rs. 6,000 from total profit Rs. 84,000 before the remainder is divided by capital ratio. Find A's total receipt.

- A. Rs. 31,000 B. Rs. 37,200
C. Rs. 44,640 D. Rs. 46,500

Solution

$$\text{Profit left} = \text{Rs. } 84,000 - \text{Rs. } 6,000 = \text{Rs. } 78,000$$

$$A : B = 60000 : 90000 = 2 : 3$$

$$A's \text{ profit share} = \text{Rs. } 78,000 \times \frac{2}{5} = \text{Rs. } 31,200$$

$$A's \text{ total} = \text{Rs. } 6,000 + \text{Rs. } 31,200 = \text{Rs. } 37,200$$

Final Answer

Rs. 37,200

MCQ 86

A and B invest Rs. 45,000 and Rs. 60,000 for equal time. A is the working partner and receives a salary of Rs. 3,000 from total profit Rs. 38,000 before the remainder is divided by capital ratio. Find A's total receipt.

- A. Rs. 15,000 B. Rs. 21,600
C. Rs. 18,000 D. Rs. 22,500

Solution

$$\text{Profit left} = \text{Rs. } 38,000 - \text{Rs. } 3,000 = \text{Rs. } 35,000$$

$$A : B = 45000 : 60000 = 3 : 4$$

$$A's \text{ profit share} = \text{Rs. } 35,000 \times \frac{3}{7} = \text{Rs. } 15,000$$

$$A's \text{ total} = \text{Rs. } 3,000 + \text{Rs. } 15,000 = \text{Rs. } 18,000$$

Final Answer

Rs. 18,000

MCQ 87

A and B invest Rs. 30,000 and Rs. 50,000 for equal time. A is the working partner and receives a salary of Rs. 4,000 from total profit Rs. 44,000 before the remainder is divided by capital ratio. Find A's total receipt.

- A. Rs. 15,834 B. Rs. 22,800
C. Rs. 23,750 D. Rs. 19,000

Solution

$$\text{Profit left} = \text{Rs. } 44,000 - \text{Rs. } 4,000 = \text{Rs. } 40,000$$

$$A : B = 30000 : 50000 = 3 : 5$$

$$A's \text{ profit share} = \text{Rs. } 40,000 \times \frac{3}{8} = \text{Rs. } 15,000$$

$$A's \text{ total} = \text{Rs. } 4,000 + \text{Rs. } 15,000 = \text{Rs. } 19,000$$

Final Answer

Rs. 19,000

MCQ 88

A and B invest Rs. 70,000 and Rs. 105,000 for equal time. A is the working partner and receives a salary of Rs. 8,000 from total profit Rs. 78,000 before the remainder is divided by capital ratio. Find A's total receipt.

- A. Rs. 36,000 B. Rs. 30,000
C. Rs. 43,200 D. Rs. 45,000

Solution

$$\text{Profit left} = \text{Rs. } 78,000 - \text{Rs. } 8,000 = \text{Rs. } 70,000$$

$$A : B = 70000 : 105000 = 2 : 3$$

$$A's \text{ profit share} = \text{Rs. } 70,000 \times \frac{2}{5} = \text{Rs. } 28,000$$

$$A's \text{ total} = \text{Rs. } 8,000 + \text{Rs. } 28,000 = \text{Rs. } 36,000$$

Final Answer

Rs. 36,000

MCQ 89

A and B invest Rs. 48,000 and Rs. 72,000 for equal time. A is the working partner and receives a salary of Rs. 6,000 from total profit Rs. 66,000 before the remainder is divided by capital ratio. Find A's total receipt.

- A. Rs. 25,000 B. Rs. 30,000
C. Rs. 36,000 D. Rs. 37,500

Solution

$$\text{Profit left} = \text{Rs. } 66,000 - \text{Rs. } 6,000 = \text{Rs. } 60,000$$

$$A : B = 48000 : 72000 = 2 : 3$$

$$A's \text{ profit share} = \text{Rs. } 60,000 \times \frac{2}{5} = \text{Rs. } 24,000$$

$$A's \text{ total} = \text{Rs. } 6,000 + \text{Rs. } 24,000 = \text{Rs. } 30,000$$

Final Answer

Rs. 30,000

MCQ 90

A and B invest Rs. 55,000 and Rs. 77,000 for equal time. A is the working partner and receives a salary of Rs. 5,000 from total profit Rs. 65,000 before the remainder is divided by capital ratio. Find A's total receipt.

- A. Rs. 25,000 B. Rs. 36,000
C. Rs. 30,000 D. Rs. 37,500

Solution

$$\text{Profit left} = \text{Rs. } 65,000 - \text{Rs. } 5,000 = \text{Rs. } 60,000$$

$$A : B = 55000 : 77000 = 5 : 7$$

$$A's \text{ profit share} = \text{Rs. } 60,000 \times \frac{5}{12} = \text{Rs. } 25,000$$

$$A's \text{ total} = \text{Rs. } 5,000 + \text{Rs. } 25,000 = \text{Rs. } 30,000$$

Final Answer

Rs. 30,000

MCQ 91

A and B invest Rs. 64,000 and Rs. 96,000 for equal time. A is the working partner and receives a salary of Rs. 8,000 from total profit Rs. 88,000 before the remainder is divided by capital ratio. Find A's total receipt.

- A. Rs. 33,334 B. Rs. 48,000
C. Rs. 50,000 D. Rs. 40,000

Solution

$$\text{Profit left} = \text{Rs. } 88,000 - \text{Rs. } 8,000 = \text{Rs. } 80,000$$

$$A : B = 64000 : 96000 = 2 : 3$$

$$A's \text{ profit share} = \text{Rs. } 80,000 \times \frac{2}{5} = \text{Rs. } 32,000$$

$$A's \text{ total} = \text{Rs. } 8,000 + \text{Rs. } 32,000 = \text{Rs. } 40,000$$

Final Answer

Rs. 40,000

MCQ 92

A and B invest Rs. 40,000 and Rs. 60,000 equally in time. A receives 10% of total profit Rs. 50,000 as managing commission; the balance is shared by capital ratio. Find A's total receipt.

- A. Rs. 23,000 B. Rs. 19,715
C. Rs. 26,833 D. Rs. 27,600

Solution

$$\text{Commission} = 10\% \times \text{Rs. } 50,000 = \text{Rs. } 5,000$$

$$\text{Balance} = \text{Rs. } 50,000 - \text{Rs. } 5,000 = \text{Rs. } 45,000$$

$$A : B = 2 : 3$$

$$A's \text{ balance share} = \text{Rs. } 45,000 \times \frac{2}{5} = \text{Rs. } 18,000$$

$$A \text{ total} = \text{Rs. } 5,000 + \text{Rs. } 18,000 = \text{Rs. } 23,000$$

Final Answer

Rs. 23,000

MCQ 93

A and B invest Rs. 50,000 and Rs. 75,000 equally in time. A receives 10% of total profit Rs. 60,000 as managing commission; the balance is shared by capital ratio. Find A's total receipt.

- A. Rs. 23,658 B. Rs. 27,600
C. Rs. 32,200 D. Rs. 33,120

Solution

$$\text{Commission} = 10\% \times \text{Rs. } 60,000 = \text{Rs. } 6,000$$

$$\text{Balance} = \text{Rs. } 60,000 - \text{Rs. } 6,000 = \text{Rs. } 54,000$$

$$A : B = 2 : 3$$

$$A's \text{ balance share} = \text{Rs. } 54,000 \times \frac{2}{5} = \text{Rs. } 21,600$$

$$A \text{ total} = \text{Rs. } 6,000 + \text{Rs. } 21,600 = \text{Rs. } 27,600$$

Final Answer

Rs. 27,600

MCQ 94

A and B invest Rs. 60,000 and Rs. 90,000 equally in time. A receives 5% of total profit Rs. 80,000 as managing commission; the balance is shared by capital ratio. Find A's total receipt.

- A. Rs. 29,486 B. Rs. 40,133
C. Rs. 34,400 D. Rs. 41,280

Solution

$$\text{Commission} = 5\% \times \text{Rs. } 80,000 = \text{Rs. } 4,000$$

$$\text{Balance} = \text{Rs. } 80,000 - \text{Rs. } 4,000 = \text{Rs. } 76,000$$

$$A : B = 2 : 3$$

$$A's \text{ balance share} = \text{Rs. } 76,000 \times \frac{2}{5} = \text{Rs. } 30,400$$

$$A \text{ total} = \text{Rs. } 4,000 + \text{Rs. } 30,400 = \text{Rs. } 34,400$$

Final Answer

Rs. 34,400

MCQ 95

A and B invest Rs. 45,000 and Rs. 75,000 equally in time. A receives 10% of total profit Rs. 72,000 as managing commission; the balance is shared by capital ratio. Find A's total receipt.

- A. Rs. 27,000 B. Rs. 36,750
C. Rs. 37,800 D. Rs. 31,500

Solution

$$\text{Commission} = 10\% \times \text{Rs. } 72,000 = \text{Rs. } 7,200$$

$$\text{Balance} = \text{Rs. } 72,000 - \text{Rs. } 7,200 = \text{Rs. } 64,800$$

$$A : B = 3 : 5$$

$$A's \text{ balance share} = \text{Rs. } 64,800 \times \frac{3}{8} = \text{Rs. } 24,300$$

$$A \text{ total} = \text{Rs. } 7,200 + \text{Rs. } 24,300 = \text{Rs. } 31,500$$

Final Answer

Rs. 31,500

MCQ 96

A and B invest Rs. 56,000 and Rs. 84,000 equally in time. A receives 10% of total profit Rs. 70,000 as managing commission; the balance is shared by capital ratio. Find A's total receipt.

- A. Rs. 32,200 B. Rs. 27,600
C. Rs. 37,566 D. Rs. 38,640

Solution

$$\text{Commission} = 10\% \times \text{Rs. } 70,000 = \text{Rs. } 7,000$$

$$\text{Balance} = \text{Rs. } 70,000 - \text{Rs. } 7,000 = \text{Rs. } 63,000$$

$$A : B = 2 : 3$$

$$A's \text{ balance share} = \text{Rs. } 63,000 \times \frac{2}{5} = \text{Rs. } 25,200$$

$$A \text{ total} = \text{Rs. } 7,000 + \text{Rs. } 25,200 = \text{Rs. } 32,200$$

Final Answer

Rs. 32,200

Mixed High-Yield Partnership Problems

MCQ 97

A and B invest Rs. 30,000 and Rs. 50,000 for the same time. The business suffers a loss of Rs. 24,000. What is A's share of the loss?

- A. Rs. 6,750 B. Rs. 9,000
C. Rs. 12,000 D. Rs. 13,500

Solution

$$A : B = 3 : 5$$

$$A's \text{ loss} = Rs. 24,000 \times \frac{3}{8} = Rs. 9,000$$

Final Answer

Rs. 9,000

MCQ 98

A and B invest Rs. 45,000 and Rs. 75,000 for the same time. The business suffers a loss of Rs. 36,000. What is A's share of the loss?

- A. Rs. 10,125 B. Rs. 18,000
C. Rs. 13,500 D. Rs. 20,250

Solution

$$A : B = 3 : 5$$

$$A's \text{ loss} = Rs. 36,000 \times \frac{3}{8} = Rs. 13,500$$

Final Answer

Rs. 13,500

MCQ 99

A and B share profit in the ratio 3:5 after investing for the same time. If B invested Rs. 75,000, how much did A invest?

- A. Rs. 36,000 B. Rs. 56,250
C. Rs. 60,000 D. Rs. 45,000

Solution

$$A : B = 3 : 5$$

$$\frac{A}{75000} = \frac{3}{5}$$

$$A = 75000 \times \frac{3}{5} = Rs. 45,000$$

Final Answer

Rs. 45,000

MCQ 100

A and B share profit in the ratio 4:7 after investing for the same time. If B invested Rs. 98,000, how much did A invest?

- A. Rs. 56,000 B. Rs. 44,800
C. Rs. 70,000 D. Rs. 74,666

Solution

$$A : B = 4 : 7$$

$$\frac{A}{98000} = \frac{4}{7}$$

$$A = 98000 \times \frac{4}{7} = Rs. 56,000$$

Final Answer

Rs. 56,000

RAPID REVISION GRID | PARTNERSHIP

Core weight

$$W = C \times T$$

Same time

Profit ratio = Capital ratio

Different time

$$A : B = C_A T_A : C_B T_B$$

Joining after m months

$$T = 12 - m$$

Changing capital

$$W = \sum C_i T_i$$

Share from total profit

$$\text{Share} = P \times \frac{\text{Partner weight}}{\text{Total weight}}$$

Working partner Deduct the stated salary/-commission first; distribute the remainder by the partnership ratio, then add the working partner's extra amount back to that partner.

Fast check All individual profit shares must add exactly to total distributable profit. All loss shares must add exactly to total loss.

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Unitary method

$$\text{Value of 1 unit} = \frac{\text{Total value}}{\text{Number of units}}$$

$$\text{Required value} = \text{Value of 1 unit} \times \text{Required units}$$

Unit rate

$$\text{Rate} = \frac{\text{Quantity}}{\text{Number of units}}$$

Examples: km/h, Rs./kg, pages/min.

Direct proportion

$$y \propto x \Rightarrow y = kx$$

$$\frac{y_1}{x_1} = \frac{y_2}{x_2} = k$$

Both quantities move in the same direction.

Inverse proportion

$$y \propto \frac{1}{x} \Rightarrow xy = k$$

$$x_1 y_1 = x_2 y_2$$

One quantity increases while the other decreases.

Combined variation

$$Q \propto ab \Rightarrow \frac{Q_2}{Q_1} = \frac{a_2 b_2}{a_1 b_1}$$

For fixed work:

$$MHD = \text{constant}$$

Exam-speed check Direct: multiply by the same scale factor.

Inverse: multiply one side, divide the other side by that factor.

Always keep units consistent before calculating.

Unitary Method Basics

MCQ 1

If 5 kg of rice cost Rs. 160, what is the cost of 8 kg of rice?

- A. Rs. 256 B. Rs. 224
C. Rs. 288 D. Rs. 320

Solution

$$\text{Cost of 1 kg of rice} = \frac{\text{Rs. 160}}{5} = \text{Rs. 32}$$

$$\text{Cost of 8 kg of rice} = \text{Rs. 32} \times 8 = \text{Rs. 256}$$

Final Answer

Rs. 256

MCQ 2

If 7 kg of sugar cost Rs. 294, what is the cost of 11 kg of sugar?

- A. Rs. 420 B. Rs. 462
C. Rs. 504 D. Rs. 546

Solution

$$\text{Cost of 1 kg of sugar} = \frac{\text{Rs. 294}}{7} = \text{Rs. 42}$$

$$\text{Cost of 11 kg of sugar} = \text{Rs. 42} \times 11 = \text{Rs. 462}$$

Final Answer

Rs. 462

MCQ 3

If 12 notebooks cost Rs. 540, what is the cost of 18 notebooks?

- A. Rs. 765 B. Rs. 855
C. Rs. 810 D. Rs. 900

Solution

$$\text{Cost of 1 notebooks} = \frac{\text{Rs. 540}}{12} = \text{Rs. 45}$$

$$\text{Cost of 18 notebooks} = \text{Rs. 45} \times 18 = \text{Rs. 810}$$

Final Answer

Rs. 810

MCQ 4

If 9 bus tickets cost Rs. 675, what is the cost of 14 bus tickets?

- A. Rs. 975 B. Rs. 1,125
C. Rs. 1,200 D. Rs. 1,050

Solution

$$\text{Cost of 1 bus tickets} = \frac{\text{Rs. 675}}{9} = \text{Rs. 75}$$

$$\text{Cost of 14 bus tickets} = \text{Rs. 75} \times 14 = \text{Rs. 1,050}$$

Final Answer

Rs. 1,050

MCQ 5

If 6 metres of cloth cost Rs. 390, what is the cost of 15 metres of cloth?

- A. Rs. 975 B. Rs. 910
C. Rs. 1,040 D. Rs. 1,105

Solution

$$\text{Cost of 1 metres of cloth} = \frac{\text{Rs. 390}}{6} = \text{Rs. 65}$$

$$\text{Cost of 15 metres of cloth} = \text{Rs. 65} \times 15 = \text{Rs. 975}$$

Final Answer

Rs. 975

MCQ 6

If 8 litres of milk cost Rs. 480, what is the cost of 13 litres of milk?

- A. Rs. 720 B. Rs. 780
C. Rs. 840 D. Rs. 900

Solution

$$\text{Cost of 1 litres of milk} = \frac{\text{Rs. 480}}{8} = \text{Rs. 60}$$

$$\text{Cost of 13 litres of milk} = \text{Rs. 60} \times 13 = \text{Rs. 780}$$

Final Answer

Rs. 780

MCQ 7

If 15 pens cost Rs. 375, what is the cost of 28 pens?

- A. Rs. 675 B. Rs. 725
C. Rs. 700 D. Rs. 750

Solution

$$\text{Cost of 1 pens} = \frac{\text{Rs. 375}}{15} = \text{Rs. 25}$$

$$\text{Cost of 28 pens} = \text{Rs. 25} \times 28 = \text{Rs. 700}$$

Final Answer

Rs. 700

MCQ 8

If 4 exercise books cost Rs. 260, what is the cost of 11 exercise books?

- A. Rs. 650 B. Rs. 780
C. Rs. 845 D. Rs. 715

Solution

$$\text{Cost of 1 exercise books} = \frac{\text{Rs. 260}}{4} = \text{Rs. 65}$$

$$\text{Cost of 11 exercise books} = \text{Rs. 65} \times 11 = \text{Rs. 715}$$

Final Answer

Rs. 715

MCQ 9

If 10 kg of flour cost Rs. 850, what is the cost of 16 kg of flour?

- A. Rs. 1,360 B. Rs. 1,275
C. Rs. 1,445 D. Rs. 1,530

Solution

$$\text{Cost of 1 kg of flour} = \frac{\text{Rs. 850}}{10} = \text{Rs. 85}$$

$$\text{Cost of 16 kg of flour} = \text{Rs. 85} \times 16 = \text{Rs. 1,360}$$

Final Answer

Rs. 1,360

MCQ 10

If 14 packs of paper cost Rs. 630, what is the cost of 20 packs of paper?

- A. Rs. 855 B. Rs. 900
C. Rs. 945 D. Rs. 990

Solution

$$\text{Cost of 1 packs of paper} = \frac{\text{Rs. 630}}{14} = \text{Rs. 45}$$

$$\text{Cost of 20 packs of paper} = \text{Rs. 45} \times 20 = \text{Rs. 900}$$

Final Answer

Rs. 900

MCQ 11

If 3 geometry boxes cost Rs. 225, what is the cost of 14 geometry boxes?

- A. Rs. 975 B. Rs. 1,125
C. Rs. 1,050 D. Rs. 1,200

Solution

$$\text{Cost of 1 geometry boxes} = \frac{\text{Rs. 225}}{3} = \text{Rs. 75}$$

$$\text{Cost of 14 geometry boxes} = \text{Rs. 75} \times 14 = \text{Rs. 1,050}$$

Final Answer

Rs. 1,050

MCQ 12

If 18 bottles of water cost Rs. 720, what is the cost of 25 bottles of water?

- A. Rs. 960 B. Rs. 1,040
C. Rs. 1,080 D. Rs. 1,000

Solution

$$\text{Cost of 1 bottles of water} = \frac{\text{Rs. 720}}{18} = \text{Rs. 40}$$

$$\text{Cost of 25 bottles of water} = \text{Rs. 40} \times 25 = \text{Rs. 1,000}$$

Final Answer

Rs. 1,000

MCQ 13

A machine produces 420 items in 6 hours at a constant rate. How many items will it produce in 9 hours?

- A. 630 items B. 560 items
C. 280 items D. 770 items

Solution

$$\text{Rate} = \frac{420 \text{ items}}{6 \text{ h}} = 70 \text{ items/h}$$

$$\text{In 9 h} = 70 \times 9 = 630 \text{ items}$$

Final Answer

630 items

MCQ 14

A printer produces 360 pages in 12 hours at a constant rate. How many pages will it produce in 25 hours?

- A. 720 pages B. 750 pages
C. 864/5 pages D. 810 pages

Solution

$$\text{Rate} = \frac{360 \text{ pages}}{12 \text{ h}} = 30 \text{ pages/h}$$

$$\text{In } 25 \text{ h} = 30 \times 25 = 750 \text{ pages}$$

Final Answer

750 pages

MCQ 15

A car produces 240 km in 4 hours at a constant rate. How many km will it produce in 7 hours?

- A. 360 km B. 960/7 km
C. 420 km D. 540 km

Solution

$$\text{Rate} = \frac{240 \text{ km}}{4 \text{ h}} = 60 \text{ km/h}$$

$$\text{In } 7 \text{ h} = 60 \times 7 = 420 \text{ km}$$

Final Answer

420 km

MCQ 16

A tap produces 180 litres in 6 hours at a constant rate. How many litres will it produce in 11 hours?

- A. 300 litres B. 1080/11 litres
C. 390 litres D. 330 litres

Solution

$$\text{Rate} = \frac{180 \text{ litres}}{6 \text{ h}} = 30 \text{ litres/h}$$

$$\text{In } 11 \text{ h} = 30 \times 11 = 330 \text{ litres}$$

Final Answer

330 litres

MCQ 17

A factory line produces 960 units in 8 hours at a constant rate. How many units will it produce in 15 hours?

- A. 1,800 units B. 1,680 units
C. 512 units D. 2,040 units

Solution

$$\text{Rate} = \frac{960 \text{ units}}{8 \text{ h}} = 120 \text{ units/h}$$

$$\text{In } 15 \text{ h} = 120 \times 15 = 1,800 \text{ units}$$

Final Answer

1,800 units

MCQ 18

A typist produces 1,500 words in 10 hours at a constant rate. How many words will it produce in 16 hours?

- A. 2,250 words B. 2,400 words
C. 1875/2 words D. 2,700 words

Solution

$$\text{Rate} = \frac{1500 \text{ words}}{10 \text{ h}} = 150 \text{ words/h}$$

$$\text{In } 16 \text{ h} = 150 \times 16 = 2,400 \text{ words}$$

Final Answer

2,400 words

MCQ 19

A pump produces 525 litres in 7 hours at a constant rate. How many litres will it produce in 12 hours?

- A. 825 litres B. 1225/4 litres
C. 900 litres D. 1,050 litres

Solution

$$\text{Rate} = \frac{525 \text{ litres}}{7 \text{ h}} = 75 \text{ litres/h}$$

$$\text{In } 12 \text{ h} = 75 \times 12 = 900 \text{ litres}$$

Final Answer

900 litres

MCQ 20

A baker produces 144 loaves in 6 hours at a constant rate. How many loaves will it produce in 15 hours?

- A. 336 loaves B. 288/5 loaves
C. 408 loaves D. 360 loaves

Solution

$$\text{Rate} = \frac{144 \text{ loaves}}{6 \text{ h}} = 24 \text{ loaves/h}$$

$$\text{In 15 h} = 24 \times 15 = 360 \text{ loaves}$$

Final Answer

360 loaves

Unit Rates & Reverse Unitary Method**MCQ 21**

If 6 kg of tea cost Rs. 270, how many kg of tea can be bought for Rs. 675?

- A. 15 kg of tea B. 14 kg of tea
C. 16 kg of tea D. 17 kg of tea

Solution

$$\text{Cost of 1 kg of tea} = \frac{\text{Rs. } 270}{6} = \text{Rs. } 45$$

$$\text{Required quantity} = \frac{\text{Rs. } 675}{\text{Rs. } 45} = 15$$

Final Answer

15 kg of tea

MCQ 22

If 8 kg of potatoes cost Rs. 360, how many kg of potatoes can be bought for Rs. 585?

- A. 12 kg of potatoes B. 13 kg of potatoes
C. 14 kg of potatoes D. 15 kg of potatoes

Solution

$$\text{Cost of 1 kg of potatoes} = \frac{\text{Rs. } 360}{8} = \text{Rs. } 45$$

$$\text{Required quantity} = \frac{\text{Rs. } 585}{\text{Rs. } 45} = 13$$

Final Answer

13 kg of potatoes

MCQ 23

If 12 books cost Rs. 900, how many books can be bought for Rs. 1,425?

- A. 18 books B. 20 books
C. 19 books D. 21 books

Solution

$$\text{Cost of 1 books} = \frac{\text{Rs. } 900}{12} = \text{Rs. } 75$$

$$\text{Required quantity} = \frac{\text{Rs. } 1425}{\text{Rs. } 75} = 19$$

Final Answer

19 books

MCQ 24

If 5 metres of cable cost Rs. 425, how many metres of cable can be bought for Rs. 1,190?

- A. 13 metres of cable B. 15 metres of cable
C. 16 metres of cable D. 14 metres of cable

Solution

$$\text{Cost of 1 metres of cable} = \frac{\text{Rs. } 425}{5} = \text{Rs. } 85$$

$$\text{Required quantity} = \frac{\text{Rs. } 1190}{\text{Rs. } 85} = 14$$

Final Answer

14 metres of cable

MCQ 25

If 9 tickets cost Rs. 540, how many tickets can be bought for Rs. 1,020?

- A. 17 tickets B. 16 tickets
C. 18 tickets D. 19 tickets

Solution

$$\text{Cost of 1 tickets} = \frac{\text{Rs. } 540}{9} = \text{Rs. } 60$$

$$\text{Required quantity} = \frac{\text{Rs. } 1020}{\text{Rs. } 60} = 17$$

Final Answer

17 tickets

MCQ 26

A bus travels 315 km in 5 hours. What is the unit rate?

- A. 126 km/h B. 63 km/h
C. 64 km/h D. 63/2 km/h

Solution

$$\text{Unit rate} = \frac{315 \text{ km}}{5 \text{ hours}} = 63 \text{ km/h}$$

Final Answer

63 km/h

MCQ 27

A worker earns 5,400 Rs. in 6 days. What is the unit rate?

- A. 1,800 Rs./day B. 901 Rs./day
C. 900 Rs./day D. 450 Rs./day

Solution

$$\text{Unit rate} = \frac{5400 \text{ Rs.}}{6 \text{ days}} = 900 \text{ Rs./day}$$

Final Answer

900 Rs./day

MCQ 28

A printer prints 840 pages in 7 minutes. What is the unit rate?

- A. 240 pages/min B. 121 pages/min
C. 60 pages/min D. 120 pages/min

Solution

$$\text{Unit rate} = \frac{840 \text{ pages}}{7 \text{ minutes}} = 120 \text{ pages/min}$$

Final Answer

120 pages/min

MCQ 29

A pump delivers 1,260 litres in 9 minutes. What is the unit rate?

- A. 140 litres/min B. 280 litres/min
C. 141 litres/min D. 70 litres/min

Solution

$$\text{Unit rate} = \frac{1260 \text{ litres}}{9 \text{ minutes}} = 140 \text{ litres/min}$$

Final Answer

140 litres/min

MCQ 30

A machine makes 1,650 bolts in 11 hours. What is the unit rate?

- A. 300 bolts/h B. 150 bolts/h
C. 151 bolts/h D. 75 bolts/h

Solution

$$\text{Unit rate} = \frac{1650 \text{ bolts}}{11 \text{ hours}} = 150 \text{ bolts/h}$$

Final Answer

150 bolts/h

MCQ 31

A car uses 24 litres of fuel to travel 288 km. What is its mileage?

- A. 24 km/litre B. 13 km/litre
C. 12 km/litre D. 6 km/litre

Solution

$$\text{Mileage} = \frac{288 \text{ km}}{24 \text{ litres}} = 12 \text{ km/litre}$$

Final Answer

12 km/litre

MCQ 32

A shop sells 72 notebooks in 6 packs. What is the unit rate?

- A. 24 notebooks/pack B. 13 notebooks/pack
C. 6 notebooks/pack D. 12 notebooks/pack

Solution

$$\text{Unit rate} = \frac{72 \text{ notebooks}}{6 \text{ packs}} = 12 \text{ notebooks/pack}$$

Final Answer

12 notebooks/pack

MCQ 33

A typist enters 2,400 words in 20 minutes. What is the unit rate?

- A. 120 words/min B. 240 words/min
C. 121 words/min D. 60 words/min

Solution

$$\text{Unit rate} = \frac{2400 \text{ words}}{20 \text{ minutes}} = 120 \text{ words/min}$$

Final Answer

120 words/min

MCQ 34

A tanker carries 8,400 litres in 12 trips. What is the unit rate?

- A. 1,400 litres/trip B. 700 litres/trip
C. 701 litres/trip D. 350 litres/trip

Solution

$$\text{Unit rate} = \frac{8400 \text{ litres}}{12 \text{ trips}} = 700 \text{ litres/trip}$$

Final Answer

700 litres/trip

MCQ 35

A runner covers 18 km in 120 minutes. What is the unit rate?

- A. 3/10 km/min B. 23/20 km/min
C. 3/20 km/min D. 3/40 km/min

Solution

$$\text{Unit rate} = \frac{18 \text{ km}}{120 \text{ minutes}} = \frac{3}{20} \text{ km/min}$$

Final Answer $\frac{3}{20}$ km/min**Direct Proportion & Direct Variation****MCQ 36**

If y varies directly as x , and $y = 18$ when $x = 6$, find y when $x = 14$.

- A. 39 B. 45
C. 48 D. 42

Solution

$$y \propto x \Rightarrow \frac{y}{x} = k$$

$$k = \frac{18}{6} = 3$$

$$y = 3 \times 14 = 42$$

Final Answer $y = 42$ **MCQ 37**

If y varies directly as x , and $y = 35$ when $x = 5$, find y when $x = 9$.

- A. 63 B. 56
C. 70 D. 77

Solution

$$y \propto x \Rightarrow \frac{y}{x} = k$$

$$k = \frac{35}{5} = 7$$

$$y = 7 \times 9 = 63$$

Final Answer $y = 63$ **MCQ 38**

If y varies directly as x , and $y = 28$ when $x = 8$, find y when $x = 15$.

- A. 49 B. 105/2
C. 56 D. 119/2

Solution

$$y \propto x \Rightarrow \frac{y}{x} = k$$

$$k = \frac{28}{8} = \frac{7}{2}$$

$$y = \frac{7}{2} \times 15 = \frac{105}{2}$$

Final Answer $y = \frac{105}{2}$ **MCQ 39**

If y varies directly as x , and $y = 42$ when $x = 12$, find y when $x = 20$.

- A. 133/2 B. 147/2
C. 70 D. 77

Solution

$$y \propto x \Rightarrow \frac{y}{x} = k$$

$$k = \frac{42}{12} = \frac{7}{2}$$

$$y = \frac{7}{2} \times 20 = 70$$

Final Answer $y = 70$

MCQ 40

If y varies directly as x , and $y = 63$ when $x = 7$, find y when $x = 11$.

- A. 90 B. 108
C. 117 D. 99

Solution

$$y \propto x \Rightarrow \frac{y}{x} = k$$

$$k = \frac{63}{7} = 9$$

$$y = 9 \times 11 = 99$$

Final Answer

$$y = 99$$

MCQ 41

If y varies directly as x , and $y = 26$ when $x = 4$, find y when $x = 10$.

- A. 65 B. 117/2
C. 143/2 D. 78

Solution

$$y \propto x \Rightarrow \frac{y}{x} = k$$

$$k = \frac{26}{4} = \frac{13}{2}$$

$$y = \frac{13}{2} \times 10 = 65$$

Final Answer

$$y = 65$$

MCQ 42

If y varies directly as x , and $y = 54$ when $x = 9$, find y when $x = 13$.

- A. 72 B. 78
C. 84 D. 90

Solution

$$y \propto x \Rightarrow \frac{y}{x} = k$$

$$k = \frac{54}{9} = 6$$

$$y = 6 \times 13 = 78$$

Final Answer

$$y = 78$$

MCQ 43

If y varies directly as x , and $y = 75$ when $x = 15$, find y when $x = 22$.

- A. 105 B. 115
C. 110 D. 120

Solution

$$y \propto x \Rightarrow \frac{y}{x} = k$$

$$k = \frac{75}{15} = 5$$

$$y = 5 \times 22 = 110$$

Final Answer

$$y = 110$$

MCQ 44

If y varies directly as x , and $y = 21$ when $x = 3$, find y when $x = 8$.

- A. 49 B. 63
C. 70 D. 56

Solution

$$y \propto x \Rightarrow \frac{y}{x} = k$$

$$k = \frac{21}{3} = 7$$

$$y = 7 \times 8 = 56$$

Final Answer

$$y = 56$$

MCQ 45

If y varies directly as x , and $y = 48$ when $x = 16$, find y when $x = 25$.

- A. 75 B. 72
C. 78 D. 81

Solution

$$y \propto x \Rightarrow \frac{y}{x} = k$$

$$k = \frac{48}{16} = 3$$

$$y = 3 \times 25 = 75$$

Final Answer

$$y = 75$$

MCQ 46

At a fixed speed, a car travels 168 km in 3 hours. How far will it travel in 7 hours?

- A. 336 km B. 392 km
C. 448 km D. 504 km

Solution

$$\frac{\text{Required}}{7} = \frac{168}{3}$$

$$\text{Required} = \frac{168 \times 7}{3} = 392$$

Final Answer

392 km

MCQ 47

A recipe uses 450 g of flour for 6 servings. How much flour is required for 14 servings?

- A. 975 g B. 1,125 g
C. 1,050 g D. 1,200 g

Solution

$$\frac{\text{Required}}{14} = \frac{450}{6}$$

$$\text{Required} = \frac{450 \times 14}{6} = 1,050$$

Final Answer

1,050 g

MCQ 48

On a map, 2 cm represents 15 km. What distance does 8 cm represent?

- A. 105/2 km B. 135/2 km
C. 75 km D. 60 km

Solution

$$\frac{\text{Required}}{8} = \frac{15}{2}$$

$$\text{Required} = \frac{15 \times 8}{2} = 60$$

Final Answer

60 km

MCQ 49

Six identical machines make 720 parts in one hour. How many parts will 11 machines make in one hour?

- A. 1,320 parts B. 1,200 parts
C. 1,440 parts D. 1,560 parts

Solution

$$\frac{\text{Required}}{11} = \frac{720}{6}$$

$$\text{Required} = \frac{720 \times 11}{6} = 1,320$$

Final Answer

1,320 parts

MCQ 50

Eight litres of paint cover 96 square metres. How much area will 15 litres cover at the same rate?

- A. 168 m² B. 180 m²
C. 192 m² D. 204 m²

Solution

$$\frac{\text{Required}}{15} = \frac{96}{8}$$

$$\text{Required} = \frac{96 \times 15}{8} = 180$$

Final Answer180 m²**MCQ 51**

For direct proportion between x and y , which quantity remains constant?

- A. xy B. $x + y$
C. y/x D. $x - y$

Solution

$$y = kx \Rightarrow \frac{y}{x} = k$$

Final Answer $\frac{y}{x}$

MCQ 52

If $y = 7x$, what is the constant of proportionality?

- A. $1/7$ B. x
C. y D. 7

Solution

$$y = kx$$

$$k = 7$$

Final Answer

7

MCQ 53

If $y \propto x$ and x is doubled, what happens to y ?

- A. It doubles B. It halves
C. It becomes four times D. It is unchanged

Solution

$$y = kx$$

$$x \rightarrow 2x \Rightarrow y \rightarrow k(2x) = 2y$$

Final Answer

It doubles

MCQ 54

Which relation represents direct variation?

- A. $xy = 5$ B. $y = 5x$
C. $y = 5/x$ D. $x + y = 5$

Solution

Direct variation: $y = kx$

$$y = 5x$$

Final Answer $y = 5x$ **MCQ 55**

If the cost per notebook is fixed, the total cost is directly proportional to which quantity?

- A. Time taken B. Reciprocal of quantity
C. Number of notebooks D. Square of quantity

Solution

Total cost = Unit price $\times$ Number of notebooks

Final Answer

Number of notebooks

Inverse Proportion & Inverse Variation**MCQ 56**

If 12 workers correspond to 15 days for a fixed total, what will correspond to 20 workers?

- A. 8 days B. 10 days
C. 11 days D. 9 days

Solution

$$x \propto \frac{1}{y} \Rightarrow x_1 y_1 = x_2 y_2$$

$$12 \times 15 = 20 \times y_2$$

$$y_2 = \frac{12 \times 15}{20} = 9$$

Final Answer

9 days

MCQ 57

If 8 machines correspond to 18 hours for a fixed total, what will correspond to 12 machines?

- A. 12 hours B. 11 hours
C. 13 hours D. 14 hours

Solution

$$x \propto \frac{1}{y} \Rightarrow x_1 y_1 = x_2 y_2$$

$$8 \times 18 = 12 \times y_2$$

$$y_2 = \frac{8 \times 18}{12} = 12$$

Final Answer

12 hours

MCQ 58

If 60 km/h correspond to 5 hours for a fixed total, what will correspond to 75 km/h?

- A. 3 hours B. 4 hours
C. 5 hours D. 6 hours

Solution

$$x \propto \frac{1}{y} \Rightarrow x_1 y_1 = x_2 y_2$$

$$60 \times 5 = 75 \times y_2$$

$$y_2 = \frac{60 \times 5}{75} = 4$$

Final Answer

4 hours

MCQ 59

If 15 people correspond to 24 days for a fixed total, what will correspond to 20 people?

- A. 17 days B. 19 days
C. 18 days D. 20 days

Solution

$$x \propto \frac{1}{y} \Rightarrow x_1 y_1 = x_2 y_2$$

$$15 \times 24 = 20 \times y_2$$

$$y_2 = \frac{15 \times 24}{20} = 18$$

Final Answer

18 days

MCQ 62

If 10 tractors correspond to 12 days for a fixed total, what will correspond to 15 tractors?

- A. 7 days B. 8 days
C. 9 days D. 10 days

Solution

$$x \propto \frac{1}{y} \Rightarrow x_1 y_1 = x_2 y_2$$

$$10 \times 12 = 15 \times y_2$$

$$y_2 = \frac{10 \times 12}{15} = 8$$

Final Answer

8 days

MCQ 60

If 6 pumps correspond to 10 hours for a fixed total, what will correspond to 15 pumps?

- A. 3 hours B. 5 hours
C. 6 hours D. 4 hours

Solution

$$x \propto \frac{1}{y} \Rightarrow x_1 y_1 = x_2 y_2$$

$$6 \times 10 = 15 \times y_2$$

$$y_2 = \frac{6 \times 10}{15} = 4$$

Final Answer

4 hours

MCQ 63

If 16 labourers correspond to 21 days for a fixed total, what will correspond to 24 labourers?

- A. 13 days B. 15 days
C. 14 days D. 16 days

Solution

$$x \propto \frac{1}{y} \Rightarrow x_1 y_1 = x_2 y_2$$

$$16 \times 21 = 24 \times y_2$$

$$y_2 = \frac{16 \times 21}{24} = 14$$

Final Answer

14 days

MCQ 61

If 4 typists correspond to 9 hours for a fixed total, what will correspond to 6 typists?

- A. 6 hours B. 5 hours
C. 7 hours D. 8 hours

Solution

$$x \propto \frac{1}{y} \Rightarrow x_1 y_1 = x_2 y_2$$

$$4 \times 9 = 6 \times y_2$$

$$y_2 = \frac{4 \times 9}{6} = 6$$

Final Answer

6 hours

MCQ 64

If 12 cows correspond to 30 days for a fixed total, what will correspond to 18 cows?

- A. 19 days B. 21 days
C. 22 days D. 20 days

Solution

$$x \propto \frac{1}{y} \Rightarrow x_1 y_1 = x_2 y_2$$

$$12 \times 30 = 18 \times y_2$$

$$y_2 = \frac{12 \times 30}{18} = 20$$

Final Answer

20 days

MCQ 65

If 9 taps correspond to 8 hours for a fixed total, what will correspond to 12 taps?

- A. 6 hours B. 5 hours
C. 7 hours D. 8 hours

Solution

$$x \propto \frac{1}{y} \Rightarrow x_1 y_1 = x_2 y_2$$

$$9 \times 8 = 12 \times y_2$$

$$y_2 = \frac{9 \times 8}{12} = 6$$

Final Answer

6 hours

MCQ 66

If 24 students correspond to 15 candies each for a fixed total, what will correspond to 30 students?

- A. 11 candies each B. 12 candies each
C. 13 candies each D. 14 candies each

Solution

$$x \propto \frac{1}{y} \Rightarrow x_1 y_1 = x_2 y_2$$

$$24 \times 15 = 30 \times y_2$$

$$y_2 = \frac{24 \times 15}{30} = 12$$

Final Answer

12 candies each

MCQ 67

If 20 gear teeth correspond to 60 rpm for a fixed total, what will correspond to 30 gear teeth?

- A. 39 rpm B. 41 rpm
C. 40 rpm D. 42 rpm

Solution

$$x \propto \frac{1}{y} \Rightarrow x_1 y_1 = x_2 y_2$$

$$20 \times 60 = 30 \times y_2$$

$$y_2 = \frac{20 \times 60}{30} = 40$$

Final Answer

40 rpm

MCQ 68

If 12 metres length correspond to 20 metres width for a fixed total, what will correspond to 15 metres length?

- A. 15 metres width B. 17 metres width
C. 18 metres width D. 16 metres width

Solution

$$x \propto \frac{1}{y} \Rightarrow x_1 y_1 = x_2 y_2$$

$$12 \times 20 = 15 \times y_2$$

$$y_2 = \frac{12 \times 20}{15} = 16$$

Final Answer

16 metres width

MCQ 69

If 80 km/h correspond to 3 hours for a fixed total, what will correspond to 60 km/h?

- A. 4 hours B. 3 hours
C. 5 hours D. 6 hours

Solution

$$x \propto \frac{1}{y} \Rightarrow x_1 y_1 = x_2 y_2$$

$$80 \times 3 = 60 \times y_2$$

$$y_2 = \frac{80 \times 3}{60} = 4$$

Final Answer

4 hours

MCQ 70

If 5 printers correspond to 4 hours for a fixed total, what will correspond to 8 printers?

- A. 3/2 hours B. 5/2 hours
C. 7/2 hours D. 9/2 hours

Solution

$$x \propto \frac{1}{y} \Rightarrow x_1 y_1 = x_2 y_2$$

$$5 \times 4 = 8 \times y_2$$

$$y_2 = \frac{5 \times 4}{8} = \frac{5}{2}$$

Final Answer $\frac{5}{2}$ hours

MCQ 71

If 14 workers correspond to 30 days for a fixed total, what will correspond to 21 workers?

- A. 19 days B. 21 days
C. 20 days D. 22 days

Solution

$$x \propto \frac{1}{y} \Rightarrow x_1 y_1 = x_2 y_2$$

$$14 \times 30 = 21 \times y_2$$

$$y_2 = \frac{14 \times 30}{21} = 20$$

Final Answer

20 days

MCQ 74

If 3 pumps correspond to 14 hours for a fixed total, what will correspond to 7 pumps?

- A. 5 hours B. 6 hours
C. 7 hours D. 8 hours

Solution

$$x \propto \frac{1}{y} \Rightarrow x_1 y_1 = x_2 y_2$$

$$3 \times 14 = 7 \times y_2$$

$$y_2 = \frac{3 \times 14}{7} = 6$$

Final Answer

6 hours

MCQ 72

If 30 people correspond to 18 days for a fixed total, what will correspond to 45 people?

- A. 11 days B. 13 days
C. 14 days D. 12 days

Solution

$$x \propto \frac{1}{y} \Rightarrow x_1 y_1 = x_2 y_2$$

$$30 \times 18 = 45 \times y_2$$

$$y_2 = \frac{30 \times 18}{45} = 12$$

Final Answer

12 days

MCQ 75

If 18 machines correspond to 10 hours for a fixed total, what will correspond to 30 machines?

- A. 5 hours B. 7 hours
C. 6 hours D. 8 hours

Solution

$$x \propto \frac{1}{y} \Rightarrow x_1 y_1 = x_2 y_2$$

$$18 \times 10 = 30 \times y_2$$

$$y_2 = \frac{18 \times 10}{30} = 6$$

Final Answer

6 hours

MCQ 73

If 25 men correspond to 16 days for a fixed total, what will correspond to 40 men?

- A. 10 days B. 9 days
C. 11 days D. 12 days

Solution

$$x \propto \frac{1}{y} \Rightarrow x_1 y_1 = x_2 y_2$$

$$25 \times 16 = 40 \times y_2$$

$$y_2 = \frac{25 \times 16}{40} = 10$$

Final Answer

10 days

Compound & Combined Variation**MCQ 76**

A factory output is proportional to machines $\times$ hours. Four machines working 5 hours produce 600 units. How many units will 6 machines working 8 hours produce?

- A. 1,410 units B. 1,470 units
C. 1,500 units D. 1,440 units

Solution

$$Q \propto ab$$

$$\frac{Q_2}{Q_1} = \frac{a_2 b_2}{a_1 b_1}$$

$$Q_2 = 600 \times \frac{6 \times 8}{4 \times 5} = 1,440$$

Final Answer

1,440 units

MCQ 77

Production is proportional to workers $\times$ days. Fifteen workers in 12 days produce 900 units. How many units will 20 workers in 9 days produce?

- A. 900 units B. 895 units
C. 905 units D. 910 units

Solution

$$Q \propto ab$$

$$\frac{Q_2}{Q_1} = \frac{a_2 b_2}{a_1 b_1}$$

$$Q_2 = 900 \times \frac{20 \times 9}{15 \times 12} = 900$$

Final Answer

900 units

MCQ 78

Total wages are proportional to workers $\times$ days. Eight workers for 5 days earn Rs. 12,000. What will 12 workers for 7 days earn?

- A. Rs. 24,900 B. Rs. 25,200
C. Rs. 25,500 D. Rs. 25,800

Solution

$$Q \propto ab$$

$$\frac{Q_2}{Q_1} = \frac{a_2 b_2}{a_1 b_1}$$

$$Q_2 = 12000 \times \frac{12 \times 7}{8 \times 5} = 25,200$$

Final Answer

Rs. 25,200

MCQ 79

Food consumed is proportional to people $\times$ days. Twenty people in 15 days consume 300 kg. How much will 30 people consume in 10 days?

- A. 299 kg B. 301 kg
C. 300 kg D. 302 kg

Solution

$$Q \propto ab$$

$$\frac{Q_2}{Q_1} = \frac{a_2 b_2}{a_1 b_1}$$

$$Q_2 = 300 \times \frac{30 \times 10}{20 \times 15} = 300$$

Final Answer

300 kg

MCQ 80

Pages printed are proportional to printers $\times$ hours. Three printers working 4 hours print 1,200 pages. How many pages will 5 printers working 6 hours print?

- A. 2,900 pages B. 3,100 pages
C. 3,200 pages D. 3,000 pages

Solution

$$Q \propto ab$$

$$\frac{Q_2}{Q_1} = \frac{a_2 b_2}{a_1 b_1}$$

$$Q_2 = 1200 \times \frac{5 \times 6}{3 \times 4} = 3,000$$

Final Answer

3,000 pages

MCQ 81

Water pumped is proportional to pumps $\times$ hours. Four pumps working 3 hours move 2,400 litres. How much will 6 pumps working 5 hours move?

- A. 6,000 litres B. 5,800 litres
C. 6,200 litres D. 6,400 litres

Solution

$$Q \propto ab$$

$$\frac{Q_2}{Q_1} = \frac{a_2 b_2}{a_1 b_1}$$

$$Q_2 = 2400 \times \frac{6 \times 5}{4 \times 3} = 6,000$$

Final Answer

6,000 litres

MCQ 82

Harvest collected is proportional to workers $\times$ hours. Ten workers in 6 hours collect 1,800 kg. How much will 15 workers in 8 hours collect?

- A. 3,570 kg B. 3,600 kg
C. 3,630 kg D. 3,660 kg

Solution

$$Q \propto ab$$

$$\frac{Q_2}{Q_1} = \frac{a_2 b_2}{a_1 b_1}$$

$$Q_2 = 1800 \times \frac{15 \times 8}{10 \times 6} = 3,600$$

Final Answer

3,600 kg

MCQ 83

10 workers working 6 hours per day finish a job in 8 days. In how many days will 12 workers working 5 hours per day finish the same job?

- A. 6 days B. 10 days
C. 8 days D. 12 days

Solution

Fixed work $\Rightarrow MHD = \text{constant}$

$$10 \times 6 \times 8 = 12 \times 5 \times d$$

$$d = \frac{10 \times 6 \times 8}{12 \times 5} = 8$$

Final Answer

8 days

MCQ 84

16 workers working 7 hours per day finish a job in 15 days. In how many days will 20 workers working 6 hours per day finish the same job?

- A. 12 days B. 16 days
C. 18 days D. 14 days

Solution

Fixed work $\Rightarrow MHD = \text{constant}$

$$16 \times 7 \times 15 = 20 \times 6 \times d$$

$$d = \frac{16 \times 7 \times 15}{20 \times 6} = 14$$

Final Answer

14 days

MCQ 85

12 workers working 8 hours per day finish a job in 10 days. In how many days will 15 workers working 8 hours per day finish the same job?

- A. 8 days B. 6 days
C. 10 days D. 12 days

Solution

Fixed work $\Rightarrow MHD = \text{constant}$

$$12 \times 8 \times 10 = 15 \times 8 \times d$$

$$d = \frac{12 \times 8 \times 10}{15 \times 8} = 8$$

Final Answer

8 days

MCQ 86

18 workers working 5 hours per day finish a job in 12 days. In how many days will 20 workers working 6 hours per day finish the same job?

- A. 7 days B. 9 days
C. 11 days D. 13 days

Solution

Fixed work $\Rightarrow MHD = \text{constant}$

$$18 \times 5 \times 12 = 20 \times 6 \times d$$

$$d = \frac{18 \times 5 \times 12}{20 \times 6} = 9$$

Final Answer

9 days

MCQ 87

If $y \propto xz$, and $y = 24$ when $x = 3, z = 4$, find y when $x = 5, z = 6$.

- A. 48 B. 72
C. 60 D. 90

Solution

$$y = kxz$$

$$24 = k(3)(4) \Rightarrow k = 2$$

$$y = 2(5)(6) = 60$$

Final Answer

60

MCQ 88

If $y \propto x/z$, and $y = 18$ when $x = 6, z = 2$, find y when $x = 10, z = 5$.

- A. 6 B. 15
C. 30 D. 12

Solution

$$y = k \frac{x}{z}$$

$$18 = k \frac{6}{2} = 3k \Rightarrow k = 6$$

$$y = 6 \frac{10}{5} = 12$$

Final Answer

12

MCQ 89

If $y \propto x^2$ and $y = 20$ when $x = 2$, find y when $x = 5$.

- A. 125 B. 50
C. 100 D. 250

Solution

$$y = kx^2$$

$$20 = k(2^2) = 4k \Rightarrow k = 5$$

$$y = 5(5^2) = 125$$

Final Answer

125

MCQ 90

If $y \propto 1/x^2$ and $y = 48$ when $x = 2$, find y when $x = 4$.

- A. 6 B. 12
C. 24 D. 96

Solution

$$y = \frac{k}{x^2}$$

$$48 = \frac{k}{4} \Rightarrow k = 192$$

$$y = \frac{192}{16} = 12$$

Final Answer

12

Mixed High-Yield One-Paper Patterns**MCQ 91**

Five kilograms of vegetables cost Rs. 80. At the same rate, what will 8 kilograms cost?

- A. Rs. 120 B. Rs. 126
C. Rs. 128 D. Rs. 130

Solution

$$1 \text{ kg cost} = \frac{80}{5} = 16$$

$$8 \text{ kg cost} = 16 \times 8 = 128$$

Final Answer

Rs. 128

MCQ 92

Forty workers can complete a fixed job in 25 days. How many days will 20 workers take at the same efficiency?

- A. 40 days B. 45 days
C. 60 days D. 50 days

Solution

$$40 \times 25 = 20 \times d$$

$$d = \frac{40 \times 25}{20} = 50$$

Final Answer

50 days

MCQ 93

Seven notebooks cost Rs. 490. What is the cost of 13 notebooks?

- A. Rs. 910 B. Rs. 840
C. Rs. 880 D. Rs. 980

Solution

$$1 \text{ notebook} = \frac{490}{7} = 70$$

$$13 \text{ notebooks} = 70 \times 13 = 910$$

Final Answer

Rs. 910

MCQ 94

A vehicle covers 560 km in 8 hours at constant speed. How far will it cover in 2.5 hours?

- A. 140 km B. 175 km
C. 168 km D. 200 km

Solution

$$\text{Speed} = \frac{560}{8} = 70 \text{ km/h}$$

$$D = 70 \times 2.5 = 175 \text{ km}$$

Final Answer

175 km

MCQ 95

Food for 24 people lasts 20 days. If 6 people leave, for how many days will the same food last?

- A. 24 days B. 25 days
C. 26 $\frac{2}{3}$ days D. 30 days

Solution

$$24 \times 20 = 18 \times d$$

$$d = \frac{480}{18} = \frac{80}{3} = 26\frac{2}{3}$$

Final Answer

$$26\frac{2}{3} \text{ days}$$

MCQ 96

Six kilograms of tea cost Rs. 4,500. How many kilograms can be bought for Rs. 6,375 at the same rate?

- A. 8 kg B. 9 kg
C. 10 kg D. 17/2 kg

Solution

$$1 \text{ kg cost} = \frac{4500}{6} = 750$$

$$\text{Quantity} = \frac{6375}{750} = 8.5 \text{ kg}$$

Final Answer

$$8.5 \text{ kg}$$

MCQ 97

For a fixed distance, speed and travel time are:

- A. Inversely proportional B. Directly proportional
C. Equal D. Unrelated

Solution

$$T = \frac{D}{S}$$

$$D \text{ fixed} \Rightarrow T \propto \frac{1}{S}$$

Final Answer

Inversely proportional

MCQ 98

Which expression gives the unit rate when a quantity Q is obtained in n equal units?

- A. Qn B. Q/n
C. n/Q D. $Q + n$

Solution

$$\text{Unit rate} = \frac{\text{Total quantity}}{\text{Number of units}} = \frac{Q}{n}$$

Final Answer

$$\frac{Q}{n}$$

MCQ 99

For inverse proportion between x and y , which quantity remains constant?

- A. y/x B. $x + y$
C. xy D. $x - y$

Solution

$$y = \frac{k}{x} \Rightarrow xy = k$$

Final Answer

$$xy$$

MCQ 100

If $x \propto y$ and $y \propto z$, then which relation is correct?

- A. $x \propto 1/z$ B. $xz = 1$
C. $x = z^2$ D. $x \propto z$

Solution

$$x = ay, \quad y = bz$$

$$x = a(bz) = abz$$

$$\therefore x \propto z$$

Final Answer

$$x \propto z$$

RAPID REVISION GRID | UNITARY METHOD & VARIATION

One-unit route

$$1 \text{ unit} = \frac{\text{Known total}}{\text{Known units}}$$

Then multiply by required units.

Direct proportion

$$\frac{y_1}{x_1} = \frac{y_2}{x_2}$$

Inverse proportion

$$x_1 y_1 = x_2 y_2$$

Unit rate

$$\text{Rate} = \frac{\text{Quantity}}{\text{Unit count}}$$

Direct scaling shortcut If the input is multiplied by r , the output is also multiplied by r .

Inverse scaling shortcut If one quantity is multiplied by r , the other is divided by r .

Combined output

$$Q \propto ab$$

Scale by both factor changes.

Fixed work

$$MHD = \text{constant}$$

Use the product of workers, hours per day and days.

Fast decision rule Same direction $\Rightarrow$ direct.
Opposite direction with fixed total $\Rightarrow$ inverse.

Final check The answer must carry the requested unit: rupees, kg, km, hours, days, items, litres, pages, etc.

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MIXTURE & ALLIGATION MCQs | 100 FULLY SOLVED MCQs**Fast Foundation for One-Paper Exams****Weighted mixture**

$$\text{Mean} = \frac{q_1 c_1 + q_2 c_2}{q_1 + q_2}$$

Alligation rule

$$\text{Low : High} = (H - M) : (M - L)$$

One replacement

$$\text{Original left} = V \left(1 - \frac{r}{V} \right)$$

Repeated replacement

$$\text{Original left} = V \left(1 - \frac{r}{V} \right)^n$$

Dilution

$$\text{Solute before} = \text{Solute after}$$

Fast check The mean concentration or mean price must lie between the two original values.

Weighted Concentration**MCQ 1**

10 L of a 20% solution is mixed with 30 L of a 40% solution. Find the concentration of the mixture.

- A. 35% B. 40%
C. 30% D. 36%

Solution

$$M = \frac{10(20) + 30(40)}{10 + 30}$$

$$M = \frac{1400}{40} = 35\%$$

Final Answer

35%

MCQ 2

12 L of a 25% solution is mixed with 18 L of a 45% solution. Find the concentration of the mixture.

- A. 42% B. 37%
C. 32% D. 35%

Solution

$$M = \frac{12(25) + 18(45)}{12 + 18}$$

$$M = \frac{1110}{30} = 37\%$$

Final Answer

37%

MCQ 3

15 L of a 30% solution is mixed with 25 L of a 50% solution. Find the concentration of the mixture.

- A. 95/2% B. 75/2%
C. 85/2% D. 40%

Solution

$$M = \frac{15(30) + 25(50)}{15 + 25}$$

$$M = \frac{1700}{40} = \frac{85}{2}\%$$

Final Answer $\frac{85}{2}\%$ **MCQ 4**

8 L of a 15% solution is mixed with 12 L of a 35% solution. Find the concentration of the mixture.

- A. 32% B. 22%
C. 25% D. 27%

Solution

$$M = \frac{8(15) + 12(35)}{8 + 12}$$

$$M = \frac{540}{20} = 27\%$$

Final Answer

27%

MCQ 5

20 L of a 10% solution is mixed with 30 L of a 30% solution. Find the concentration of the mixture.

- A. 22% B. 27%
C. 17% D. 20%

Solution

$$M = \frac{20(10) + 30(30)}{20 + 30}$$

$$M = \frac{1100}{50} = 22\%$$

Final Answer

22%

MCQ 6

14 L of a 40% solution is mixed with 21 L of a 20% solution. Find the concentration of the mixture.

- A. 33% B. 28%
C. 23% D. 30%

Solution

$$M = \frac{14(40) + 21(20)}{14 + 21}$$

$$M = \frac{980}{35} = 28\%$$

Final Answer

28%

MCQ 7

25 L of a 24% solution is mixed with 15 L of a 44% solution. Find the concentration of the mixture.

- A. 73/2% B. 53/2%
C. 63/2% D. 34%

Solution

$$M = \frac{25(24) + 15(44)}{25 + 15}$$

$$M = \frac{1260}{40} = \frac{63}{2}\%$$

Final Answer

$$\frac{63}{2}\%$$

MCQ 8

16 L of a 12% solution is mixed with 24 L of a 32% solution. Find the concentration of the mixture.

- A. 29% B. 19%
C. 22% D. 24%

Solution

$$M = \frac{16(12) + 24(32)}{16 + 24}$$

$$M = \frac{960}{40} = 24\%$$

Final Answer

$$24\%$$

MCQ 9

18 L of a 50% solution is mixed with 12 L of a 20% solution. Find the concentration of the mixture.

- A. 38% B. 43%
C. 33% D. 35%

Solution

$$M = \frac{18(50) + 12(20)}{18 + 12}$$

$$M = \frac{1140}{30} = 38\%$$

Final Answer

$$38\%$$

MCQ 10

9 L of a 60% solution is mixed with 21 L of a 30% solution. Find the concentration of the mixture.

- A. 44% B. 39%
C. 34% D. 45%

Solution

$$M = \frac{9(60) + 21(30)}{9 + 21}$$

$$M = \frac{1170}{30} = 39\%$$

Final Answer

$$39\%$$

MCQ 11

30 L of a 15% solution is mixed with 10 L of a 45% solution. Find the concentration of the mixture.

- A. 55/2% B. 35/2%
C. 45/2% D. 30%

Solution

$$M = \frac{30(15) + 10(45)}{30 + 10}$$

$$M = \frac{900}{40} = \frac{45}{2}\%$$

Final Answer

$$\frac{45}{2}\%$$

MCQ 12

11 L of a 20% solution is mixed with 22 L of a 35% solution. Find the concentration of the mixture.

- A. 35% B. 25%
C. 55/2% D. 30%

Solution

$$M = \frac{11(20) + 22(35)}{11 + 22}$$

$$M = \frac{990}{33} = 30\%$$

Final Answer

$$30\%$$

MCQ 13

24 L of a 25% solution is mixed with 16 L of a 55% solution. Find the concentration of the mixture.

- A. 37% B. 42%
C. 32% D. 40%

Solution

$$M = \frac{24(25) + 16(55)}{24 + 16}$$

$$M = \frac{1480}{40} = 37\%$$

Final Answer

37%

MCQ 14

13 L of a 40% solution is mixed with 27 L of a 10% solution. Find the concentration of the mixture.

- A. 99/4% B. 79/4%
C. 59/4% D. 25%

Solution

$$M = \frac{13(40) + 27(10)}{13 + 27}$$

$$M = \frac{790}{40} = \frac{79}{4}\%$$

Final Answer $\frac{79}{4}\%$ **MCQ 15**

35 L of a 20% solution is mixed with 15 L of a 50% solution. Find the concentration of the mixture.

- A. 34% B. 24%
C. 29% D. 35%

Solution

$$M = \frac{35(20) + 15(50)}{35 + 15}$$

$$M = \frac{1450}{50} = 29\%$$

Final Answer

29%

MCQ 16

20 L of a 35% solution is mixed with 30 L of a 15% solution. Find the concentration of the mixture.

- A. 28% B. 18%
C. 25% D. 23%

Solution

$$M = \frac{20(35) + 30(15)}{20 + 30}$$

$$M = \frac{1150}{50} = 23\%$$

Final Answer

23%

MCQ 17

12 L of a 10% solution is mixed with 28 L of a 40% solution. Find the concentration of the mixture.

- A. 31% B. 36%
C. 26% D. 25%

Solution

$$M = \frac{12(10) + 28(40)}{12 + 28}$$

$$M = \frac{1240}{40} = 31\%$$

Final Answer

31%

MCQ 18

32 L of a 30% solution is mixed with 8 L of a 70% solution. Find the concentration of the mixture.

- A. 43% B. 38%
C. 33% D. 50%

Solution

$$M = \frac{32(30) + 8(70)}{32 + 8}$$

$$M = \frac{1520}{40} = 38\%$$

Final Answer

38%

MCQ 19

18 L of a 25% solution is mixed with 42 L of a 45% solution. Find the concentration of the mixture.

- A. 44% B. 34%
C. 39% D. 35%

Solution

$$M = \frac{18(25) + 42(45)}{18 + 42}$$

$$M = \frac{2340}{60} = 39\%$$

Final Answer**39%****MCQ 20**

27 L of a 20% solution is mixed with 33 L of a 50% solution. Find the concentration of the mixture.

- A. 83/2% B. 63/2%
C. 35% D. 73/2%

Solution

$$M = \frac{27(20) + 33(50)}{27 + 33}$$

$$M = \frac{2190}{60} = \frac{73}{2}\%$$

Final Answer **$\frac{73}{2}\%$** **Alligation Ratio****MCQ 21**

In what ratio should a 10% solution be mixed with a 40% solution to obtain a 25% solution?

- A. 1:1 B. 1:2
C. 2:1 D. 1:3

Solution

$$\text{Low : High} = (H - M) : (M - L)$$

$$= (40 - 25) : (25 - 10) = 15 : 15$$

$$= 1 : 1$$

Final Answer**1 : 1****MCQ 22**

In what ratio should a 20% solution be mixed with a 50% solution to obtain a 35% solution?

- A. 1:2 B. 1:1
C. 2:1 D. 1:3

Solution

$$\text{Low : High} = (H - M) : (M - L)$$

$$= (50 - 35) : (35 - 20) = 15 : 15$$

$$= 1 : 1$$

Final Answer**1 : 1****MCQ 23**

In what ratio should a 30% solution be mixed with a 70% solution to obtain a 50% solution?

- A. 1:2 B. 2:1
C. 1:1 D. 1:3

Solution

$$\text{Low : High} = (H - M) : (M - L)$$

$$= (70 - 50) : (50 - 30) = 20 : 20$$

$$= 1 : 1$$

Final Answer**1 : 1****MCQ 24**

In what ratio should a 15% solution be mixed with a 45% solution to obtain a 25% solution?

- A. 1:2 B. 3:1
C. 2:3 D. 2:1

Solution

$$\text{Low : High} = (H - M) : (M - L)$$

$$= (45 - 25) : (25 - 15) = 20 : 10$$

$$= 2 : 1$$

Final Answer**2 : 1**

MCQ 25

In what ratio should a 25% solution be mixed with a 65% solution to obtain a 45% solution?

- A. 1:1 B. 1:2
C. 2:1 D. 1:3

Solution

$$\begin{aligned}\text{Low : High} &= (H - M) : (M - L) \\ &= (65 - 45) : (45 - 25) = 20 : 20 \\ &= 1 : 1\end{aligned}$$

Final Answer**1 : 1****MCQ 26**

In what ratio should a 12% solution be mixed with a 42% solution to obtain a 30% solution?

- A. 3:2 B. 2:3
C. 3:3 D. 2:5

Solution

$$\begin{aligned}\text{Low : High} &= (H - M) : (M - L) \\ &= (42 - 30) : (30 - 12) = 12 : 18 \\ &= 2 : 3\end{aligned}$$

Final Answer**2 : 3****MCQ 27**

In what ratio should a 18% solution be mixed with a 48% solution to obtain a 28% solution?

- A. 1:2 B. 3:1
C. 2:1 D. 2:3

Solution

$$\begin{aligned}\text{Low : High} &= (H - M) : (M - L) \\ &= (48 - 28) : (28 - 18) = 20 : 10 \\ &= 2 : 1\end{aligned}$$

Final Answer**2 : 1****MCQ 28**

In what ratio should a 20% solution be mixed with a 60% solution to obtain a 40% solution?

- A. 1:2 B. 2:1
C. 1:3 D. 1:1

Solution

$$\begin{aligned}\text{Low : High} &= (H - M) : (M - L) \\ &= (60 - 40) : (40 - 20) = 20 : 20 \\ &= 1 : 1\end{aligned}$$

Final Answer**1 : 1****MCQ 29**

In what ratio should a 35% solution be mixed with a 75% solution to obtain a 55% solution?

- A. 1:1 B. 1:2
C. 2:1 D. 1:3

Solution

$$\begin{aligned}\text{Low : High} &= (H - M) : (M - L) \\ &= (75 - 55) : (55 - 35) = 20 : 20 \\ &= 1 : 1\end{aligned}$$

Final Answer**1 : 1****MCQ 30**

In what ratio should a 5% solution be mixed with a 35% solution to obtain a 20% solution?

- A. 1:2 B. 1:1
C. 2:1 D. 1:3

Solution

$$\begin{aligned}\text{Low : High} &= (H - M) : (M - L) \\ &= (35 - 20) : (20 - 5) = 15 : 15 \\ &= 1 : 1\end{aligned}$$

Final Answer**1 : 1**

MCQ 31

In what ratio should a 40% solution be mixed with a 80% solution to obtain a 50% solution?

- A. 1:3 B. 4:1
C. 3:1 D. 3:3

Solution

$$\begin{aligned}\text{Low : High} &= (H - M) : (M - L) \\ &= (80 - 50) : (50 - 40) = 30 : 10 \\ &= 3 : 1\end{aligned}$$

Final Answer**3 : 1****MCQ 32**

In what ratio should a 10% solution be mixed with a 70% solution to obtain a 30% solution?

- A. 1:2 B. 3:1
C. 2:3 D. 2:1

Solution

$$\begin{aligned}\text{Low : High} &= (H - M) : (M - L) \\ &= (70 - 30) : (30 - 10) = 40 : 20 \\ &= 2 : 1\end{aligned}$$

Final Answer**2 : 1****MCQ 33**

In what ratio should a 22% solution be mixed with a 52% solution to obtain a 37% solution?

- A. 1:1 B. 1:2
C. 2:1 D. 1:3

Solution

$$\begin{aligned}\text{Low : High} &= (H - M) : (M - L) \\ &= (52 - 37) : (37 - 22) = 15 : 15 \\ &= 1 : 1\end{aligned}$$

Final Answer**1 : 1****MCQ 34**

In what ratio should a 16% solution be mixed with a 56% solution to obtain a 36% solution?

- A. 1:2 B. 1:1
C. 2:1 D. 1:3

Solution

$$\begin{aligned}\text{Low : High} &= (H - M) : (M - L) \\ &= (56 - 36) : (36 - 16) = 20 : 20 \\ &= 1 : 1\end{aligned}$$

Final Answer**1 : 1****MCQ 35**

In what ratio should a 30% solution be mixed with a 90% solution to obtain a 60% solution?

- A. 1:2 B. 2:1
C. 1:1 D. 1:3

Solution

$$\begin{aligned}\text{Low : High} &= (H - M) : (M - L) \\ &= (90 - 60) : (60 - 30) = 30 : 30 \\ &= 1 : 1\end{aligned}$$

Final Answer**1 : 1****MCQ 36**

In what ratio should a 25% solution be mixed with a 55% solution to obtain a 40% solution?

- A. 1:2 B. 2:1
C. 1:3 D. 1:1

Solution

$$\begin{aligned}\text{Low : High} &= (H - M) : (M - L) \\ &= (55 - 40) : (40 - 25) = 15 : 15 \\ &= 1 : 1\end{aligned}$$

Final Answer**1 : 1**

MCQ 37

In what ratio should a 8% solution be mixed with a 68% solution to obtain a 28% solution?

- A. 2:1 B. 1:2
C. 3:1 D. 2:3

Solution

$$\begin{aligned}\text{Low : High} &= (H - M) : (M - L) \\ &= (68 - 28) : (28 - 8) = 40 : 20 \\ &= 2 : 1\end{aligned}$$

Final Answer**2 : 1****MCQ 38**

In what ratio should a 45% solution be mixed with a 75% solution to obtain a 60% solution?

- A. 1:2 B. 1:1
C. 2:1 D. 1:3

Solution

$$\begin{aligned}\text{Low : High} &= (H - M) : (M - L) \\ &= (75 - 60) : (60 - 45) = 15 : 15 \\ &= 1 : 1\end{aligned}$$

Final Answer**1 : 1****MCQ 39**

In what ratio should a 14% solution be mixed with a 44% solution to obtain a 24% solution?

- A. 1:2 B. 3:1
C. 2:1 D. 2:3

Solution

$$\begin{aligned}\text{Low : High} &= (H - M) : (M - L) \\ &= (44 - 24) : (24 - 14) = 20 : 10 \\ &= 2 : 1\end{aligned}$$

Final Answer**2 : 1****MCQ 40**

In what ratio should a 32% solution be mixed with a 62% solution to obtain a 47% solution?

- A. 1:2 B. 2:1
C. 1:3 D. 1:1

Solution

$$\begin{aligned}\text{Low : High} &= (H - M) : (M - L) \\ &= (62 - 47) : (47 - 32) = 15 : 15 \\ &= 1 : 1\end{aligned}$$

Final Answer**1 : 1****Mean Price Mixtures****MCQ 41**

Rice costing Rs. 60/kg and Rs. 90/kg is mixed in the ratio 2:3. Find the mean price per kg.

- A. Rs. 78 B. Rs. 83
C. Rs. 73 D. Rs. 75

Solution

$$\begin{aligned}\text{Mean price} &= \frac{2(60) + 3(90)}{2 + 3} \\ &= \text{Rs. 78}\end{aligned}$$

Final Answer**Rs. 78****MCQ 42**

Rice costing Rs. 50/kg and Rs. 80/kg is mixed in the ratio 3:2. Find the mean price per kg.

- A. Rs. 67 B. Rs. 62
C. Rs. 57 D. Rs. 65

Solution

$$\begin{aligned}\text{Mean price} &= \frac{3(50) + 2(80)}{3 + 2} \\ &= \text{Rs. 62}\end{aligned}$$

Final Answer**Rs. 62**

MCQ 43

Rice costing Rs. 40/kg and Rs. 70/kg is mixed in the ratio 1:2. Find the mean price per kg.

- A. Rs. 65 B. Rs. 55
C. Rs. 60 D. Rs. 61

Solution

$$\begin{aligned}\text{Mean price} &= \frac{1(40) + 2(70)}{1 + 2} \\ &= \text{Rs. 60}\end{aligned}$$

Final Answer

Rs. 60

MCQ 44

Rice costing Rs. 75/kg and Rs. 105/kg is mixed in the ratio 4:1. Find the mean price per kg.

- A. Rs. 86 B. Rs. 76
C. Rs. 90 D. Rs. 81

Solution

$$\begin{aligned}\text{Mean price} &= \frac{4(75) + 1(105)}{4 + 1} \\ &= \text{Rs. 81}\end{aligned}$$

Final Answer

Rs. 81

MCQ 45

Rice costing Rs. 55/kg and Rs. 85/kg is mixed in the ratio 3:5. Find the mean price per kg.

- A. Rs. 295/4 B. Rs. 315/4
C. Rs. 275/4 D. Rs. 70

Solution

$$\begin{aligned}\text{Mean price} &= \frac{3(55) + 5(85)}{3 + 5} \\ &= \text{Rs. } \frac{295}{4}\end{aligned}$$

Final AnswerRs. $\frac{295}{4}$ **MCQ 46**

Rice costing Rs. 30/kg and Rs. 60/kg is mixed in the ratio 5:3. Find the mean price per kg.

- A. Rs. 185/4 B. Rs. 165/4
C. Rs. 145/4 D. Rs. 45

Solution

$$\begin{aligned}\text{Mean price} &= \frac{5(30) + 3(60)}{5 + 3} \\ &= \text{Rs. } \frac{165}{4}\end{aligned}$$

Final AnswerRs. $\frac{165}{4}$ **MCQ 47**

Rice costing Rs. 65/kg and Rs. 95/kg is mixed in the ratio 2:5. Find the mean price per kg.

- A. Rs. 640/7 B. Rs. 570/7
C. Rs. 605/7 D. Rs. 80

Solution

$$\begin{aligned}\text{Mean price} &= \frac{2(65) + 5(95)}{2 + 5} \\ &= \text{Rs. } \frac{605}{7}\end{aligned}$$

Final AnswerRs. $\frac{605}{7}$ **MCQ 48**

Rice costing Rs. 45/kg and Rs. 75/kg is mixed in the ratio 7:3. Find the mean price per kg.

- A. Rs. 59 B. Rs. 49
C. Rs. 60 D. Rs. 54

Solution

$$\begin{aligned}\text{Mean price} &= \frac{7(45) + 3(75)}{7 + 3} \\ &= \text{Rs. 54}\end{aligned}$$

Final Answer

Rs. 54

MCQ 49

Rice costing Rs. 80/kg and Rs. 120/kg is mixed in the ratio 3:1. Find the mean price per kg.

- A. Rs. 90 B. Rs. 95
C. Rs. 85 D. Rs. 100

Solution

$$\begin{aligned}\text{Mean price} &= \frac{3(80) + 1(120)}{3 + 1} \\ &= \text{Rs. 90}\end{aligned}$$

Final Answer

Rs. 90

MCQ 50

Rice costing Rs. 35/kg and Rs. 65/kg is mixed in the ratio 4:6. Find the mean price per kg.

- A. Rs. 58 B. Rs. 53
C. Rs. 48 D. Rs. 50

Solution

$$\begin{aligned}\text{Mean price} &= \frac{4(35) + 6(65)}{4 + 6} \\ &= \text{Rs. 53}\end{aligned}$$

Final Answer

Rs. 53

Alligation with Total Quantity**MCQ 51**

A mixture of 60 kg is to cost Rs. 55/kg using materials costing Rs. 40/kg and Rs. 70/kg. How many kg of the cheaper material are required?

- A. 35 kg B. 25 kg
C. 30 kg D. 31 kg

Solution

$$\text{Low : High} = (70 - 55) : (55 - 40) = 1 : 1$$

$$\text{Low quantity} = 60 \left(\frac{1}{2} \right) = 30$$

Final Answer

30 kg

MCQ 52

A mixture of 48 kg is to cost Rs. 35/kg using materials costing Rs. 20/kg and Rs. 50/kg. How many kg of the cheaper material are required?

- A. 29 kg B. 19 kg
C. 25 kg D. 24 kg

Solution

$$\text{Low : High} = (50 - 35) : (35 - 20) = 1 : 1$$

$$\text{Low quantity} = 48 \left(\frac{1}{2} \right) = 24$$

Final Answer

24 kg

MCQ 53

A mixture of 80 kg is to cost Rs. 50/kg using materials costing Rs. 30/kg and Rs. 90/kg. How many kg of the cheaper material are required?

- A. 160/3 kg B. 80/3 kg
C. 175/3 kg D. 145/3 kg

Solution

$$\text{Low : High} = (90 - 50) : (50 - 30) = 2 : 1$$

$$\text{Low quantity} = 80 \left(\frac{2}{3} \right) = \frac{160}{3}$$

Final Answer $\frac{160}{3}$ kg**MCQ 54**

A mixture of 72 kg is to cost Rs. 45/kg using materials costing Rs. 25/kg and Rs. 65/kg. How many kg of the cheaper material are required?

- A. 41 kg B. 36 kg
C. 31 kg D. 37 kg

Solution

$$\text{Low : High} = (65 - 45) : (45 - 25) = 1 : 1$$

$$\text{Low quantity} = 72 \left(\frac{1}{2} \right) = 36$$

Final Answer

36 kg

MCQ 55

A mixture of 50 kg is to cost Rs. 65/kg using materials costing Rs. 50/kg and Rs. 80/kg. How many kg of the cheaper material are required?

- A. 30 kg B. 20 kg
C. 25 kg D. 26 kg

Solution

$$\text{Low : High} = (80 - 65) : (65 - 50) = 1 : 1$$

$$\text{Low quantity} = 50 \left(\frac{1}{2} \right) = 25$$

Final Answer

25 kg

MCQ 56

A mixture of 36 kg is to cost Rs. 25/kg using materials costing Rs. 10/kg and Rs. 40/kg. How many kg of the cheaper material are required?

- A. 23 kg B. 13 kg
C. 19 kg D. 18 kg

Solution

$$\text{Low : High} = (40 - 25) : (25 - 10) = 1 : 1$$

$$\text{Low quantity} = 36 \left(\frac{1}{2} \right) = 18$$

Final Answer

18 kg

MCQ 57

A mixture of 70 kg is to cost Rs. 50/kg using materials costing Rs. 35/kg and Rs. 75/kg. How many kg of the cheaper material are required?

- A. $175/4$ kg B. $105/4$ kg
C. $195/4$ kg D. $155/4$ kg

Solution

$$\text{Low : High} = (75 - 50) : (50 - 35) = 5 : 3$$

$$\text{Low quantity} = 70 \left(\frac{5}{8} \right) = \frac{175}{4}$$

Final Answer $\frac{175}{4}$ kg**MCQ 58**

A mixture of 64 kg is to cost Rs. 65/kg using materials costing Rs. 45/kg and Rs. 85/kg. How many kg of the cheaper material are required?

- A. 37 kg B. 32 kg
C. 27 kg D. 33 kg

Solution

$$\text{Low : High} = (85 - 65) : (65 - 45) = 1 : 1$$

$$\text{Low quantity} = 64 \left(\frac{1}{2} \right) = 32$$

Final Answer

32 kg

MCQ 59

A mixture of 44 kg is to cost Rs. 35/kg using materials costing Rs. 15/kg and Rs. 55/kg. How many kg of the cheaper material are required?

- A. 27 kg B. 17 kg
C. 22 kg D. 23 kg

Solution

$$\text{Low : High} = (55 - 35) : (35 - 15) = 1 : 1$$

$$\text{Low quantity} = 44 \left(\frac{1}{2} \right) = 22$$

Final Answer

22 kg

MCQ 60

A mixture of 90 kg is to cost Rs. 70/kg using materials costing Rs. 60/kg and Rs. 100/kg. How many kg of the cheaper material are required?

- A. $45/2$ kg B. $145/2$ kg
C. $125/2$ kg D. $135/2$ kg

Solution

$$\text{Low : High} = (100 - 70) : (70 - 60) = 3 : 1$$

$$\text{Low quantity} = 90 \left(\frac{3}{4} \right) = \frac{135}{2}$$

Final Answer $\frac{135}{2}$ kg**One-Step Replacement**

MCQ 61

A vessel contains 40 L of milk. 10 L is removed and replaced with water. How much milk remains?

- A. 30 L B. 10 L
C. 40 L D. 20 L

Solution

$$\text{Fraction left} = 1 - \frac{10}{40} = \frac{30}{40}$$

$$\text{Milk left} = 40 \left(\frac{30}{40} \right) = 30 \text{ L}$$

Final Answer

30 L

MCQ 62

A vessel contains 50 L of milk. 10 L is removed and replaced with water. How much milk remains?

- A. 10 L B. 40 L
C. 50 L D. 30 L

Solution

$$\text{Fraction left} = 1 - \frac{10}{50} = \frac{40}{50}$$

$$\text{Milk left} = 50 \left(\frac{40}{50} \right) = 40 \text{ L}$$

Final Answer

40 L

MCQ 63

A vessel contains 60 L of milk. 15 L is removed and replaced with water. How much milk remains?

- A. 15 L B. 60 L
C. 45 L D. 30 L

Solution

$$\text{Fraction left} = 1 - \frac{15}{60} = \frac{45}{60}$$

$$\text{Milk left} = 60 \left(\frac{45}{60} \right) = 45 \text{ L}$$

Final Answer

45 L

MCQ 64

A vessel contains 80 L of milk. 20 L is removed and replaced with water. How much milk remains?

- A. 20 L B. 80 L
C. 40 L D. 60 L

Solution

$$\text{Fraction left} = 1 - \frac{20}{80} = \frac{60}{80}$$

$$\text{Milk left} = 80 \left(\frac{60}{80} \right) = 60 \text{ L}$$

Final Answer

60 L

MCQ 65

A vessel contains 100 L of milk. 25 L is removed and replaced with water. How much milk remains?

- A. 75 L B. 25 L
C. 100 L D. 50 L

Solution

$$\text{Fraction left} = 1 - \frac{25}{100} = \frac{75}{100}$$

$$\text{Milk left} = 100 \left(\frac{75}{100} \right) = 75 \text{ L}$$

Final Answer

75 L

MCQ 66

A vessel contains 30 L of milk. 6 L is removed and replaced with water. How much milk remains?

- A. 6 L B. 24 L
C. 30 L D. 18 L

Solution

$$\text{Fraction left} = 1 - \frac{6}{30} = \frac{24}{30}$$

$$\text{Milk left} = 30 \left(\frac{24}{30} \right) = 24 \text{ L}$$

Final Answer

24 L

MCQ 67

A vessel contains 45 L of milk. 9 L is removed and replaced with water. How much milk remains?

- A. 9 L B. 45 L
C. 36 L D. 27 L

Solution

$$\text{Fraction left} = 1 - \frac{9}{45} = \frac{36}{45}$$

$$\text{Milk left} = 45 \left(\frac{36}{45} \right) = 36 \text{ L}$$

Final Answer

36 L

MCQ 68

A vessel contains 72 L of milk. 12 L is removed and replaced with water. How much milk remains?

- A. 12 L B. 72 L
C. 48 L D. 60 L

Solution

$$\text{Fraction left} = 1 - \frac{12}{72} = \frac{60}{72}$$

$$\text{Milk left} = 72 \left(\frac{60}{72} \right) = 60 \text{ L}$$

Final Answer

60 L

MCQ 69

A vessel contains 90 L of milk. 18 L is removed and replaced with water. How much milk remains?

- A. 72 L B. 18 L
C. 90 L D. 54 L

Solution

$$\text{Fraction left} = 1 - \frac{18}{90} = \frac{72}{90}$$

$$\text{Milk left} = 90 \left(\frac{72}{90} \right) = 72 \text{ L}$$

Final Answer

72 L

MCQ 70

A vessel contains 120 L of milk. 30 L is removed and replaced with water. How much milk remains?

- A. 30 L B. 90 L
C. 120 L D. 60 L

Solution

$$\text{Fraction left} = 1 - \frac{30}{120} = \frac{90}{120}$$

$$\text{Milk left} = 120 \left(\frac{90}{120} \right) = 90 \text{ L}$$

Final Answer

90 L

MCQ 71

A vessel contains 64 L of milk. 16 L is removed and replaced with water. How much milk remains?

- A. 16 L B. 64 L
C. 48 L D. 32 L

Solution

$$\text{Fraction left} = 1 - \frac{16}{64} = \frac{48}{64}$$

$$\text{Milk left} = 64 \left(\frac{48}{64} \right) = 48 \text{ L}$$

Final Answer

48 L

MCQ 72

A vessel contains 75 L of milk. 15 L is removed and replaced with water. How much milk remains?

- A. 15 L B. 75 L
C. 45 L D. 60 L

Solution

$$\text{Fraction left} = 1 - \frac{15}{75} = \frac{60}{75}$$

$$\text{Milk left} = 75 \left(\frac{60}{75} \right) = 60 \text{ L}$$

Final Answer

60 L

MCQ 73

A vessel contains 54 L of milk. 9 L is removed and replaced with water. How much milk remains?

- A. 45 L B. 9 L
C. 54 L D. 36 L

Solution

$$\text{Fraction left} = 1 - \frac{9}{54} = \frac{45}{54}$$

$$\text{Milk left} = 54 \left(\frac{45}{54} \right) = 45 \text{ L}$$

Final Answer

45 L

MCQ 74

A vessel contains 84 L of milk. 21 L is removed and replaced with water. How much milk remains?

- A. 21 L B. 63 L
C. 84 L D. 42 L

Solution

$$\text{Fraction left} = 1 - \frac{21}{84} = \frac{63}{84}$$

$$\text{Milk left} = 84 \left(\frac{63}{84} \right) = 63 \text{ L}$$

Final Answer

63 L

MCQ 75

A vessel contains 96 L of milk. 24 L is removed and replaced with water. How much milk remains?

- A. 24 L B. 96 L
C. 72 L D. 48 L

Solution

$$\text{Fraction left} = 1 - \frac{24}{96} = \frac{72}{96}$$

$$\text{Milk left} = 96 \left(\frac{72}{96} \right) = 72 \text{ L}$$

Final Answer

72 L

Repeated Replacement**MCQ 76**

A 64 L vessel is full of milk. Each time 16 L is removed and replaced by water. After 2 such operations, how much original milk remains?

- A. 48 L B. 41 L
C. 31 L D. 36 L

Solution

$$Q_n = 64 \left(1 - \frac{16}{64} \right)^2$$

$$= 64 \left(\frac{48}{64} \right)^2 = 36 \text{ L}$$

Final Answer

36 L

MCQ 77

A 81 L vessel is full of milk. Each time 27 L is removed and replaced by water. After 2 such operations, how much original milk remains?

- A. 36 L B. 54 L
C. 41 L D. 31 L

Solution

$$Q_n = 81 \left(1 - \frac{27}{81} \right)^2$$

$$= 81 \left(\frac{54}{81} \right)^2 = 36 \text{ L}$$

Final Answer

36 L

MCQ 78

A 125 L vessel is full of milk. Each time 25 L is removed and replaced by water. After 2 such operations, how much original milk remains?

- A. 100 L B. 80 L
C. 85 L D. 75 L

Solution

$$Q_n = 125 \left(1 - \frac{25}{125} \right)^2$$

$$= 125 \left(\frac{100}{125} \right)^2 = 80 \text{ L}$$

Final Answer

80 L

MCQ 79

A 100 L vessel is full of milk. Each time 20 L is removed and replaced by water. After 3 such operations, how much original milk remains?

- A. 80 L B. 281/5 L
C. 256/5 L D. 231/5 L

Solution

$$Q_n = 100 \left(1 - \frac{20}{100}\right)^3$$

$$= 100 \left(\frac{80}{100}\right)^3 = \frac{256}{5} \text{ L}$$

Final Answer

$$\frac{256}{5} \text{ L}$$

MCQ 80

A 50 L vessel is full of milk. Each time 10 L is removed and replaced by water. After 2 such operations, how much original milk remains?

- A. 40 L B. 37 L
C. 27 L D. 32 L

Solution

$$Q_n = 50 \left(1 - \frac{10}{50}\right)^2$$

$$= 50 \left(\frac{40}{50}\right)^2 = 32 \text{ L}$$

Final Answer

$$32 \text{ L}$$

MCQ 81

A 80 L vessel is full of milk. Each time 20 L is removed and replaced by water. After 2 such operations, how much original milk remains?

- A. 45 L B. 60 L
C. 50 L D. 40 L

Solution

$$Q_n = 80 \left(1 - \frac{20}{80}\right)^2$$

$$= 80 \left(\frac{60}{80}\right)^2 = 45 \text{ L}$$

Final Answer

$$45 \text{ L}$$

MCQ 82

A 60 L vessel is full of milk. Each time 15 L is removed and replaced by water. After 3 such operations, how much original milk remains?

- A. 45 L B. 405/16 L
C. 485/16 L D. 325/16 L

Solution

$$Q_n = 60 \left(1 - \frac{15}{60}\right)^3$$

$$= 60 \left(\frac{45}{60}\right)^3 = \frac{405}{16} \text{ L}$$

Final Answer

$$\frac{405}{16} \text{ L}$$

MCQ 83

A 40 L vessel is full of milk. Each time 8 L is removed and replaced by water. After 3 such operations, how much original milk remains?

- A. 32 L B. 637/25 L
C. 512/25 L D. 387/25 L

Solution

$$Q_n = 40 \left(1 - \frac{8}{40}\right)^3$$

$$= 40 \left(\frac{32}{40}\right)^3 = \frac{512}{25} \text{ L}$$

Final Answer

$$\frac{512}{25} \text{ L}$$

MCQ 84

A 90 L vessel is full of milk. Each time 30 L is removed and replaced by water. After 2 such operations, how much original milk remains?

- A. 60 L B. 45 L
C. 35 L D. 40 L

Solution

$$Q_n = 90 \left(1 - \frac{30}{90}\right)^2$$

$$= 90 \left(\frac{60}{90}\right)^2 = 40 \text{ L}$$

Final Answer

$$40 \text{ L}$$

MCQ 85

A 72 L vessel is full of milk. Each time 18 L is removed and replaced by water. After 2 such operations, how much original milk remains?

- A. 81/2 L B. 54 L
C. 91/2 L D. 71/2 L

Solution

$$Q_n = 72 \left(1 - \frac{18}{72} \right)^2$$

$$= 72 \left(\frac{54}{72} \right)^2 = \frac{81}{2} \text{ L}$$

Final Answer

$$\frac{81}{2} \text{ L}$$

Dilution and Concentration**MCQ 86**

How much water must be added to 20 L of a 40% solution to reduce its concentration to 25%?

- A. 17 L B. 12 L
C. 7 L D. 32 L

Solution

$$\text{Solute} = 20 \left(\frac{40}{100} \right) = 8$$

$$V_f \left(\frac{25}{100} \right) = 8 \Rightarrow V_f = 32$$

$$\text{Water added} = 32 - 20 = 12 \text{ L}$$

Final Answer

$$12 \text{ L}$$

MCQ 87

How much water must be added to 30 L of a 50% solution to reduce its concentration to 30%?

- A. 25 L B. 15 L
C. 20 L D. 50 L

Solution

$$\text{Solute} = 30 \left(\frac{50}{100} \right) = 15$$

$$V_f \left(\frac{30}{100} \right) = 15 \Rightarrow V_f = 50$$

$$\text{Water added} = 50 - 30 = 20 \text{ L}$$

Final Answer

$$20 \text{ L}$$

MCQ 88

How much water must be added to 24 L of a 25% solution to reduce its concentration to 15%?

- A. 21 L B. 11 L
C. 40 L D. 16 L

Solution

$$\text{Solute} = 24 \left(\frac{25}{100} \right) = 6$$

$$V_f \left(\frac{15}{100} \right) = 6 \Rightarrow V_f = 40$$

$$\text{Water added} = 40 - 24 = 16 \text{ L}$$

Final Answer

$$16 \text{ L}$$

MCQ 89

How much water must be added to 40 L of a 30% solution to reduce its concentration to 20%?

- A. 20 L B. 25 L
C. 15 L D. 60 L

Solution

$$\text{Solute} = 40 \left(\frac{30}{100} \right) = 12$$

$$V_f \left(\frac{20}{100} \right) = 12 \Rightarrow V_f = 60$$

$$\text{Water added} = 60 - 40 = 20 \text{ L}$$

Final Answer

$$20 \text{ L}$$

MCQ 90

How much water must be added to 50 L of a 60% solution to reduce its concentration to 40%?

- A. 30 L B. 25 L
C. 20 L D. 75 L

Solution

$$\text{Solute} = 50 \left(\frac{60}{100} \right) = 30$$

$$V_f \left(\frac{40}{100} \right) = 30 \Rightarrow V_f = 75$$

$$\text{Water added} = 75 - 50 = 25 \text{ L}$$

Final Answer

$$25 \text{ L}$$

MCQ 91

How much water must be added to 36 L of a 45% solution to reduce its concentration to 30%?

- A. 23 L B. 13 L
C. 18 L D. 54 L

Solution

$$\text{Solute} = 36 \left(\frac{45}{100} \right) = \frac{81}{5}$$

$$V_f \left(\frac{30}{100} \right) = \frac{81}{5} \Rightarrow V_f = 54$$

$$\text{Water added} = 54 - 36 = 18 \text{ L}$$

Final Answer

18 L

MCQ 92

How much water must be added to 25 L of a 32% solution to reduce its concentration to 20%?

- A. 20 L B. 10 L
C. 40 L D. 15 L

Solution

$$\text{Solute} = 25 \left(\frac{32}{100} \right) = 8$$

$$V_f \left(\frac{20}{100} \right) = 8 \Rightarrow V_f = 40$$

$$\text{Water added} = 40 - 25 = 15 \text{ L}$$

Final Answer

15 L

MCQ 93

How much water must be added to 48 L of a 50% solution to reduce its concentration to 40%?

- A. 12 L B. 17 L
C. 7 L D. 60 L

Solution

$$\text{Solute} = 48 \left(\frac{50}{100} \right) = 24$$

$$V_f \left(\frac{40}{100} \right) = 24 \Rightarrow V_f = 60$$

$$\text{Water added} = 60 - 48 = 12 \text{ L}$$

Final Answer

12 L

MCQ 94

A 50 L solution contains 20% solute. How much water must evaporate to make it 25% solute?

- A. 15 L B. 10 L
C. 5 L D. 40 L

Solution

$$\text{Solute} = 50 \left(\frac{20}{100} \right) = 10$$

$$V_f \left(\frac{25}{100} \right) = 10 \Rightarrow V_f = 40$$

$$\text{Water evaporated} = 50 - 40 = 10 \text{ L}$$

Final Answer

10 L

MCQ 95

A 60 L solution contains 30% solute. How much water must evaporate to make it 40% solute?

- A. 20 L B. 10 L
C. 15 L D. 45 L

Solution

$$\text{Solute} = 60 \left(\frac{30}{100} \right) = 18$$

$$V_f \left(\frac{40}{100} \right) = 18 \Rightarrow V_f = 45$$

$$\text{Water evaporated} = 60 - 45 = 15 \text{ L}$$

Final Answer

15 L

MCQ 96

A 40 L solution contains 25% solute. How much water must evaporate to make it 40% solute?

- A. 20 L B. 10 L
C. 25 L D. 15 L

Solution

$$\text{Solute} = 40 \left(\frac{25}{100} \right) = 10$$

$$V_f \left(\frac{40}{100} \right) = 10 \Rightarrow V_f = 25$$

$$\text{Water evaporated} = 40 - 25 = 15 \text{ L}$$

Final Answer

15 L

MCQ 97

A 80 L solution contains 15% solute. How much water must evaporate to make it 20% solute?

- A. 20 L B. 25 L
C. 15 L D. 60 L

Solution

$$\text{Solute} = 80 \left(\frac{15}{100} \right) = 12$$

$$V_f \left(\frac{20}{100} \right) = 12 \Rightarrow V_f = 60$$

$$\text{Water evaporated} = 80 - 60 = 20 \text{ L}$$

Final Answer

20 L

MCQ 98

A 45 L solution contains 20% solute. How much water must evaporate to make it 30% solute?

- A. 20 L B. 15 L
C. 10 L D. 30 L

Solution

$$\text{Solute} = 45 \left(\frac{20}{100} \right) = 9$$

$$V_f \left(\frac{30}{100} \right) = 9 \Rightarrow V_f = 30$$

$$\text{Water evaporated} = 45 - 30 = 15 \text{ L}$$

Final Answer

15 L

MCQ 99

A 100 L solution contains 25% solute. How much water must evaporate to make it 40% solute?

- A. $85/2$ L B. $65/2$ L
C. $75/2$ L D. $125/2$ L

Solution

$$\text{Solute} = 100 \left(\frac{25}{100} \right) = 25$$

$$V_f \left(\frac{40}{100} \right) = 25 \Rightarrow V_f = \frac{125}{2}$$

$$\text{Water evaporated} = 100 - \frac{125}{2} = \frac{75}{2} \text{ L}$$

Final Answer $\frac{75}{2} \text{ L}$ **MCQ 100**

A 72 L solution contains 30% solute. How much water must evaporate to make it 45% solute?

- A. 29 L B. 19 L
C. 48 L D. 24 L

Solution

$$\text{Solute} = 72 \left(\frac{30}{100} \right) = \frac{108}{5}$$

$$V_f \left(\frac{45}{100} \right) = \frac{108}{5} \Rightarrow V_f = 48$$

$$\text{Water evaporated} = 72 - 48 = 24 \text{ L}$$

Final Answer

24 L

RAPID REVISION GRID | MIXTURE & ALLIGATION**Alligation**

$$L : H = (H - M) : (M - L)$$

Weighted mean

$$M = \frac{q_1 c_1 + q_2 c_2}{q_1 + q_2}$$

Repeated replacement

$$Q_n = V \left(1 - \frac{r}{V}\right)^n$$

Dilution Amount of solute remains constant when only water is added.

Evaporation Amount of non-volatile solute remains constant while total volume falls.

Exam check Check units and confirm the final percentage lies between 0 and 100.

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ALGEBRAIC EXPRESSIONS, IDENTITIES & FACTORIZATION MCQs | 100 FULLY SOLVED MCQs

Fast Foundation for One-Paper Exams

Like terms Only terms with the same variables and powers can be combined.

Square identities

$$(a + b)^2 = a^2 + 2ab + b^2$$

$$(a - b)^2 = a^2 - 2ab + b^2$$

Difference of squares

$$a^2 - b^2 = (a - b)(a + b)$$

Product identity

$$(x + a)(x + b) = x^2 + (a + b)x + ab$$

Common factor

$$ax + ay = a(x + y)$$

Exam-speed check Substitute carefully; preserve signs; factor out the greatest common factor first.

Substitution and Evaluation**MCQ 1**If $x = 2$ and $y = 1$, find $3x + 5y + (-1)$.

- A. 10 B. 12
C. 8 D. -10

Solution

$$\begin{aligned} & 3x + 5y + (-1) \\ &= 3(2) + 5(1) + (-1) \\ &= 10 \end{aligned}$$

Final Answer

10

MCQ 2If $x = 3$ and $y = -1$, find $4x + 2y + (0)$.

- A. 12 B. 10
C. 8 D. -10

Solution

$$\begin{aligned} & 4x + 2y + (0) \\ &= 4(3) + 2(-1) + (0) \\ &= 10 \end{aligned}$$

Final Answer

10

MCQ 3If $x = 5$ and $y = 2$, find $2x + 4y + (1)$.

- A. 21 B. 17
C. 19 D. -19

Solution

$$\begin{aligned} & 2x + 4y + (1) \\ &= 2(5) + 4(2) + (1) \\ &= 19 \end{aligned}$$

Final Answer

19

MCQ 4If $x = -2$ and $y = 4$, find $5x + 3y + (2)$.

- A. 6 B. 2
C. -4 D. 4

Solution

$$\begin{aligned} & 5x + 3y + (2) \\ &= 5(-2) + 3(4) + (2) \\ &= 4 \end{aligned}$$

Final Answer

4

MCQ 5If $x = 1$ and $y = 3$, find $6x + 2y + (-2)$.

- A. 10 B. 12
C. 8 D. -10

Solution

$$\begin{aligned} & 6x + 2y + (-2) \\ &= 6(1) + 2(3) + (-2) \\ &= 10 \end{aligned}$$

Final Answer

10

MCQ 6If $x = -3$ and $y = -2$, find $2x + 5y + (-1)$.

- A. -15 B. -17
C. -19 D. 17

Solution

$$\begin{aligned} & 2x + 5y + (-1) \\ &= 2(-3) + 5(-2) + (-1) \\ &= -17 \end{aligned}$$

Final Answer

-17

MCQ 7

If $x = 2$ and $y = 5$, find $7x + 1y + (0)$.

- A. 21 B. 17
C. 19 D. -19

Solution

$$\begin{aligned} & 7x + 1y + (0) \\ &= 7(2) + 1(5) + (0) \\ &= 19 \end{aligned}$$

Final Answer**19****MCQ 8**

If $x = 4$ and $y = -3$, find $3x + 2y + (1)$.

- A. 9 B. 5
C. -7 D. 7

Solution

$$\begin{aligned} & 3x + 2y + (1) \\ &= 3(4) + 2(-3) + (1) \\ &= 7 \end{aligned}$$

Final Answer**7****MCQ 9**

If $x = -1$ and $y = 2$, find $4x + 6y + (2)$.

- A. 10 B. 12
C. 8 D. -10

Solution

$$\begin{aligned} & 4x + 6y + (2) \\ &= 4(-1) + 6(2) + (2) \\ &= 10 \end{aligned}$$

Final Answer**10****MCQ 10**

If $x = 3$ and $y = 1$, find $5x + 2y + (-2)$.

- A. 17 B. 15
C. 13 D. -15

Solution

$$\begin{aligned} & 5x + 2y + (-2) \\ &= 5(3) + 2(1) + (-2) \\ &= 15 \end{aligned}$$

Final Answer**15****MCQ 11**

If $x = 2$ and $y = 4$, find $2x + 3y + (-1)$.

- A. 17 B. 13
C. 15 D. -15

Solution

$$\begin{aligned} & 2x + 3y + (-1) \\ &= 2(2) + 3(4) + (-1) \\ &= 15 \end{aligned}$$

Final Answer**15****MCQ 12**

If $x = -2$ and $y = 1$, find $3x + 4y + (0)$.

- A. 0 B. -4
C. 2 D. -2

Solution

$$\begin{aligned} & 3x + 4y + (0) \\ &= 3(-2) + 4(1) + (0) \\ &= -2 \end{aligned}$$

Final Answer**-2**

MCQ 13If $x = 2$ and $y = -1$, find $6x + 2y + (1)$.

- A. 11 B. 13
C. 9 D. -11

Solution

$$\begin{aligned} & 6x + 2y + (1) \\ &= 6(2) + 2(-1) + (1) \\ &= 11 \end{aligned}$$

Final Answer

11

MCQ 14If $x = 5$ and $y = 2$, find $4x + 1y + (2)$.

- A. 26 B. 24
C. 22 D. -24

Solution

$$\begin{aligned} & 4x + 1y + (2) \\ &= 4(5) + 1(2) + (2) \\ &= 24 \end{aligned}$$

Final Answer

24

MCQ 15If $x = 1$ and $y = -2$, find $3x + 7y + (-2)$.

- A. -11 B. -15
C. -13 D. 13

Solution

$$\begin{aligned} & 3x + 7y + (-2) \\ &= 3(1) + 7(-2) + (-2) \\ &= -13 \end{aligned}$$

Final Answer

-13

MCQ 16If $x = -1$ and $y = 3$, find $5x + 4y + (-1)$.

- A. 8 B. 4
C. -6 D. 6

Solution

$$\begin{aligned} & 5x + 4y + (-1) \\ &= 5(-1) + 4(3) + (-1) \\ &= 6 \end{aligned}$$

Final Answer

6

MCQ 17If $x = 6$ and $y = -1$, find $2x + 3y + (0)$.

- A. 9 B. 11
C. 7 D. -9

Solution

$$\begin{aligned} & 2x + 3y + (0) \\ &= 2(6) + 3(-1) + (0) \\ &= 9 \end{aligned}$$

Final Answer

9

MCQ 18If $x = -2$ and $y = 2$, find $7x + 2y + (1)$.

- A. -7 B. -9
C. -11 D. 9

Solution

$$\begin{aligned} & 7x + 2y + (1) \\ &= 7(-2) + 2(2) + (1) \\ &= -9 \end{aligned}$$

Final Answer

-9

MCQ 19

If $x = 5$ and $y = -4$, find $3x + 5y + (2)$.

A. -1

B. -5

C. -3

D. 3

Solution

$$\begin{aligned} & 3x + 5y + (2) \\ &= 3(5) + 5(-4) + (2) \\ &= -3 \end{aligned}$$

Final Answer**-3****MCQ 20**

If $x = 2$ and $y = 3$, find $4x + 4y + (-2)$.

A. 20

B. 16

C. -18

D. 18

Solution

$$\begin{aligned} & 4x + 4y + (-2) \\ &= 4(2) + 4(3) + (-2) \\ &= 18 \end{aligned}$$

Final Answer**18**

MCQ 30Simplify $5x + (5)x + (-4)x$.

- A. $14x$ B. $6x$
C. $-4x$ D. $7x$

Solution

$$5x + (5)x + (-4)x = (5 + 5 + -4)x = 6x$$

Final Answer $6x$ **MCQ 31**Simplify $12x + (-6)x + (3)x$.

- A. $3x$ B. $21x$
C. $9x$ D. $10x$

Solution

$$12x + (-6)x + (3)x = (12 + -6 + 3)x = 9x$$

Final Answer $9x$ **MCQ 32**Simplify $4x + (9)x + (-8)x$.

- A. $21x$ B. $-13x$
C. $6x$ D. $5x$

Solution

$$4x + (9)x + (-8)x = (4 + 9 + -8)x = 5x$$

Final Answer $5x$ **MCQ 33**Simplify $7x + (7)x + (-5)x$.

- A. $9x$ B. $19x$
C. $-5x$ D. $10x$

Solution

$$7x + (7)x + (-5)x = (7 + 7 + -5)x = 9x$$

Final Answer $9x$ **MCQ 34**Simplify $6x + (4)x + (-9)x$.

- A. $19x$ B. $1x$
C. $-7x$ D. $2x$

Solution

$$6x + (4)x + (-9)x = (6 + 4 + -9)x = 1x$$

Final Answer $1x$ **MCQ 35**Simplify $9x + (-1)x + (2)x$.

- A. $6x$ B. $12x$
C. $10x$ D. $11x$

Solution

$$9x + (-1)x + (2)x = (9 + -1 + 2)x = 10x$$

Final Answer $10x$ **Expansion and Standard Identities****MCQ 36**Expand $(x + 3)^2$.

- A. $x^2 + 3x + 9$ B. $x^2 - 6x + 9$
C. $x^2 + 6x - 9$ D. $x^2 + 6x + 9$

Solution

$$\begin{aligned}(x + 3)^2 &= (x)^2 + 2(x)(3) + (3)^2 \\ &= x^2 + 6x + 9\end{aligned}$$

Final Answer $x^2 + 6x + 9$ **MCQ 37**Expand $(x - 5)^2$.

- A. $x^2 - 10x + 25$ B. $x^2 - 5x + 25$
C. $x^2 + 10x + 25$ D. $x^2 - 10x - 25$

Solution

$$\begin{aligned}(x - 5)^2 &= (x)^2 + 2(x)(-5) + (-5)^2 \\ &= x^2 - 10x + 25\end{aligned}$$

Final Answer $x^2 - 10x + 25$ **MCQ 38**Expand $(2x + 3)^2$.

- A. $4x^2 + 6x + 9$ B. $4x^2 + 12x + 9$
C. $4x^2 - 12x + 9$ D. $4x^2 + 12x - 9$

Solution

$$\begin{aligned}(2x + 3)^2 &= (2x)^2 + 2(2x)(3) + (3)^2 \\ &= 4x^2 + 12x + 9\end{aligned}$$

Final Answer $4x^2 + 12x + 9$

MCQ 39Expand $(3x - 2)^2$.

A. $9x^2 - 6x + 4$ B. $9x^2 + 12x + 4$

C. $9x^2 - 12x + 4$ D. $9x^2 - 12x - 4$

Solution

$$\begin{aligned}(3x - 2)^2 &= (3x)^2 + 2(3x)(-2) + (-2)^2 \\ &= 9x^2 - 12x + 4\end{aligned}$$

Final Answer

$9x^2 - 12x + 4$

MCQ 40Expand $(2x - 5)^2$.

A. $4x^2 - 10x + 25$ B. $4x^2 + 20x + 25$

C. $4x^2 - 20x - 25$ D. $4x^2 - 20x + 25$

Solution

$$\begin{aligned}(2x - 5)^2 &= (2x)^2 + 2(2x)(-5) + (-5)^2 \\ &= 4x^2 - 20x + 25\end{aligned}$$

Final Answer

$4x^2 - 20x + 25$

MCQ 41Expand $(4x + 1)^2$.

A. $16x^2 + 8x + 1$ B. $16x^2 + 4x + 1$

C. $16x^2 - 8x + 1$ D. $16x^2 + 8x - 1$

Solution

$$\begin{aligned}(4x + 1)^2 &= (4x)^2 + 2(4x)(1) + (1)^2 \\ &= 16x^2 + 8x + 1\end{aligned}$$

Final Answer

$16x^2 + 8x + 1$

MCQ 42Expand $(3x + 4)^2$.

A. $9x^2 + 12x + 16$ B. $9x^2 + 24x + 16$

C. $9x^2 - 24x + 16$ D. $9x^2 + 24x - 16$

Solution

$$\begin{aligned}(3x + 4)^2 &= (3x)^2 + 2(3x)(4) + (4)^2 \\ &= 9x^2 + 24x + 16\end{aligned}$$

Final Answer

$9x^2 + 24x + 16$

MCQ 43Expand $(5x - 2)^2$.

A. $25x^2 - 10x + 4$

B. $25x^2 + 20x + 4$

C. $25x^2 - 20x + 4$

D. $25x^2 - 20x - 4$

Solution

$$\begin{aligned}(5x - 2)^2 &= (5x)^2 + 2(5x)(-2) + (-2)^2 \\ &= 25x^2 - 20x + 4\end{aligned}$$

Final Answer

$25x^2 - 20x + 4$

MCQ 44Expand $(2x + 7)^2$.

A. $4x^2 + 14x + 49$

B. $4x^2 - 28x + 49$

C. $4x^2 + 28x - 49$

D. $4x^2 + 28x + 49$

Solution

$$\begin{aligned}(2x + 7)^2 &= (2x)^2 + 2(2x)(7) + (7)^2 \\ &= 4x^2 + 28x + 49\end{aligned}$$

Final Answer

$4x^2 + 28x + 49$

MCQ 45Expand $(4x - 3)^2$.

A. $16x^2 - 24x + 9$

B. $16x^2 - 12x + 9$

C. $16x^2 + 24x + 9$

D. $16x^2 - 24x - 9$

Solution

$$\begin{aligned}(4x - 3)^2 &= (4x)^2 + 2(4x)(-3) + (-3)^2 \\ &= 16x^2 - 24x + 9\end{aligned}$$

Final Answer

$16x^2 - 24x + 9$

MCQ 46Factorize $x^2 - 16$.

A. $(x - 4)^2$

B. $(x - 4)(x + 4)$

C. $(x + 4)^2$

D. $(x - 4)(x - 4)$

Solution

$$(x)^2 - 16 = (x - 4)(x + 4)$$

Final Answer

$(x - 4)(x + 4)$

MCQ 47Factorize $x^2 - 49$.

A. $(x - 7)^2$

B. $(x + 7)^2$

C. $(x - 7)(x + 7)$

D. $(x - 7)(x - 7)$

Solution

$$(x)^2 - 49 = (x - 7)(x + 7)$$

Final Answer

$$(x - 7)(x + 7)$$

MCQ 48Factorize $4x^2 - 9$.

A. $(2x - 3)^2$

B. $(2x + 3)^2$

C. $(2x - 3)(2x - 3)$

D. $(2x - 3)(2x + 3)$

Solution

$$(2x)^2 - 9 = (2x - 3)(2x + 3)$$

Final Answer

$$(2x - 3)(2x + 3)$$

MCQ 49Factorize $9x^2 - 25$.

A. $(3x - 5)(3x + 5)$

B. $(3x - 5)^2$

C. $(3x + 5)^2$

D. $(3x - 5)(3x - 5)$

Solution

$$(3x)^2 - 25 = (3x - 5)(3x + 5)$$

Final Answer

$$(3x - 5)(3x + 5)$$

MCQ 50Factorize $16x^2 - 4$.

A. $(4x - 2)^2$

B. $(4x - 2)(4x + 2)$

C. $(4x + 2)^2$

D. $(4x - 2)(4x - 2)$

Solution

$$(4x)^2 - 4 = (4x - 2)(4x + 2)$$

Final Answer

$$(4x - 2)(4x + 2)$$

MCQ 51Factorize $25x^2 - 1$.

A. $(5x - 1)^2$

B. $(5x + 1)^2$

C. $(5x - 1)(5x + 1)$

D. $(5x - 1)(5x - 1)$

Solution

$$(5x)^2 - 1 = (5x - 1)(5x + 1)$$

Final Answer

$$(5x - 1)(5x + 1)$$

MCQ 52Factorize $4x^2 - 49$.

A. $(2x - 7)^2$

B. $(2x + 7)^2$

C. $(2x - 7)(2x - 7)$

D. $(2x - 7)(2x + 7)$

Solution

$$(2x)^2 - 49 = (2x - 7)(2x + 7)$$

Final Answer

$$(2x - 7)(2x + 7)$$

MCQ 53Factorize $9x^2 - 16$.

A. $(3x - 4)(3x + 4)$

B. $(3x - 4)^2$

C. $(3x + 4)^2$

D. $(3x - 4)(3x - 4)$

Solution

$$(3x)^2 - 16 = (3x - 4)(3x + 4)$$

Final Answer

$$(3x - 4)(3x + 4)$$

MCQ 54Factorize $25x^2 - 9$.

A. $(5x - 3)^2$

B. $(5x - 3)(5x + 3)$

C. $(5x + 3)^2$

D. $(5x - 3)(5x - 3)$

Solution

$$(5x)^2 - 9 = (5x - 3)(5x + 3)$$

Final Answer

$$(5x - 3)(5x + 3)$$

MCQ 55Factorize $36x^2 - 4$.

A. $(6x - 2)^2$

B. $(6x + 2)^2$

C. $(6x - 2)(6x + 2)$

D. $(6x - 2)(6x - 2)$

Solution

$$(6x)^2 - 4 = (6x - 2)(6x + 2)$$

Final Answer

$$(6x - 2)(6x + 2)$$

Common-Factor Factorization

MCQ 56Factorize $6x^2 + 9x$.

- A. $3(2x + 3)$ B. $x(6x + 9)$
 C. $3x(2x - 3)$ D. $3x(2x + 3)$

Solution

$$6x^2 + 9x = 3x(2x + 3)$$

Final Answer

$$3x(2x + 3)$$

MCQ 57Factorize $8x^2 + 12x$.

- A. $4x(2x + 3)$ B. $4(2x + 3)$
 C. $x(8x + 12)$ D. $4x(2x - 3)$

Solution

$$8x^2 + 12x = 4x(2x + 3)$$

Final Answer

$$4x(2x + 3)$$

MCQ 58Factorize $10x^2 + 15x$.

- A. $5(2x + 3)$ B. $5x(2x + 3)$
 C. $x(10x + 15)$ D. $5x(2x - 3)$

Solution

$$10x^2 + 15x = 5x(2x + 3)$$

Final Answer

$$5x(2x + 3)$$

MCQ 59Factorize $14x^2 + 21x$.

- A. $7(2x + 3)$ B. $x(14x + 21)$
 C. $7x(2x + 3)$ D. $7x(2x - 3)$

Solution

$$14x^2 + 21x = 7x(2x + 3)$$

Final Answer

$$7x(2x + 3)$$

MCQ 60Factorize $12x^2 + 18x$.

- A. $6(2x + 3)$ B. $x(12x + 18)$
 C. $6x(2x - 3)$ D. $6x(2x + 3)$

Solution

$$12x^2 + 18x = 6x(2x + 3)$$

Final Answer

$$6x(2x + 3)$$

MCQ 61Factorize $15x^2 + 25x$.

- A. $5x(3x + 5)$ B. $5(3x + 5)$
 C. $x(15x + 25)$ D. $5x(3x - 5)$

Solution

$$15x^2 + 25x = 5x(3x + 5)$$

Final Answer

$$5x(3x + 5)$$

MCQ 62Factorize $16x^2 + 24x$.

- A. $8(2x + 3)$ B. $8x(2x + 3)$
 C. $x(16x + 24)$ D. $8x(2x - 3)$

Solution

$$16x^2 + 24x = 8x(2x + 3)$$

Final Answer

$$8x(2x + 3)$$

MCQ 63Factorize $18x^2 + 30x$.

- A. $6(3x + 5)$ B. $x(18x + 30)$
 C. $6x(3x + 5)$ D. $6x(3x - 5)$

Solution

$$18x^2 + 30x = 6x(3x + 5)$$

Final Answer

$$6x(3x + 5)$$

MCQ 64Factorize $20x^2 + 35x$.

- A. $5(4x + 7)$ B. $x(20x + 35)$
 C. $5x(4x - 7)$ D. $5x(4x + 7)$

Solution

$$20x^2 + 35x = 5x(4x + 7)$$

Final Answer

$$5x(4x + 7)$$

MCQ 65Factorize $9x^2 + 27x$.

- A. $9x(x + 3)$ B. $9(x + 3)$
 C. $x(9x + 27)$ D. $9x(x - 3)$

Solution

$$9x^2 + 27x = 9x(x + 3)$$

Final Answer

$$9x(x + 3)$$

MCQ 66Factorize $24x^2 + 36x$.

- A. $12(2x + 3)$ B. $12x(2x + 3)$
 C. $x(24x + 36)$ D. $12x(2x - 3)$

Solution

$$24x^2 + 36x = 12x(2x + 3)$$

Final Answer

$$12x(2x + 3)$$

MCQ 67Factorize $25x^2 + 40x$.

- A. $5(5x + 8)$ B. $x(25x + 40)$
 C. $5x(5x + 8)$ D. $5x(5x - 8)$

Solution

$$25x^2 + 40x = 5x(5x + 8)$$

Final Answer

$$5x(5x + 8)$$

MCQ 68Factorize $28x^2 + 42x$.

- A. $14(2x + 3)$ B. $x(28x + 42)$
 C. $14x(2x - 3)$ D. $14x(2x + 3)$

Solution

$$28x^2 + 42x = 14x(2x + 3)$$

Final Answer

$$14x(2x + 3)$$

MCQ 69Factorize $30x^2 + 45x$.

- A. $15x(2x + 3)$ B. $15(2x + 3)$
 C. $x(30x + 45)$ D. $15x(2x - 3)$

Solution

$$30x^2 + 45x = 15x(2x + 3)$$

Final Answer

$$15x(2x + 3)$$

MCQ 70Factorize $32x^2 + 48x$.

- A. $16(2x + 3)$ B. $16x(2x + 3)$
 C. $x(32x + 48)$ D. $16x(2x - 3)$

Solution

$$32x^2 + 48x = 16x(2x + 3)$$

Final Answer

$$16x(2x + 3)$$

Trinomial Factorization**MCQ 71**Factorize $x^2 - 5x + 6$.

- A. $(x + 2)(x + 3)$ B. $(x - 2)(x + 3)$
 C. $(x - 2)(x - 3)$ D. $(x + 2)(x - 3)$

Solution

$$x^2 - 5x + 6 = (x - 2)(x - 3)$$

Final Answer

$$(x - 2)(x - 3)$$

MCQ 72Factorize $x^2 - 6x + 5$.

- A. $(x + 1)(x + 5)$ B. $(x - 1)(x + 5)$
 C. $(x + 1)(x - 5)$ D. $(x - 1)(x - 5)$

Solution

$$x^2 - 6x + 5 = (x - 1)(x - 5)$$

Final Answer

$$(x - 1)(x - 5)$$

MCQ 73Factorize $x^2 - 7x + 12$.

- A. $(x - 3)(x - 4)$ B. $(x + 3)(x + 4)$
 C. $(x - 3)(x + 4)$ D. $(x + 3)(x - 4)$

Solution

$$x^2 - 7x + 12 = (x - 3)(x - 4)$$

Final Answer

$$(x - 3)(x - 4)$$

MCQ 74Factorize $x^2 - 3x - 10$.

- A. $(x - 2)(x + 5)$ B. $(x + 2)(x - 5)$
 C. $(x + 2)(x + 5)$ D. $(x - 2)(x - 5)$

Solution

$$x^2 - 3x - 10 = (x + 2)(x - 5)$$

Final Answer

$$(x + 2)(x - 5)$$

MCQ 75Factorize $x^2 + 7x + 12$.

- A. $(x - 3)(x - 4)$ B. $(x + 3)(x - 4)$
 C. $(x + 3)(x + 4)$ D. $(x - 3)(x + 4)$

Solution

$$x^2 + 7x + 12 = (x + 3)(x + 4)$$

Final Answer

$$(x + 3)(x + 4)$$

MCQ 76Factorize $x^2 - 9x + 14$.

- A. $(x + 2)(x + 7)$ B. $(x - 2)(x + 7)$
 C. $(x + 2)(x - 7)$ D. $(x - 2)(x - 7)$

Solution

$$x^2 - 9x + 14 = (x - 2)(x - 7)$$

Final Answer

$$(x - 2)(x - 7)$$

MCQ 77Factorize $x^2 - 9x + 20$.

- A. $(x - 4)(x - 5)$ B. $(x + 4)(x + 5)$
 C. $(x - 4)(x + 5)$ D. $(x + 4)(x - 5)$

Solution

$$x^2 - 9x + 20 = (x - 4)(x - 5)$$

Final Answer

$$(x - 4)(x - 5)$$

MCQ 78Factorize $x^2 - 5x - 6$.

- A. $(x - 1)(x + 6)$ B. $(x + 1)(x - 6)$
 C. $(x + 1)(x + 6)$ D. $(x - 1)(x - 6)$

Solution

$$x^2 - 5x - 6 = (x + 1)(x - 6)$$

Final Answer

$$(x + 1)(x - 6)$$

MCQ 79Factorize $x^2 - 1x + 24$.

- A. $(x + 3)(x + 8)$ B. $(x - 3)(x + 8)$
 C. $(x - 3)(x - 8)$ D. $(x + 3)(x - 8)$

Solution

$$x^2 - 1x + 24 = (x - 3)(x - 8)$$

Final Answer

$$(x - 3)(x - 8)$$

MCQ 80Factorize $x^2 - 3x - 28$.

- A. $(x - 4)(x + 7)$ B. $(x + 4)(x + 7)$
 C. $(x - 4)(x - 7)$ D. $(x + 4)(x - 7)$

Solution

$$x^2 - 3x - 28 = (x + 4)(x - 7)$$

Final Answer

$$(x + 4)(x - 7)$$

MCQ 81Factorize $x^2 - 1x + 30$.

- A. $(x - 5)(x - 6)$ B. $(x + 5)(x + 6)$
 C. $(x - 5)(x + 6)$ D. $(x + 5)(x - 6)$

Solution

$$x^2 - 1x + 30 = (x - 5)(x - 6)$$

Final Answer

$$(x - 5)(x - 6)$$

MCQ 82Factorize $x^2 - 7x - 18$.

- A. $(x - 2)(x + 9)$ B. $(x + 2)(x - 9)$
 C. $(x + 2)(x + 9)$ D. $(x - 2)(x - 9)$

Solution

$$x^2 - 7x - 18 = (x + 2)(x - 9)$$

Final Answer

$$(x + 2)(x - 9)$$

MCQ 83Factorize $x^2 - 1x + 10$.

- A. $(x + 1)(x + 10)$ B. $(x - 1)(x + 10)$
 C. $(x - 1)(x - 10)$ D. $(x + 1)(x - 10)$

Solution

$$x^2 - 1x + 10 = (x - 1)(x - 10)$$

Final Answer

$$(x - 1)(x - 10)$$

MCQ 84Factorize $x^2 - 3x - 40$.

- A. $(x - 5)(x + 8)$ B. $(x + 5)(x + 8)$
 C. $(x - 5)(x - 8)$ D. $(x + 5)(x - 8)$

Solution

$$x^2 - 3x - 40 = (x + 5)(x - 8)$$

Final Answer

$$(x + 5)(x - 8)$$

MCQ 85Factorize $x^2 - 13x + 42$.**A.** $(x - 6)(x - 7)$ **B.** $(x + 6)(x + 7)$ **C.** $(x - 6)(x + 7)$ **D.** $(x + 6)(x - 7)$ **Solution**

$$x^2 - 13x + 42 = (x - 6)(x - 7)$$

Final Answer

$$(x - 6)(x - 7)$$

Fast Identity Evaluation**MCQ 86**Evaluate $12^2 - 8^2$ using an algebraic identity.**A.** 208 **B.** 80**C.** 16 **D.** 88**Solution**

$$\begin{aligned} 12^2 - 8^2 &= (12 - 8)(12 + 8) \\ &= 4 \times 20 = 80 \end{aligned}$$

Final Answer

80

MCQ 87Evaluate $15^2 - 5^2$ using an algebraic identity.**A.** 250 **B.** 100**C.** 200 **D.** 220**Solution**

$$\begin{aligned} 15^2 - 5^2 &= (15 - 5)(15 + 5) \\ &= 10 \times 20 = 200 \end{aligned}$$

Final Answer

200

MCQ 88Evaluate $21^2 - 9^2$ using an algebraic identity.**A.** 522 **B.** 144**C.** 384 **D.** 360**Solution**

$$\begin{aligned} 21^2 - 9^2 &= (21 - 9)(21 + 9) \\ &= 12 \times 30 = 360 \end{aligned}$$

Final Answer

360

MCQ 89Evaluate $18^2 - 2^2$ using an algebraic identity.**A.** 320 **B.** 328**C.** 256 **D.** 352**Solution**

$$\begin{aligned} 18^2 - 2^2 &= (18 - 2)(18 + 2) \\ &= 16 \times 20 = 320 \end{aligned}$$

Final Answer

320

MCQ 90Evaluate $25^2 - 15^2$ using an algebraic identity.**A.** 850 **B.** 400**C.** 100 **D.** 420**Solution**

$$\begin{aligned} 25^2 - 15^2 &= (25 - 15)(25 + 15) \\ &= 10 \times 40 = 400 \end{aligned}$$

Final Answer

400

MCQ 91Evaluate $14^2 - 6^2$ using an algebraic identity.**A.** 232 **B.** 64**C.** 160 **D.** 176**Solution**

$$\begin{aligned} 14^2 - 6^2 &= (14 - 6)(14 + 6) \\ &= 8 \times 20 = 160 \end{aligned}$$

Final Answer

160

MCQ 92Evaluate $30^2 - 10^2$ using an algebraic identity.**A.** 1000 **B.** 400**C.** 840 **D.** 800**Solution**

$$\begin{aligned} 30^2 - 10^2 &= (30 - 10)(30 + 10) \\ &= 20 \times 40 = 800 \end{aligned}$$

Final Answer

800

MCQ 93Evaluate $17^2 - 3^2$ using an algebraic identity.

- A. 280 B. 298
C. 196 D. 308

Solution

$$\begin{aligned} 17^2 - 3^2 &= (17 - 3)(17 + 3) \\ &= 14 \times 20 = 280 \end{aligned}$$

Final Answer

280

MCQ 94Evaluate $22^2 - 12^2$ using an algebraic identity.

- A. 628 B. 340
C. 100 D. 360

Solution

$$\begin{aligned} 22^2 - 12^2 &= (22 - 12)(22 + 12) \\ &= 10 \times 34 = 340 \end{aligned}$$

Final Answer

340

MCQ 95Evaluate $19^2 - 11^2$ using an algebraic identity.

- A. 482 B. 64
C. 240 D. 256

Solution

$$\begin{aligned} 19^2 - 11^2 &= (19 - 11)(19 + 11) \\ &= 8 \times 30 = 240 \end{aligned}$$

Final Answer

240

MCQ 96Evaluate $16^2 - 4^2$ using an algebraic identity.

- A. 272 B. 144
C. 264 D. 240

Solution

$$\begin{aligned} 16^2 - 4^2 &= (16 - 4)(16 + 4) \\ &= 12 \times 20 = 240 \end{aligned}$$

Final Answer

240

MCQ 97Evaluate $28^2 - 8^2$ using an algebraic identity.

- A. 720 B. 848
C. 400 D. 760

Solution

$$\begin{aligned} 28^2 - 8^2 &= (28 - 8)(28 + 8) \\ &= 20 \times 36 = 720 \end{aligned}$$

Final Answer

720

MCQ 98Evaluate $24^2 - 6^2$ using an algebraic identity.

- A. 612 B. 540
C. 324 D. 576

Solution

$$\begin{aligned} 24^2 - 6^2 &= (24 - 6)(24 + 6) \\ &= 18 \times 30 = 540 \end{aligned}$$

Final Answer

540

MCQ 99Evaluate $13^2 - 7^2$ using an algebraic identity.

- A. 218 B. 36
C. 120 D. 132

Solution

$$\begin{aligned} 13^2 - 7^2 &= (13 - 7)(13 + 7) \\ &= 6 \times 20 = 120 \end{aligned}$$

Final Answer

120

MCQ 100Evaluate $27^2 - 3^2$ using an algebraic identity.

- A. 738 B. 576
C. 768 D. 720

Solution

$$\begin{aligned} 27^2 - 3^2 &= (27 - 3)(27 + 3) \\ &= 24 \times 30 = 720 \end{aligned}$$

Final Answer

720

RAPID REVISION GRID | ALGEBRA**Combine like terms**

$$ax + bx = (a + b)x$$

Square of sum

$$(a + b)^2 = a^2 + 2ab + b^2$$

Square of difference

$$(a - b)^2 = a^2 - 2ab + b^2$$

Difference of squares

$$a^2 - b^2 = (a - b)(a + b)$$

Two binomials

$$(x + a)(x + b) = x^2 + (a + b)x + ab$$

Factorization check Expand the proposed factors mentally; the middle term and constant must match.

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Linear equation

$$ax + b = c \Rightarrow x = \frac{c - b}{a}$$

Brackets Expand first, then collect variable terms on one side.

Fractions Multiply the entire equation by the LCM of denominators.

Simultaneous equations Eliminate one variable by adding or subtracting suitable multiples.

Substitution Express one variable in terms of the other; then substitute.

Fast check Put the final value back into the original equation; both sides must agree.

Direct Linear Equations**MCQ 1**Solve $3x + 5 = 26$.

- A. 7 B. 8
C. 6 D. -7

Solution

$$\begin{aligned} 3x + 5 &= 26 \\ 3x &= 26 - 5 = 21 \\ x &= \frac{21}{3} = 7 \end{aligned}$$

Final Answer

$x = 7$

MCQ 2Solve $4x - 3 = 21$.

- A. 7 B. 6
C. 5 D. -6

Solution

$$\begin{aligned} 4x - 3 &= 21 \\ 4x &= 21 - -3 = 24 \\ x &= \frac{24}{4} = 6 \end{aligned}$$

Final Answer

$x = 6$

MCQ 3Solve $5x + 9 = -1$.

- A. -1 B. -3
C. -2 D. 2

Solution

$$\begin{aligned} 5x + 9 &= -1 \\ 5x &= -1 - 9 = -10 \\ x &= \frac{-10}{5} = -2 \end{aligned}$$

Final Answer

$x = -2$

MCQ 4Solve $7x + 2 = 30$.

- A. 5 B. 3
C. -4 D. 4

Solution

$$\begin{aligned} 7x + 2 &= 30 \\ 7x &= 30 - 2 = 28 \\ x &= \frac{28}{7} = 4 \end{aligned}$$

Final Answer

$x = 4$

MCQ 5Solve $6x - 8 = 22$.

- A. 5 B. 6
C. 4 D. -5

Solution

$$\begin{aligned} 6x - 8 &= 22 \\ 6x &= 22 - -8 = 30 \\ x &= \frac{30}{6} = 5 \end{aligned}$$

Final Answer

$x = 5$

MCQ 6Solve $8x + 7 = 31$.

- A. 4 B. 3
C. 2 D. -3

Solution

$$\begin{aligned} 8x + 7 &= 31 \\ 8x &= 31 - 7 = 24 \\ x &= \frac{24}{8} = 3 \end{aligned}$$

Final Answer

$x = 3$

MCQ 7Solve $9x + 4 = -5$.

- A. 0 B. -2
C. -1 D. 1

Solution

$$9x + 4 = -5$$

$$9x = -5 - 4 = -9$$

$$x = \frac{-9}{9} = -1$$

Final Answer

$x = -1$

MCQ 8Solve $2x - 5 = 17$.

- A. 12 B. 10
C. -11 D. 11

Solution

$$2x - 5 = 17$$

$$2x = 17 - -5 = 22$$

$$x = \frac{22}{2} = 11$$

Final Answer

$x = 11$

MCQ 9Solve $10x + 13 = 33$.

- A. 2 B. 3
C. 1 D. -2

Solution

$$10x + 13 = 33$$

$$10x = 33 - 13 = 20$$

$$x = \frac{20}{10} = 2$$

Final Answer

$x = 2$

MCQ 10Solve $11x - 7 = 26$.

- A. 4 B. 3
C. 2 D. -3

Solution

$$11x - 7 = 26$$

$$11x = 26 - -7 = 33$$

$$x = \frac{33}{11} = 3$$

Final Answer

$x = 3$

MCQ 11Solve $4x + 6 = -14$.

- A. -4 B. -6
C. -5 D. 5

Solution

$$4x + 6 = -14$$

$$4x = -14 - 6 = -20$$

$$x = \frac{-20}{4} = -5$$

Final Answer

$x = -5$

MCQ 12Solve $12x - 10 = 14$.

- A. 3 B. 1
C. -2 D. 2

Solution

$$12x - 10 = 14$$

$$12x = 14 - -10 = 24$$

$$x = \frac{24}{12} = 2$$

Final Answer

$x = 2$

MCQ 13Solve $5x + 1 = 41$.

- A. 8 B. 9
C. 7 D. -8

Solution

$$\begin{aligned}5x + 1 &= 41 \\5x &= 41 - 1 = 40 \\x &= \frac{40}{5} = 8\end{aligned}$$

Final Answer

$x = 8$

MCQ 14Solve $7x + 5 = -16$.

- A. -2 B. -3
C. -4 D. 3

Solution

$$\begin{aligned}7x + 5 &= -16 \\7x &= -16 - 5 = -21 \\x &= \frac{-21}{7} = -3\end{aligned}$$

Final Answer

$x = -3$

MCQ 15Solve $3x - 4 = 32$.

- A. 13 B. 11
C. 12 D. -12

Solution

$$\begin{aligned}3x - 4 &= 32 \\3x &= 32 - -4 = 36 \\x &= \frac{36}{3} = 12\end{aligned}$$

Final Answer

$x = 12$

MCQ 16Solve $6x + 9 = -15$.

- A. -3 B. -5
C. 4 D. -4

Solution

$$\begin{aligned}6x + 9 &= -15 \\6x &= -15 - 9 = -24 \\x &= \frac{-24}{6} = -4\end{aligned}$$

Final Answer

$x = -4$

MCQ 17Solve $8x - 6 = 50$.

- A. 7 B. 8
C. 6 D. -7

Solution

$$\begin{aligned}8x - 6 &= 50 \\8x &= 50 - -6 = 56 \\x &= \frac{56}{8} = 7\end{aligned}$$

Final Answer

$x = 7$

MCQ 18Solve $9x + 3 = 48$.

- A. 6 B. 5
C. 4 D. -5

Solution

$$\begin{aligned}9x + 3 &= 48 \\9x &= 48 - 3 = 45 \\x &= \frac{45}{9} = 5\end{aligned}$$

Final Answer

$x = 5$

MCQ 19Solve $2x + 7 = -11$.**A.** -8 **B.** -10**C.** -9 **D.** 9**Solution**

$$2x + 7 = -11$$

$$2x = -11 - 7 = -18$$

$$x = \frac{-18}{2} = -9$$

Final Answer

$$x = -9$$

MCQ 22Solve $4x + 8 = 44$.**A.** 10 **B.** 9**C.** 8 **D.** -9**Solution**

$$4x + 8 = 44$$

$$4x = 44 - 8 = 36$$

$$x = \frac{36}{4} = 9$$

Final Answer

$$x = 9$$

MCQ 20Solve $13x - 5 = 21$.**A.** 3 **B.** 1**C.** -2 **D.** 2**Solution**

$$13x - 5 = 21$$

$$13x = 21 - (-5) = 26$$

$$x = \frac{26}{13} = 2$$

Final Answer

$$x = 2$$

MCQ 23Solve $7x - 9 = 26$.**A.** 6 **B.** 4**C.** 5 **D.** -5**Solution**

$$7x - 9 = 26$$

$$7x = 26 - (-9) = 35$$

$$x = \frac{35}{7} = 5$$

Final Answer

$$x = 5$$

MCQ 21Solve $5x - 11 = 19$.**A.** 6 **B.** 7**C.** 5 **D.** -6**Solution**

$$5x - 11 = 19$$

$$5x = 19 - (-11) = 30$$

$$x = \frac{30}{5} = 6$$

Final Answer

$$x = 6$$

MCQ 24Solve $3x + 10 = -11$.**A.** -6 **B.** -8**C.** 7 **D.** -7**Solution**

$$3x + 10 = -11$$

$$3x = -11 - 10 = -21$$

$$x = \frac{-21}{3} = -7$$

Final Answer

$$x = -7$$

MCQ 25Solve $12x + 1 = 49$.

- A. 4 B. 5
C. 3 D. -4

Solution

$$12x + 1 = 49$$

$$12x = 49 - 1 = 48$$

$$x = \frac{48}{12} = 4$$

Final Answer

$$x = 4$$

Brackets and Fraction Equations**MCQ 26**Solve $3(x + 4) + 2 = 29$.

- A. 7 B. 5
C. 3 D. -5

Solution

$$3(x + 4) + 2 = 29$$

$$3x + 12 + 2 = 29$$

$$3x = 15 \Rightarrow x = 5$$

Final Answer

$$x = 5$$

MCQ 27Solve $4(x - 2) + 7 = 23$.

- A. 8 B. 4
C. 6 D. -6

Solution

$$4(x - 2) + 7 = 23$$

$$4x - 8 + 7 = 23$$

$$4x = 24 \Rightarrow x = 6$$

Final Answer

$$x = 6$$

MCQ 28Solve $5(x + 3) - 4 = 21$.

- A. 4 B. 0
C. -2 D. 2

Solution

$$5(x + 3) - 4 = 21$$

$$5x + 15 - 4 = 21$$

$$5x = 10 \Rightarrow x = 2$$

Final Answer

$$x = 2$$

MCQ 29Solve $2(x + 7) + 5 = 35$.

- A. 8 B. 10
C. 6 D. -8

Solution

$$2(x + 7) + 5 = 35$$

$$2x + 14 + 5 = 35$$

$$2x = 16 \Rightarrow x = 8$$

Final Answer

$$x = 8$$

MCQ 30Solve $6(x - 1) + 3 = 21$.

- A. 6 B. 4
C. 2 D. -4

Solution

$$6(x - 1) + 3 = 21$$

$$6x - 6 + 3 = 21$$

$$6x = 24 \Rightarrow x = 4$$

Final Answer

$$x = 4$$

MCQ 31Solve $3(x + 5) - 7 = 35$.

- A. 11 B. 7
C. 9 D. -9

Solution

$$3(x + 5) - 7 = 35$$

$$3x + 15 - 7 = 35$$

$$3x = 27 \Rightarrow x = 9$$

Final Answer

$$x = 9$$

MCQ 32Solve $7(x + 2) + 1 = 36$.

- A. 5 B. 1
C. -3 D. 3

Solution

$$7(x + 2) + 1 = 36$$

$$7x + 14 + 1 = 36$$

$$7x = 21 \Rightarrow x = 3$$

Final Answer

$$x = 3$$

MCQ 33Solve $4(x + 6) - 5 = 47$.

- A. 7 B. 9
C. 5 D. -7

Solution

$$4(x + 6) - 5 = 47$$

$$4x + 24 - 5 = 47$$

$$4x = 28 \Rightarrow x = 7$$

Final Answer

$$x = 7$$

MCQ 34Solve $5(x - 4) + 8 = 18$.

- A. 8 B. 6
C. 4 D. -6

Solution

$$5(x - 4) + 8 = 18$$

$$5x - 20 + 8 = 18$$

$$5x = 30 \Rightarrow x = 6$$

Final Answer

$$x = 6$$

MCQ 35Solve $2(x + 3) + 9 = 11$.

- A. 0 B. -4
C. -2 D. 2

Solution

$$2(x + 3) + 9 = 11$$

$$2x + 6 + 9 = 11$$

$$2x = -4 \Rightarrow x = -2$$

Final Answer

$$x = -2$$

MCQ 36Solve $\frac{x + 3}{4} = 3$.

- A. 10 B. 8
C. -9 D. 9

Solution

$$\frac{x + 3}{4} = 3$$

$$x + 3 = 12$$

$$x = 9$$

Final Answer

$$x = 9$$

MCQ 37Solve $\frac{x-5}{3} = 1$.

- A. 8 B. 9
C. 7 D. -8

Solution

$$\frac{x-5}{3} = 1$$

$$x-5 = 3$$

$$x = 8$$

Final Answer

$$x = 8$$

MCQ 38Solve $\frac{x+7}{5} = 4$.

- A. 14 B. 13
C. 12 D. -13

Solution

$$\frac{x+7}{5} = 4$$

$$x+7 = 20$$

$$x = 13$$

Final Answer

$$x = 13$$

MCQ 39Solve $\frac{x+2}{6} = 2$.

- A. 11 B. 9
C. 10 D. -10

Solution

$$\frac{x+2}{6} = 2$$

$$x+2 = 12$$

$$x = 10$$

Final Answer

$$x = 10$$

MCQ 40Solve $\frac{x-4}{7} = 1$.

- A. 12 B. 10
C. -11 D. 11

Solution

$$\frac{x-4}{7} = 1$$

$$x-4 = 7$$

$$x = 11$$

Final Answer

$$x = 11$$

MCQ 41Solve $\frac{x+6}{8} = \frac{5}{2}$.

- A. 14 B. 15
C. 13 D. -14

Solution

$$\frac{x+6}{8} = \frac{5}{2}$$

$$x+6 = 20$$

$$x = 14$$

Final Answer

$$x = 14$$

MCQ 42Solve $\frac{x+1}{3} = -1$.

- A. -3 B. -4
C. -5 D. 4

Solution

$$\frac{x+1}{3} = -1$$

$$x+1 = -3$$

$$x = -4$$

Final Answer

$$x = -4$$

MCQ 43Solve $\frac{x-2}{5} = 2$.

- A. 13 B. 11
C. 12 D. -12

Solution

$$\frac{x-2}{5} = 2$$

$$x - 2 = 10$$

$$x = 12$$

Final Answer

$$x = 12$$

MCQ 44Solve $\frac{x+9}{6} = 4$.

- A. 16 B. 14
C. -15 D. 15

Solution

$$\frac{x+9}{6} = 4$$

$$x + 9 = 24$$

$$x = 15$$

Final Answer

$$x = 15$$

MCQ 45Solve $\frac{x-7}{4} = \frac{-1}{2}$.

- A. 5 B. 6
C. 4 D. -5

Solution

$$\frac{x-7}{4} = \frac{-1}{2}$$

$$x - 7 = -2$$

$$x = 5$$

Final Answer

$$x = 5$$

Linear Word Problems**MCQ 46**

A number increased by 7 is 25. Find the number.

- A. 20 B. 18
C. 16 D. 36

Solution

$$x + 7 = 25$$

$$x = 25 - 7$$

$$x = 18$$

Final Answer

$$18$$

MCQ 47

Three times a number is 42. Find the number.

- A. 16 B. 12
C. 14 D. 28

Solution

$$3x = 42$$

$$x = \frac{42}{3}$$

$$x = 14$$

Final Answer

$$14$$

MCQ 48

Five less than twice a number is 31. Find the number.

- A. 20 B. 16
C. 36 D. 18

Solution

$$2x - 5 = 31$$

$$2x = 31 + 5 = 36$$

$$x = \frac{36}{2} = 18$$

Final Answer

$$18$$

MCQ 49

The sum of a number and its double is 54. Find the number.

- A. 18 B. 20
C. 16 D. 36

Solution

$$x + 2x = 54$$

$$3x = 54$$

$$x = 18$$

Final Answer

18

MCQ 50

One-third of a number is 15. Find the number.

- A. 47 B. 45
C. 43 D. 90

Solution

$$\frac{x}{3} = 15$$

$$x = 15 \times 3 = 45$$

Final Answer

45

MCQ 51

A number divided by 4 and then increased by 3 gives 11. Find the number.

- A. 34 B. 30
C. 32 D. 64

Solution

$$\frac{x}{4} + 3 = 11$$

$$\frac{x}{4} = 11 - 3 = 8$$

$$x = 8 \times 4 = 32$$

Final Answer

32

MCQ 52

The perimeter of a square is 68 cm. Find its side.

- A. 19 B. 15
C. 34 D. 17

Solution

$$4x = 68$$

$$x = \frac{68}{4} = 17$$

Final Answer

17

MCQ 53

A taxi charges Rs. 100 fixed plus Rs. 20 per km. The bill is Rs. 260. How many km were travelled?

- A. 8 B. 10
C. 6 D. 16

Solution

$$100 + 20x = 260$$

$$20x = 260 - 100 = 160$$

$$x = \frac{160}{20} = 8$$

Final Answer

8

MCQ 54

Three consecutive integers have sum 48. Find the middle integer.

- A. 18 B. 16
C. 14 D. 32

Solution

$$(x - 1) + x + (x + 1) = 48$$

$$3x = 48$$

$$x = 16$$

Final Answer

16

MCQ 55

Two consecutive even integers have sum 38. Find the smaller integer.

- A. 20 B. 16
C. 18 D. 36

Solution

$$x + (x + 2) = 38$$

$$2x + 2 = 38$$

$$2x = 36$$

$$x = 18$$

Final Answer

18

MCQ 56

A father gives Rs. 500 equally to 5 children after keeping Rs. 100. What was the original amount?

- A. 602 B. 598
C. 1200 D. 600

Solution

$$x - 100 = 500$$

$$x = 500 + 100 = 600$$

Final Answer

600

MCQ 57

A rectangle has length 5 cm more than width. If its perimeter is 50 cm, find the width.

- A. 10 B. 12
C. 8 D. 20

Solution

$$2[x + (x + 5)] = 50$$

$$x + (x + 5) = 25$$

$$2x + 5 = 25$$

$$2x = 20$$

$$x = 10$$

Final Answer

10

MCQ 58

A number is 12 more than one-fourth of itself. Find the number.

- A. 18 B. 16
C. 14 D. 32

Solution

$$x = \frac{x}{4} + 12$$

$$x - \frac{x}{4} = 12$$

$$\frac{3x}{4} = 12$$

$$3x = 48$$

$$x = 16$$

Final Answer

16

MCQ 59

After a 6-point increase, a score became 40. What was the original score?

- A. 36 B. 32
C. 34 D. 68

Solution

$$x + 6 = 40$$

$$x = 40 - 6 = 34$$

Final Answer

34

MCQ 60

Seven identical notebooks and a Rs. 30 pen cost Rs. 240. Find the price of one notebook.

- A. 32 B. 28
C. 60 D. 30

Solution

$$7x + 30 = 240$$

$$7x = 240 - 30 = 210$$

$$x = \frac{210}{7} = 30$$

Final Answer

30

Simultaneous Equations

MCQ 61Solve the system $2x + 3y = 17$, $1x + 2y = 9$. Find x .

- A. 7 B. 8
C. 6 D. -7

Solution

$$\begin{aligned} 2x + 3y &= 17 & 1x + 2y &= 9 \\ 2(2x + 3y) - 3(1x + 2y) &= 2(17) - 3(9) \\ 1x &= 7 \Rightarrow x = 7 \end{aligned}$$

Final Answer

$x = 7$

MCQ 62Solve the system $3x + 2y = 23$, $2x + 3y = 22$. Find x .

- A. 6 B. 5
C. 4 D. -5

Solution

$$\begin{aligned} 3x + 2y &= 23 & 2x + 3y &= 22 \\ 3(3x + 2y) - 2(2x + 3y) &= 3(23) - 2(22) \\ 5x &= 25 \Rightarrow x = 5 \end{aligned}$$

Final Answer

$x = 5$

MCQ 63Solve the system $4x + 1y = 27$, $3x + 4y = 30$. Find y .

- A. 4 B. 2
C. 3 D. -3

Solution

$$\begin{aligned} 4x + 1y &= 27 & 3x + 4y &= 30 \\ 4(4x + 1y) - 1(3x + 4y) &= 4(27) - 1(30) \\ 13x &= 78 \Rightarrow x = 6 \\ 4(6) + 1y &= 27 \Rightarrow 1y = 3 \Rightarrow y = 3 \end{aligned}$$

Final Answer

$y = 3$

MCQ 64Solve the system $5x + 2y = 34$, $4x + 5y = 51$. Find x .

- A. 5 B. 3
C. -4 D. 4

Solution

$$\begin{aligned} 5x + 2y &= 34 & 4x + 5y &= 51 \\ 5(5x + 2y) - 2(4x + 5y) &= 5(34) - 2(51) \\ 17x &= 68 \Rightarrow x = 4 \end{aligned}$$

Final Answer

$x = 4$

MCQ 65Solve the system $2x + 5y = 26$, $1x + 6y = 20$. Find x .

- A. 8 B. 9
C. 7 D. -8

Solution

$$\begin{aligned} 2x + 5y &= 26 & 1x + 6y &= 20 \\ 6(2x + 5y) - 5(1x + 6y) &= 6(26) - 5(20) \\ 7x &= 56 \Rightarrow x = 8 \end{aligned}$$

Final Answer

$x = 8$

MCQ 66Solve the system $3x + 4y = 38$, $2x + 2y = 22$. Find y .

- A. 6 B. 5
C. 4 D. -5

Solution

$$\begin{aligned} 3x + 4y &= 38 & 2x + 2y &= 22 \\ 2(3x + 4y) - 4(2x + 2y) &= 2(38) - 4(22) \\ -2x &= -12 \Rightarrow x = 6 \\ 3(6) + 4y &= 38 \Rightarrow 4y = 20 \Rightarrow y = 5 \end{aligned}$$

Final Answer

$y = 5$

MCQ 67Solve the system $1x + 2y = 15$, $3x + 3y = 36$. Find x .**A. 10****B. 8****C. 9****D. -9****Solution**

$$1x + 2y = 15 \quad 3x + 3y = 36$$

$$3(1x + 2y) - 2(3x + 3y) = 3(15) - 2(36)$$

$$-3x = -27 \Rightarrow x = 9$$

Final Answer

$$x = 9$$

MCQ 68Solve the system $4x + 3y = 32$, $4x + 4y = 40$. Find x .**A. 3****B. 1****C. -2****D. 2****Solution**

$$4x + 3y = 32 \quad 4x + 4y = 40$$

$$4(4x + 3y) - 3(4x + 4y) = 4(32) - 3(40)$$

$$4x = 8 \Rightarrow x = 2$$

Final Answer

$$x = 2$$

MCQ 69Solve the system $5x + 1y = 39$, $1x + 5y = 27$. Find y .**A. 4****B. 5****C. 3****D. -4****Solution**

$$5x + 1y = 39 \quad 1x + 5y = 27$$

$$5(5x + 1y) - 1(1x + 5y) = 5(39) - 1(27)$$

$$24x = 168 \Rightarrow x = 7$$

$$5(7) + 1y = 39 \Rightarrow 1y = 4 \Rightarrow y = 4$$

Final Answer

$$y = 4$$

MCQ 70Solve the system $2x + 1y = 28$, $2x + 6y = 58$. Find x .**A. 12****B. 11****C. 10****D. -11****Solution**

$$2x + 1y = 28 \quad 2x + 6y = 58$$

$$6(2x + 1y) - 1(2x + 6y) = 6(28) - 1(58)$$

$$10x = 110 \Rightarrow x = 11$$

Final Answer

$$x = 11$$

MCQ 71Solve the system $3x + 5y = 22$, $3x + 2y = 16$. Find x .**A. 5****B. 3****C. 4****D. -4****Solution**

$$3x + 5y = 22 \quad 3x + 2y = 16$$

$$2(3x + 5y) - 5(3x + 2y) = 2(22) - 5(16)$$

$$-9x = -36 \Rightarrow x = 4$$

Final Answer

$$x = 4$$

MCQ 72Solve the system $6x + 1y = 27$, $4x + 3y = 39$. Find y .**A. 10****B. 8****C. -9****D. 9****Solution**

$$6x + 1y = 27 \quad 4x + 3y = 39$$

$$3(6x + 1y) - 1(4x + 3y) = 3(27) - 1(39)$$

$$14x = 42 \Rightarrow x = 3$$

$$6(3) + 1y = 27 \Rightarrow 1y = 9 \Rightarrow y = 9$$

Final Answer

$$y = 9$$

MCQ 73Solve the system $2x + 7y = 31$, $1x + 4y = 17$. Find x .

- A. 5 B. 6
C. 4 D. -5

Solution

$$\begin{aligned} 2x + 7y &= 31 & 1x + 4y &= 17 \\ 4(2x + 7y) - 7(1x + 4y) &= 4(31) - 7(17) \\ 1x &= 5 \Rightarrow x = 5 \end{aligned}$$

Final Answer

$x = 5$

MCQ 74Solve the system $5x + 3y = 33$, $2x + 5y = 17$. Find x .

- A. 7 B. 6
C. 5 D. -6

Solution

$$\begin{aligned} 5x + 3y &= 33 & 2x + 5y &= 17 \\ 5(5x + 3y) - 3(2x + 5y) &= 5(33) - 3(17) \\ 19x &= 114 \Rightarrow x = 6 \end{aligned}$$

Final Answer

$x = 6$

MCQ 75Solve the system $4x + 5y = 47$, $3x + 6y = 51$. Find y .

- A. 8 B. 6
C. 7 D. -7

Solution

$$\begin{aligned} 4x + 5y &= 47 & 3x + 6y &= 51 \\ 6(4x + 5y) - 5(3x + 6y) &= 6(47) - 5(51) \\ 9x &= 27 \Rightarrow x = 3 \\ 4(3) + 5y &= 47 \Rightarrow 5y = 35 \Rightarrow y = 7 \end{aligned}$$

Final Answer

$y = 7$

MCQ 76Solve the system $7x + 2y = 24$, $4x + 2y = 18$. Find x .

- A. 3 B. 1
C. -2 D. 2

Solution

$$\begin{aligned} 7x + 2y &= 24 & 4x + 2y &= 18 \\ 2(7x + 2y) - 2(4x + 2y) &= 2(24) - 2(18) \\ 6x &= 12 \Rightarrow x = 2 \end{aligned}$$

Final Answer

$x = 2$

MCQ 77Solve the system $3x + 1y = 34$, $1x + 3y = 22$. Find x .

- A. 10 B. 11
C. 9 D. -10

Solution

$$\begin{aligned} 3x + 1y &= 34 & 1x + 3y &= 22 \\ 3(3x + 1y) - 1(1x + 3y) &= 3(34) - 1(22) \\ 8x &= 80 \Rightarrow x = 10 \end{aligned}$$

Final Answer

$x = 10$

MCQ 78Solve the system $2x + 3y = 35$, $2x + 4y = 44$. Find y .

- A. 10 B. 9
C. 8 D. -9

Solution

$$\begin{aligned} 2x + 3y &= 35 & 2x + 4y &= 44 \\ 4(2x + 3y) - 3(2x + 4y) &= 4(35) - 3(44) \\ 2x &= 8 \Rightarrow x = 4 \\ 2(4) + 3y &= 35 \Rightarrow 3y = 27 \Rightarrow y = 9 \end{aligned}$$

Final Answer

$y = 9$

MCQ 79Solve the system $5x + 4y = 29$, $3x + 5y = 33$. Find x .

- A. 2 B. 0
C. 1 D. -1

Solution

$$\begin{aligned} 5x + 4y &= 29 & 3x + 5y &= 33 \\ 5(5x + 4y) - 4(3x + 5y) &= 5(29) - 4(33) \\ 13x &= 13 \Rightarrow x = 1 \end{aligned}$$

Final Answer

$x = 1$

MCQ 80Solve the system $6x + 5y = 27$, $4x + 6y = 26$. Find x .

- A. 3 B. 1
C. -2 D. 2

Solution

$$\begin{aligned} 6x + 5y &= 27 & 4x + 6y &= 26 \\ 6(6x + 5y) - 5(4x + 6y) &= 6(27) - 5(26) \\ 16x &= 32 \Rightarrow x = 2 \end{aligned}$$

Final Answer

$x = 2$

MCQ 81Solve the system $3x + 2y = 38$, $1x + 2y = 22$. Find y .

- A. 7 B. 8
C. 6 D. -7

Solution

$$\begin{aligned} 3x + 2y &= 38 & 1x + 2y &= 22 \\ 2(3x + 2y) - 2(1x + 2y) &= 2(38) - 2(22) \\ 4x &= 32 \Rightarrow x = 8 \\ 3(8) + 2y &= 38 \Rightarrow 2y = 14 \Rightarrow y = 7 \end{aligned}$$

Final Answer

$y = 7$

MCQ 82Solve the system $4x + 1y = 38$, $2x + 3y = 24$. Find x .

- A. 10 B. 9
C. 8 D. -9

Solution

$$\begin{aligned} 4x + 1y &= 38 & 2x + 3y &= 24 \\ 3(4x + 1y) - 1(2x + 3y) &= 3(38) - 1(24) \\ 10x &= 90 \Rightarrow x = 9 \end{aligned}$$

Final Answer

$x = 9$

MCQ 83Solve the system $5x + 2y = 31$, $3x + 4y = 41$. Find x .

- A. 4 B. 2
C. 3 D. -3

Solution

$$\begin{aligned} 5x + 2y &= 31 & 3x + 4y &= 41 \\ 4(5x + 2y) - 2(3x + 4y) &= 4(31) - 2(41) \\ 14x &= 42 \Rightarrow x = 3 \end{aligned}$$

Final Answer

$x = 3$

MCQ 84Solve the system $2x + 4y = 34$, $4x + 5y = 53$. Find y .

- A. 6 B. 4
C. -5 D. 5

Solution

$$\begin{aligned} 2x + 4y &= 34 & 4x + 5y &= 53 \\ 5(2x + 4y) - 4(4x + 5y) &= 5(34) - 4(53) \\ -6x &= -42 \Rightarrow x = 7 \\ 2(7) + 4y &= 34 \Rightarrow 4y = 20 \Rightarrow y = 5 \end{aligned}$$

Final Answer

$y = 5$

MCQ 85

Solve the system $3x + 6y = 39$, $1x + 6y = 29$. Find x .

- A. 5 B. 6
C. 4 D. -5

Solution

$$\begin{aligned} 3x + 6y &= 39 & 1x + 6y &= 29 \\ 6(3x + 6y) - 6(1x + 6y) &= 6(39) - 6(29) \\ 12x &= 60 \Rightarrow x = 5 \end{aligned}$$

Final Answer $x = 5$ **Two-Variable Word Problems****MCQ 86**

The sum of two numbers is 30 and their difference is 6. Find the larger number.

- A. 12 B. 18
C. 20 D. 16

Solution

$$\begin{aligned} x + y &= 30 \\ x - y &= 6 \\ 2x &= 36 \\ x &= 18 \end{aligned}$$

Final Answer 18 **MCQ 87**

The sum of two numbers is 44 and one is 8 more than the other. Find the smaller number.

- A. 26 B. 20
C. 18 D. 16

Solution

$$\begin{aligned} x + y &= 44 \\ x - y &= 8 \\ 2x &= 52 \Rightarrow x = 26 \\ y &= 44 - 26 = 18 \end{aligned}$$

Final Answer 18 **MCQ 88**

Two pens and three pencils cost Rs. 90; one pen and two pencils cost Rs. 55. Find the price of a pen.

- A. 20 B. 17
C. 13 D. 15

Solution

$$\begin{aligned} 2p + 3q &= 90 \\ p + 2q &= 55 \Rightarrow 2p + 4q = 110 \\ (2p + 4q) - (2p + 3q) &= 110 - 90 \\ q &= 20 \\ p + 2(20) &= 55 \Rightarrow p = 15 \end{aligned}$$

Final Answer 15 **MCQ 89**

Adult tickets cost Rs. 50 and child tickets Rs. 30. Ten tickets cost Rs. 420. How many adult tickets were sold?

- A. 6 B. 4
C. 8 D. 7

Solution

$$\begin{aligned} a + c &= 10 \\ 50a + 30c &= 420 \\ 30a + 30c &= 300 \\ 20a &= 120 \\ a &= 6 \end{aligned}$$

Final Answer 6 **MCQ 90**

The sum of two numbers is 50. Twice the first plus the second is 70. Find the first number.

- A. 30 B. 20
C. 22 D. 18

Solution

$$\begin{aligned} x + y &= 50 \\ 2x + y &= 70 \\ (2x + y) - (x + y) &= 70 - 50 \\ x &= 20 \end{aligned}$$

Final Answer 20

MCQ 91

A farm has chickens and goats totaling 20 heads and 56 legs. How many goats are there?

- A. 12 B. 10
C. 8 D. 6

Solution

$$\begin{aligned}c + g &= 20 \\2c + 4g &= 56 \\2c + 2g &= 40 \\2g &= 56 - 40 = 16 \\g &= 8\end{aligned}$$

Final Answer

8

MCQ 92

Two numbers have sum 36 and the first is twice the second. Find the first number.

- A. 12 B. 26
C. 22 D. 24

Solution

$$\begin{aligned}x + y &= 36 \\x &= 2y \\2y + y &= 36 \\3y &= 36 \Rightarrow y = 12 \\x &= 2(12) = 24\end{aligned}$$

Final Answer

24

MCQ 93

Three notebooks and two pens cost Rs. 190; two notebooks and one pen cost Rs. 110. Find the notebook price.

- A. 30 B. 50
C. 32 D. 28

Solution

$$\begin{aligned}3n + 2p &= 190 \\2n + p &= 110 \Rightarrow 4n + 2p = 220 \\(4n + 2p) - (3n + 2p) &= 220 - 190 \\n &= 30\end{aligned}$$

Final Answer

30

MCQ 94

The sum of two numbers is 64 and their ratio is 3:5. Find the smaller number.

- A. 40 B. 24
C. 26 D. 22

Solution

$$\begin{aligned}x : y &= 3 : 5 \\x &= 3k, \quad y = 5k \\3k + 5k &= 64 \\8k &= 64 \Rightarrow k = 8 \\x &= 3(8) = 24\end{aligned}$$

Final Answer

24

MCQ 95

A total of 25 coins are Rs. 5 and Rs. 10 coins, worth Rs. 180. How many Rs. 10 coins are there?

- A. 14 B. 13
C. 11 D. 9

Solution

$$\begin{aligned}x + y &= 25 \\5x + 10y &= 180 \Rightarrow x + 2y = 36 \\(x + 2y) - (x + y) &= 36 - 25 \\y &= 11\end{aligned}$$

Final Answer

11

Quick Equation Concepts**MCQ 96**

Which value satisfies $4x - 7 = 13$?

- A. 4 B. 6
C. 7 D. 5

Solution

$$4(5) - 7 = 20 - 7 = 13$$

Final Answer

x = 5

MCQ 97

If $x + y = 12$ and $x - y = 4$, what is $x + y + x - y$?

- A. 16 B. 8
C. 12 D. 20

Solution

$$(x + y) + (x - y) = 12 + 4 = 16$$

Final Answer

16

MCQ 98

Which ordered pair satisfies $x + y = 7$ and $x - y = 1$?

- A. (3, 4) B. (4, 3)
C. (5, 2) D. (2, 5)

Solution

$$4 + 3 = 7, \quad 4 - 3 = 1$$

Final Answer

(4, 3)

MCQ 99

If two linear equations represent the same line, how many solutions do they have?

- A. No solution B. Exactly one
C. Infinitely many D. Exactly two

Solution

$$L_1 \equiv L_2 \Rightarrow \text{infinitely many solutions}$$

Final Answer

Infinitely many

MCQ 100

If two non-parallel straight lines intersect, how many solutions does their simultaneous system have?

- A. None B. Infinitely many
C. Exactly two D. Exactly one

Solution

$$L_1 \nparallel L_2 \Rightarrow 1 \text{ intersection} \Rightarrow 1 \text{ solution}$$

Final Answer

Exactly one

RAPID REVISION GRID | LINEAR EQUATIONS**One variable**

$$ax + b = c \Rightarrow x = (c - b)/a$$

Fraction equations Clear denominators with the LCM before simplifying.

Elimination Make one pair of coefficients equal and opposite, then add.

Substitution Use when one variable already has coefficient 1 or is easy to isolate.

Word problems Define the unknown first, translate the relation into an equation, then solve.

Verification Substitute the answer into every original equation.

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Standard form

$$ax^2 + bx + c = 0, \quad a \neq 0$$

Quadratic formula

$$x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$$

Discriminant

$$D = b^2 - 4ac$$

Root relations

$$\alpha + \beta = -\frac{b}{a}, \quad \alpha\beta = \frac{c}{a}$$

Inequality sign Multiplying or dividing by a negative number reverses the inequality sign.

Quadratic inequality Factor first, mark the critical roots, then inspect the sign on the intervals.

Factorable Quadratic Equations**MCQ 1**Solve $x^2 - 3x + 2 = 0$.

A. $x = 1, 2$

B. $x = -1, -2$

C. $x = 2, 3$

D. $x = 1, -2$

Solution

$$x^2 - 3x + 2 = 0$$

$$(x - 1)(x - 2) = 0$$

$$x = 1 \quad \text{or} \quad x = 2$$

Final Answer

$$x = 1, 2$$

MCQ 2Solve $x^2 - 5x + 6 = 0$.

A. $x = -2, -3$

B. $x = 2, 3$

C. $x = 3, 4$

D. $x = 2, -3$

Solution

$$x^2 - 5x + 6 = 0$$

$$(x - 2)(x - 3) = 0$$

$$x = 2 \quad \text{or} \quad x = 3$$

Final Answer

$$x = 2, 3$$

MCQ 3Solve $x^2 - 7x + 12 = 0$.

A. $x = -3, -4$

B. $x = 4, 5$

C. $x = 3, 4$

D. $x = 3, -4$

Solution

$$x^2 - 7x + 12 = 0$$

$$(x - 3)(x - 4) = 0$$

$$x = 3 \quad \text{or} \quad x = 4$$

Final Answer

$$x = 3, 4$$

MCQ 4Solve $x^2 - 6x + 5 = 0$.

A. $x = -1, -5$

B. $x = 2, 6$

C. $x = 1, -5$

D. $x = 1, 5$

Solution

$$x^2 - 6x + 5 = 0$$

$$(x - 1)(x - 5) = 0$$

$$x = 1 \quad \text{or} \quad x = 5$$

Final Answer

$$x = 1, 5$$

MCQ 5Solve $x^2 - 3x - 4 = 0$.

A. $x = -1, 4$

B. $x = 1, -4$

C. $x = 0, 5$

D. $x = -1, -4$

Solution

$$x^2 - 3x - 4 = 0$$

$$(x + 1)(x - 4) = 0$$

$$x = -1 \quad \text{or} \quad x = 4$$

Final Answer

$$x = -1, 4$$

MCQ 6Solve $x^2 - 3x - 10 = 0$.

A. $x = 2, -5$

B. $x = -2, 5$

C. $x = -1, 6$

D. $x = -2, -5$

Solution

$$x^2 - 3x - 10 = 0$$

$$(x + 2)(x - 5) = 0$$

$$x = -2 \quad \text{or} \quad x = 5$$

Final Answer

$$x = -2, 5$$

MCQ 7Solve $x^2 + 4x + 3 = 0$.

A. $x = 3, 1$

B. $x = -2, 0$

C. $x = -3, -1$

D. $x = -3, 1$

Solution

$$x^2 + 4x + 3 = 0$$

$$(x + 3)(x + 1) = 0$$

$$x = -3 \quad \text{or} \quad x = -1$$

Final Answer

$$x = -3, -1$$

MCQ 10Solve $x^2 - 9x + 20 = 0$.

A. $x = -4, -5$

B. $x = 4, 5$

C. $x = 5, 6$

D. $x = 4, -5$

Solution

$$x^2 - 9x + 20 = 0$$

$$(x - 4)(x - 5) = 0$$

$$x = 4 \quad \text{or} \quad x = 5$$

Final Answer

$$x = 4, 5$$

MCQ 8Solve $x^2 - 8x + 12 = 0$.

A. $x = -2, -6$

B. $x = 3, 7$

C. $x = 2, -6$

D. $x = 2, 6$

Solution

$$x^2 - 8x + 12 = 0$$

$$(x - 2)(x - 6) = 0$$

$$x = 2 \quad \text{or} \quad x = 6$$

Final Answer

$$x = 2, 6$$

MCQ 11Solve $x^2 - 9x + 8 = 0$.

A. $x = -1, -8$

B. $x = 2, 9$

C. $x = 1, 8$

D. $x = 1, -8$

Solution

$$x^2 - 9x + 8 = 0$$

$$(x - 1)(x - 8) = 0$$

$$x = 1 \quad \text{or} \quad x = 8$$

Final Answer

$$x = 1, 8$$

MCQ 9Solve $x^2 - 10x + 21 = 0$.

A. $x = 3, 7$

B. $x = -3, -7$

C. $x = 4, 8$

D. $x = 3, -7$

Solution

$$x^2 - 10x + 21 = 0$$

$$(x - 3)(x - 7) = 0$$

$$x = 3 \quad \text{or} \quad x = 7$$

Final Answer

$$x = 3, 7$$

MCQ 12Solve $x^2 + 2x - 8 = 0$.

A. $x = 4, -2$

B. $x = -3, 3$

C. $x = -4, -2$

D. $x = -4, 2$

Solution

$$x^2 + 2x - 8 = 0$$

$$(x + 4)(x - 2) = 0$$

$$x = -4 \quad \text{or} \quad x = 2$$

Final Answer

$$x = -4, 2$$

MCQ 13Solve $x^2 + 2x - 15 = 0$.

A. $x = -5, 3$

B. $x = 5, -3$

C. $x = -4, 4$

D. $x = -5, -3$

Solution

$$x^2 + 2x - 15 = 0$$

$$(x + 5)(x - 3) = 0$$

$$x = -5 \quad \text{or} \quad x = 3$$

Final Answer

$$x = -5, 3$$

MCQ 16Solve $x^2 - 11x + 28 = 0$.

A. $x = -4, -7$

B. $x = 5, 8$

C. $x = 4, -7$

D. $x = 4, 7$

Solution

$$x^2 - 11x + 28 = 0$$

$$(x - 4)(x - 7) = 0$$

$$x = 4 \quad \text{or} \quad x = 7$$

Final Answer

$$x = 4, 7$$

MCQ 14Solve $x^2 - 11x + 30 = 0$.

A. $x = -5, -6$

B. $x = 5, 6$

C. $x = 6, 7$

D. $x = 5, -6$

Solution

$$x^2 - 11x + 30 = 0$$

$$(x - 5)(x - 6) = 0$$

$$x = 5 \quad \text{or} \quad x = 6$$

Final Answer

$$x = 5, 6$$

MCQ 17Solve $x^2 + 8x + 12 = 0$.

A. $x = -2, -6$

B. $x = 2, 6$

C. $x = -1, -5$

D. $x = -2, 6$

Solution

$$x^2 + 8x + 12 = 0$$

$$(x + 2)(x + 6) = 0$$

$$x = -2 \quad \text{or} \quad x = -6$$

Final Answer

$$x = -2, -6$$

MCQ 15Solve $x^2 - 11x + 18 = 0$.

A. $x = -2, -9$

B. $x = 3, 10$

C. $x = 2, 9$

D. $x = 2, -9$

Solution

$$x^2 - 11x + 18 = 0$$

$$(x - 2)(x - 9) = 0$$

$$x = 2 \quad \text{or} \quad x = 9$$

Final Answer

$$x = 2, 9$$

MCQ 18Solve $x^2 - 5x - 24 = 0$.

A. $x = 3, -8$

B. $x = -3, 8$

C. $x = -2, 9$

D. $x = -3, -8$

Solution

$$x^2 - 5x - 24 = 0$$

$$(x + 3)(x - 8) = 0$$

$$x = -3 \quad \text{or} \quad x = 8$$

Final Answer

$$x = -3, 8$$

MCQ 19Solve $x^2 - 14x + 48 = 0$.**A.** $x = -6, -8$ **B.** $x = 7, 9$ **C.** $x = 6, 8$ **D.** $x = 6, -8$ **Solution**

$$x^2 - 14x + 48 = 0$$

$$(x - 6)(x - 8) = 0$$

$$x = 6 \quad \text{or} \quad x = 8$$

Final Answer

$$x = 6, 8$$

MCQ 22Solve $x^2 - 6x - 7 = 0$.**A.** $x = 1, -7$ **B.** $x = -1, 7$ **C.** $x = 0, 8$ **D.** $x = -1, -7$ **Solution**

$$x^2 - 6x - 7 = 0$$

$$(x + 1)(x - 7) = 0$$

$$x = -1 \quad \text{or} \quad x = 7$$

Final Answer

$$x = -1, 7$$

MCQ 20Solve $x^2 - 11x + 10 = 0$.**A.** $x = -1, -10$ **B.** $x = 2, 11$ **C.** $x = 1, -10$ **D.** $x = 1, 10$ **Solution**

$$x^2 - 11x + 10 = 0$$

$$(x - 1)(x - 10) = 0$$

$$x = 1 \quad \text{or} \quad x = 10$$

Final Answer

$$x = 1, 10$$

MCQ 23Solve $x^2 - 14x + 45 = 0$.**A.** $x = -5, -9$ **B.** $x = 6, 10$ **C.** $x = 5, 9$ **D.** $x = 5, -9$ **Solution**

$$x^2 - 14x + 45 = 0$$

$$(x - 5)(x - 9) = 0$$

$$x = 5 \quad \text{or} \quad x = 9$$

Final Answer

$$x = 5, 9$$

MCQ 21Solve $x^2 - 12x + 27 = 0$.**A.** $x = 3, 9$ **B.** $x = -3, -9$ **C.** $x = 4, 10$ **D.** $x = 3, -9$ **Solution**

$$x^2 - 12x + 27 = 0$$

$$(x - 3)(x - 9) = 0$$

$$x = 3 \quad \text{or} \quad x = 9$$

Final Answer

$$x = 3, 9$$

MCQ 24Solve $x^2 - 2x - 24 = 0$.**A.** $x = 4, -6$ **B.** $x = -3, 7$ **C.** $x = -4, -6$ **D.** $x = -4, 6$ **Solution**

$$x^2 - 2x - 24 = 0$$

$$(x + 4)(x - 6) = 0$$

$$x = -4 \quad \text{or} \quad x = 6$$

Final Answer

$$x = -4, 6$$

MCQ 25Solve $x^2 - 13x + 22 = 0$.**A.** $x = 2, 11$ **B.** $x = -2, -11$ **C.** $x = 3, 12$ **D.** $x = 2, -11$ **Solution**

$$x^2 - 13x + 22 = 0$$

$$(x - 2)(x - 11) = 0$$

$$x = 2 \quad \text{or} \quad x = 11$$

Final Answer

$$x = 2, 11$$

MCQ 28Solve $x^2 - 13x + 36 = 0$.**A.** $x = -4, -9$ **B.** $x = 5, 10$ **C.** $x = 4, -9$ **D.** $x = 4, 9$ **Solution**

$$x^2 - 13x + 36 = 0$$

$$(x - 4)(x - 9) = 0$$

$$x = 4 \quad \text{or} \quad x = 9$$

Final Answer

$$x = 4, 9$$

MCQ 26Solve $x^2 - 15x + 56 = 0$.**A.** $x = -7, -8$ **B.** $x = 7, 8$ **C.** $x = 8, 9$ **D.** $x = 7, -8$ **Solution**

$$x^2 - 15x + 56 = 0$$

$$(x - 7)(x - 8) = 0$$

$$x = 7 \quad \text{or} \quad x = 8$$

Final Answer

$$x = 7, 8$$

MCQ 29Solve $x^2 - 16x + 60 = 0$.**A.** $x = 6, 10$ **B.** $x = -6, -10$ **C.** $x = 7, 11$ **D.** $x = 6, -10$ **Solution**

$$x^2 - 16x + 60 = 0$$

$$(x - 6)(x - 10) = 0$$

$$x = 6 \quad \text{or} \quad x = 10$$

Final Answer

$$x = 6, 10$$

MCQ 27Solve $x^2 + 7x + 10 = 0$.**A.** $x = 5, 2$ **B.** $x = -4, -1$ **C.** $x = -5, -2$ **D.** $x = -5, 2$ **Solution**

$$x^2 + 7x + 10 = 0$$

$$(x + 5)(x + 2) = 0$$

$$x = -5 \quad \text{or} \quad x = -2$$

Final Answer

$$x = -5, -2$$

MCQ 30Solve $x^2 - 2x - 15 = 0$.**A.** $x = 3, -5$ **B.** $x = -3, 5$ **C.** $x = -2, 6$ **D.** $x = -3, -5$ **Solution**

$$x^2 - 2x - 15 = 0$$

$$(x + 3)(x - 5) = 0$$

$$x = -3 \quad \text{or} \quad x = 5$$

Final Answer

$$x = -3, 5$$

Quadratic Formula and Discriminant**MCQ 31**Find the discriminant of $1x^2 + 5x + 6 = 0$.**A.** 5**B.** -3**C.** 1**D.** -1**Solution**

$$D = b^2 - 4ac = (5)^2 - 4(1)(6) = 1$$

Final Answer

$$1$$

MCQ 32Find the discriminant of $1x^2 + 4x + 4 = 0$.

- A. 4 B. -4
C. 1 D. 0

Solution

$$D = b^2 - 4ac = (4)^2 - 4(1)(4) = 0$$

Final Answer

0

MCQ 33Find the discriminant of $1x^2 + 2x + 5 = 0$.

- A. -16 B. -12
C. -20 D. 16

Solution

$$D = b^2 - 4ac = (2)^2 - 4(1)(5) = -16$$

Final Answer

-16

MCQ 34Find the discriminant of $2x^2 + 7x + 3 = 0$.

- A. 29 B. 25
C. 21 D. -25

Solution

$$D = b^2 - 4ac = (7)^2 - 4(2)(3) = 25$$

Final Answer

25

MCQ 35Find the discriminant of $3x^2 + 6x + 3 = 0$.

- A. 4 B. -4
C. 0 D. 1

Solution

$$D = b^2 - 4ac = (6)^2 - 4(3)(3) = 0$$

Final Answer

0

MCQ 36Find the discriminant of $2x^2 + 1x + 4 = 0$.

- A. -27 B. -35
C. 31 D. -31

Solution

$$D = b^2 - 4ac = (1)^2 - 4(2)(4) = -31$$

Final Answer

-31

MCQ 37Find the discriminant of $1x^2 - 3x - 10 = 0$.

- A. 49 B. 53
C. 45 D. -49

Solution

$$D = b^2 - 4ac = (-3)^2 - 4(1)(-10) = 49$$

Final Answer

49

MCQ 38Find the discriminant of $4x^2 + 4x + 1 = 0$.

- A. 4 B. 0
C. -4 D. 1

Solution

$$D = b^2 - 4ac = (4)^2 - 4(4)(1) = 0$$

Final Answer

0

MCQ 39Find the discriminant of $3x^2 + 5x - 2 = 0$.

- A. 53 B. 45
C. 49 D. -49

Solution

$$D = b^2 - 4ac = (5)^2 - 4(3)(-2) = 49$$

Final Answer

49

MCQ 40Find the discriminant of $2x^2 - 8x + 8 = 0$.

- A. 4 B. -4
C. 1 D. 0

Solution

$$D = b^2 - 4ac = (-8)^2 - 4(2)(8) = 0$$

Final Answer

0

MCQ 41What is the nature of the roots of $1x^2 + 5x + 6 = 0$?

- A. Distinct real roots B. Equal real roots
C. No real roots D. Three real roots

Solution

$$D = (5)^2 - 4(1)(6) = 1$$

$$D > 0 \Rightarrow \text{distinct real roots}$$

Final Answer

Distinct real roots

MCQ 42What is the nature of the roots of $1x^2 + 4x + 4 = 0$?

- A. Distinct real roots B. Equal real roots
C. No real roots D. Three real roots

Solution

$$D = (4)^2 - 4(1)(4) = 0$$

$$D = 0 \Rightarrow \text{equal real roots}$$

Final Answer

Equal real roots

MCQ 43What is the nature of the roots of $1x^2 + 2x + 5 = 0$?

- A. Distinct real roots B. Equal real roots
C. No real roots D. Three real roots

Solution

$$D = (2)^2 - 4(1)(5) = -16$$

$$D < 0 \Rightarrow \text{no real roots}$$

Final Answer

No real roots

MCQ 44What is the nature of the roots of $2x^2 + 7x + 3 = 0$?

- A. Equal real roots B. No real roots
C. Three real roots D. Distinct real roots

Solution

$$D = (7)^2 - 4(2)(3) = 25$$

$$D > 0 \Rightarrow \text{distinct real roots}$$

Final Answer

Distinct real roots

MCQ 45What is the nature of the roots of $3x^2 + 6x + 3 = 0$?

- A. Equal real roots B. Distinct real roots
C. No real roots D. Three real roots

Solution

$$D = (6)^2 - 4(3)(3) = 0$$

$$D = 0 \Rightarrow \text{equal real roots}$$

Final Answer

Equal real roots

MCQ 46What is the nature of the roots of $2x^2 + 1x + 4 = 0$?

- A. Distinct real roots B. No real roots
C. Equal real roots D. Three real roots

Solution

$$D = (1)^2 - 4(2)(4) = -31$$

$$D < 0 \Rightarrow \text{no real roots}$$

Final Answer

No real roots

MCQ 47What is the nature of the roots of $1x^2 - 3x - 10 = 0$?

- A. Equal real roots B. No real roots
C. Distinct real roots D. Three real roots

Solution

$$D = (-3)^2 - 4(1)(-10) = 49$$

$$D > 0 \Rightarrow \text{distinct real roots}$$

Final Answer

Distinct real roots

MCQ 48What is the nature of the roots of $4x^2 + 4x + 1 = 0$?

- A. Distinct real roots B. No real roots
C. Three real roots D. Equal real roots

Solution

$$D = (4)^2 - 4(4)(1) = 0$$

$$D = 0 \Rightarrow \text{equal real roots}$$

Final Answer

Equal real roots

MCQ 49What is the nature of the roots of $3x^2 + 5x - 2 = 0$?

- A. Distinct real roots B. Equal real roots
C. No real roots D. Three real roots

Solution

$$D = (5)^2 - 4(3)(-2) = 49$$

$$D > 0 \Rightarrow \text{distinct real roots}$$

Final Answer

Distinct real roots

MCQ 50What is the nature of the roots of $2x^2 - 8x + 8 = 0$?

- A. Distinct real roots B. Equal real roots
C. No real roots D. Three real roots

Solution

$$D = (-8)^2 - 4(2)(8) = 0$$

$$D = 0 \Rightarrow \text{equal real roots}$$

Final Answer

Equal real roots

Sum and Product of Roots**MCQ 51**For $2x^2 + 7x + 3 = 0$, find the sum of the roots.

- A. $-5/2$ B. $-9/2$
C. $-7/2$ D. $7/2$

Solution

$$\begin{aligned}\alpha + \beta &= -\frac{b}{a} \\ &= -\frac{7}{2} = -\frac{7}{2}\end{aligned}$$

Final Answer $-\frac{7}{2}$ **MCQ 52**For $3x^2 - 5x + 2 = 0$, find the product of the roots.

- A. $5/3$ B. $-1/3$
C. $-2/3$ D. $2/3$

Solution

$$\begin{aligned}\alpha\beta &= \frac{c}{a} \\ &= \frac{2}{3} = \frac{2}{3}\end{aligned}$$

Final Answer $\frac{2}{3}$ **MCQ 53**For $1x^2 - 9x + 14 = 0$, find the sum of the roots.

- A. 9 B. 10
C. 8 D. -9

Solution

$$\begin{aligned}\alpha + \beta &= -\frac{b}{a} \\ &= -\frac{-9}{1} = 9\end{aligned}$$

Final Answer

9

MCQ 54For $4x^2 + 8x - 3 = 0$, find the product of the roots.

- A. $1/4$ B. $-3/4$
C. $-7/4$ D. $3/4$

Solution

$$\begin{aligned}\alpha\beta &= \frac{c}{a} \\ &= \frac{-3}{4} = -\frac{3}{4}\end{aligned}$$

Final Answer $-\frac{3}{4}$ **MCQ 55**For $5x^2 - 2x - 7 = 0$, find the sum of the roots.

- A. $7/5$ B. $-3/5$
C. $2/5$ D. $-2/5$

Solution

$$\begin{aligned}\alpha + \beta &= -\frac{b}{a} \\ &= -\frac{-2}{5} = \frac{2}{5}\end{aligned}$$

Final Answer $\frac{2}{5}$

MCQ 56For $2x^2 + 3x - 5 = 0$, find the product of the roots.**A.** $-3/2$ **B.** $-7/2$ **C.** $5/2$ **D.** $-5/2$ **Solution**

$$\alpha\beta = \frac{c}{a}$$

$$= \frac{-5}{2} = \frac{-5}{2}$$

Final Answer

$$\frac{-5}{2}$$

MCQ 57For $1x^2 + 6x + 5 = 0$, find the sum of the roots.**A.** -6 **B.** -5 **C.** -7 **D.** 6 **Solution**

$$\alpha + \beta = -\frac{b}{a}$$

$$= -\frac{6}{1} = -6$$

Final Answer

$$-6$$

MCQ 58For $3x^2 + 1x - 4 = 0$, find the product of the roots.**A.** $-1/3$ **B.** $-4/3$ **C.** $-7/3$ **D.** $4/3$ **Solution**

$$\alpha\beta = \frac{c}{a}$$

$$= \frac{-4}{3} = \frac{-4}{3}$$

Final Answer

$$\frac{-4}{3}$$

MCQ 59For $2x^2 - 10x + 8 = 0$, find the sum of the roots.**A.** 6 **B.** 4 **C.** 5 **D.** -5 **Solution**

$$\alpha + \beta = -\frac{b}{a}$$

$$= -\frac{-10}{2} = 5$$

Final Answer

$$5$$

MCQ 60For $5x^2 + 15x + 10 = 0$, find the product of the roots.**A.** 3 **B.** 1 **C.** -2 **D.** 2 **Solution**

$$\alpha\beta = \frac{c}{a}$$

$$= \frac{10}{5} = 2$$

Final Answer

$$2$$

Forming Quadratics from Roots**MCQ 61**

Form the monic quadratic equation whose roots are 2 and 5.

A. $x^2 - 7x + 10 = 0$ **B.** $x^2 + 7x + 10 = 0$ **C.** $x^2 - 7x - 10 = 0$ **D.** $x^2 + 7x - 10 = 0$ **Solution**

$$x^2 - (\alpha + \beta)x + \alpha\beta = 0$$

$$x^2 - (7)x + (2)(5) = 0$$

Final Answer

$$x^2 - 7x + 10 = 0$$

MCQ 62

Form the monic quadratic equation whose roots are 3 and 7.

A. $x^2 + 10x + 21 = 0$ **B.** $x^2 - 10x + 21 = 0$

C. $x^2 - 10x - 21 = 0$ **D.** $x^2 + 10x - 21 = 0$

Solution

$$x^2 - (\alpha + \beta)x + \alpha\beta = 0$$

$$x^2 - (10)x + (3)(7) = 0$$

Final Answer

$$x^2 - 10x + 21 = 0$$

MCQ 63

Form the monic quadratic equation whose roots are -2 and 4.

A. $x^2 + 2x - 8 = 0$ **B.** $x^2 - 2x + 8 = 0$

C. $x^2 - 2x - 8 = 0$ **D.** $x^2 + 2x + 8 = 0$

Solution

$$x^2 - (\alpha + \beta)x + \alpha\beta = 0$$

$$x^2 - (2)x + (-2)(4) = 0$$

Final Answer

$$x^2 - 2x - 8 = 0$$

MCQ 64

Form the monic quadratic equation whose roots are -3 and -5.

A. $x^2 - 8x + 15 = 0$ **B.** $x^2 + 8x - 15 = 0$

C. $x^2 - 8x - 15 = 0$ **D.** $x^2 + 8x + 15 = 0$

Solution

$$x^2 - (\alpha + \beta)x + \alpha\beta = 0$$

$$x^2 - (-8)x + (-3)(-5) = 0$$

Final Answer

$$x^2 + 8x + 15 = 0$$

MCQ 65

Form the monic quadratic equation whose roots are 1 and 8.

A. $x^2 - 9x + 8 = 0$ **B.** $x^2 + 9x + 8 = 0$

C. $x^2 - 9x - 8 = 0$ **D.** $x^2 + 9x - 8 = 0$

Solution

$$x^2 - (\alpha + \beta)x + \alpha\beta = 0$$

$$x^2 - (9)x + (1)(8) = 0$$

Final Answer

$$x^2 - 9x + 8 = 0$$

MCQ 66

Form the monic quadratic equation whose roots are 4 and 6.

A. $x^2 + 10x + 24 = 0$

B. $x^2 - 10x + 24 = 0$

C. $x^2 - 10x - 24 = 0$

D. $x^2 + 10x - 24 = 0$

Solution

$$x^2 - (\alpha + \beta)x + \alpha\beta = 0$$

$$x^2 - (10)x + (4)(6) = 0$$

Final Answer

$$x^2 - 10x + 24 = 0$$

MCQ 67

Form the monic quadratic equation whose roots are -1 and 9.

A. $x^2 + 8x - 9 = 0$

B. $x^2 - 8x + 9 = 0$

C. $x^2 - 8x - 9 = 0$

D. $x^2 + 8x + 9 = 0$

Solution

$$x^2 - (\alpha + \beta)x + \alpha\beta = 0$$

$$x^2 - (8)x + (-1)(9) = 0$$

Final Answer

$$x^2 - 8x - 9 = 0$$

MCQ 68

Form the monic quadratic equation whose roots are 5 and 10.

A. $x^2 + 15x + 50 = 0$

B. $x^2 - 15x - 50 = 0$

C. $x^2 + 15x - 50 = 0$

D. $x^2 - 15x + 50 = 0$

Solution

$$x^2 - (\alpha + \beta)x + \alpha\beta = 0$$

$$x^2 - (15)x + (5)(10) = 0$$

Final Answer

$$x^2 - 15x + 50 = 0$$

MCQ 69

Form the monic quadratic equation whose roots are -4 and 3.

A. $x^2 + 1x - 12 = 0$

B. $x^2 - 1x - 12 = 0$

C. $x^2 + 1x + 12 = 0$

D. $x^2 - 1x + 12 = 0$

Solution

$$x^2 - (\alpha + \beta)x + \alpha\beta = 0$$

$$x^2 - (-1)x + (-4)(3) = 0$$

Final Answer

$$x^2 + 1x - 12 = 0$$

MCQ 70

Form the monic quadratic equation whose roots are 6 and 7.

- A. $x^2 + 13x + 42 = 0$ B. $x^2 - 13x + 42 = 0$
 C. $x^2 - 13x - 42 = 0$ D. $x^2 + 13x - 42 = 0$

Solution

$$x^2 - (\alpha + \beta)x + \alpha\beta = 0$$

$$x^2 - (13)x + (6)(7) = 0$$

Final Answer

$$x^2 - 13x + 42 = 0$$

Basic Linear Inequalities**MCQ 71**

Solve $3x + 5 < 20$.

- A. $x > 5$ B. $x < 6$
 C. $x < 5$ D. $x > 6$

Solution

$$3x + 5 < 20$$

$$3x < 15$$

$$x < 5$$

Final Answer

$$x < 5$$

MCQ 72

Solve $4x - 3 > 13$.

- A. $x < 4$ B. $x > 5$
 C. $x < 5$ D. $x > 4$

Solution

$$4x - 3 > 13$$

$$4x > 16$$

$$x > 4$$

Final Answer

$$x > 4$$

MCQ 73

Solve $5x + 2 \leq 27$.

- A. $x \leq 5$ B. $x \geq 5$
 C. $x \leq 6$ D. $x \geq 6$

Solution

$$5x + 2 \leq 27$$

$$5x \leq 25$$

$$x \leq 5$$

Final Answer

$$x \leq 5$$

MCQ 74

Solve $2x + 7 \geq 19$.

- A. $x \leq 6$ B. $x \geq 6$
 C. $x \geq 7$ D. $x \leq 7$

Solution

$$2x + 7 \geq 19$$

$$2x \geq 12$$

$$x \geq 6$$

Final Answer

$$x \geq 6$$

MCQ 75

Solve $-3x + 4 < 13$.

- A. $x < -3$ B. $x > -2$
 C. $x > -3$ D. $x < -2$

Solution

$$-3x + 4 < 13$$

$$-3x < 9$$

$$x > \frac{9}{-3} = -3$$

Final Answer

$$x > -3$$

MCQ 76Solve $-2x + 5 > -7$.

A. $x > 6$

B. $x < 7$

C. $x > 7$

D. $x < 6$

Solution

$$-2x + 5 > -7$$

$$-2x > -12$$

$$x < \frac{-12}{-2} = 6$$

Final Answer

$x < 6$

MCQ 79Solve $-4x + 3 \geq 15$.

A. $x \geq -3$

B. $x \leq -2$

C. $x \leq -3$

D. $x \geq -2$

Solution

$$-4x + 3 \geq 15$$

$$-4x \geq 12$$

$$x \leq \frac{12}{-4} = -3$$

Final Answer

$x \leq -3$

MCQ 77Solve $6x - 8 \leq 10$.

A. $x \leq 3$

B. $x \geq 3$

C. $x \leq 4$

D. $x \geq 4$

Solution

$$6x - 8 \leq 10$$

$$6x \leq 18$$

$$x \leq 3$$

Final Answer

$x \leq 3$

MCQ 80Solve $8x - 5 < 27$.

A. $x > 4$

B. $x < 5$

C. $x > 5$

D. $x < 4$

Solution

$$8x - 5 < 27$$

$$8x < 32$$

$$x < 4$$

Final Answer

$x < 4$

MCQ 78Solve $7x + 1 > 29$.

A. $x < 4$

B. $x > 4$

C. $x > 5$

D. $x < 5$

Solution

$$7x + 1 > 29$$

$$7x > 28$$

$$x > 4$$

Final Answer

$x > 4$

MCQ 81Solve $5x - 10 > 15$.

A. $x > 5$

B. $x < 5$

C. $x > 6$

D. $x < 6$

Solution

$$5x - 10 > 15$$

$$5x > 25$$

$$x > 5$$

Final Answer

$x > 5$

MCQ 82Solve $3x + 9 < 0$.

A. $x > -3$

B. $x < -3$

C. $x < -2$

D. $x > -2$

Solution

$$3x + 9 < 0$$

$$3x < -9$$

$$x < -3$$

Final Answer

$$x < -3$$

MCQ 85Solve $9x + 4 < 31$.

A. $x < 3$

B. $x > 3$

C. $x < 4$

D. $x > 4$

Solution

$$9x + 4 < 31$$

$$9x < 27$$

$$x < 3$$

Final Answer

$$x < 3$$

MCQ 83Solve $-5x + 2 \leq 17$.

A. $x \leq -3$

B. $x \geq -2$

C. $x \geq -3$

D. $x \leq -2$

Solution

$$-5x + 2 \leq 17$$

$$-5x \leq 15$$

$$x \geq \frac{15}{-5} = -3$$

Final Answer

$$x \geq -3$$

MCQ 86Solve $4x + 12 > 0$.

A. $x < -3$

B. $x > -3$

C. $x > -2$

D. $x < -2$

Solution

$$4x + 12 > 0$$

$$4x > -12$$

$$x > -3$$

Final Answer

$$x > -3$$

MCQ 84Solve $2x - 6 \geq 8$.

A. $x \leq 7$

B. $x \geq 8$

C. $x \leq 8$

D. $x \geq 7$

Solution

$$2x - 6 \geq 8$$

$$2x \geq 14$$

$$x \geq 7$$

Final Answer

$$x \geq 7$$

MCQ 87Solve $-2x - 3 < 9$.

A. $x < -6$

B. $x > -5$

C. $x > -6$

D. $x < -5$

Solution

$$-2x - 3 < 9$$

$$-2x < 12$$

$$x > \frac{12}{-2} = -6$$

Final Answer

$$x > -6$$

MCQ 88Solve $6x + 5 \geq -7$.

A. $x \leq -2$

B. $x \geq -1$

C. $x \leq -1$

D. $x \geq -2$

Solution

$$6x + 5 \geq -7$$

$$6x \geq -12$$

$$x \geq -2$$

Final Answer

$$x \geq -2$$

MCQ 89Solve $3x - 15 \leq 6$.

A. $x \leq 7$

B. $x \geq 7$

C. $x \leq 8$

D. $x \geq 8$

Solution

$$3x - 15 \leq 6$$

$$3x \leq 21$$

$$x \leq 7$$

Final Answer

$$x \leq 7$$

MCQ 90Solve $-7x + 1 > -13$.

A. $x > 2$

B. $x < 2$

C. $x < 3$

D. $x > 3$

Solution

$$-7x + 1 > -13$$

$$-7x > -14$$

$$x < \frac{-14}{-7} = 2$$

Final Answer

$$x < 2$$

Quadratic Inequalities**MCQ 91**Solve $x^2 - 4x + 3 < 0$.

A. $x < 1$

B. $x < 3$

C. $1 < x < 3$

D. $x > 1$ or $x > 3$

Solution

$$x^2 - 4x + 3 = (x - 1)(x - 3)$$

Critical points: $x = 1, 3$

Required sign occurs between the roots.

Final Answer

$$1 < x < 3$$

MCQ 92Solve $x^2 - 7x + 10 > 0$.

A. $2 < x < 5$

B. $x > 2$

C. $x < 5$

D. $x > 5$ or $x < 2$

Solution

$$x^2 - 7x + 10 = (x - 2)(x - 5)$$

Critical points: $x = 2, 5$

Required sign occurs outside the roots.

Final Answer

$$x > 5 \text{ or } x < 2$$

MCQ 93Solve $x^2 - 3x - 4 \leq 0$.

A. $-1 \leq x \leq 4$

B. $x \leq -1$

C. $x \leq 4$

D. $x \geq -1$ or $x \geq 4$

Solution

$$x^2 - 3x - 4 = (x + 1)(x - 4)$$

Critical points: $x = -1, 4$

Required sign occurs between the roots.

Final Answer

$$-1 \leq x \leq 4$$

MCQ 94Solve $x^2 - 6x + 0 \geq 0$.

A. $0 < x < 6$

B. $x \geq 6$ or $x \leq 0$

C. $x > 0$

D. $x < 6$

Solution

$$x^2 - 6x + 0 = (x + 0)(x - 6)$$

Critical points: $x = 0, 6$

Required sign occurs outside the roots.

Final Answer

$$x \geq 6 \text{ or } x \leq 0$$

MCQ 95Solve $x^2 - 10x + 21 < 0$.

A. $x < 3$

B. $x < 7$

C. $3 < x < 7$

D. $x > 3$ or $x > 7$

Solution

$$x^2 - 10x + 21 = (x - 3)(x - 7)$$

Critical points: $x = 3, 7$

Required sign occurs between the roots.

Final Answer

$$3 < x < 7$$

MCQ 96Solve $x^2 + 0x - 4 > 0$.

A. $-2 < x < 2$

B. $x > -2$

C. $x < 2$

D. $x > 2$ or $x < -2$

Solution

$$x^2 + 0x - 4 = (x + 2)(x - 2)$$

Critical points: $x = -2, 2$

Required sign occurs outside the roots.

Final Answer

$$x > 2 \text{ or } x < -2$$

MCQ 97Solve $x^2 - 13x + 36 \leq 0$.

A. $4 \leq x \leq 9$

B. $x \leq 4$

C. $x \leq 9$

D. $x \geq 4$ or $x \geq 9$

Solution

$$x^2 - 13x + 36 = (x - 4)(x - 9)$$

Critical points: $x = 4, 9$

Required sign occurs between the roots.

Final Answer

$$4 \leq x \leq 9$$

MCQ 98Solve $x^2 - 9x + 8 \geq 0$.

A. $1 < x < 8$

B. $x \geq 8$ or $x \leq 1$

C. $x > 1$

D. $x < 8$

Solution

$$x^2 - 9x + 8 = (x - 1)(x - 8)$$

Critical points: $x = 1, 8$

Required sign occurs outside the roots.

Final Answer

$$x \geq 8 \text{ or } x \leq 1$$

MCQ 99Solve $x^2 - 2x - 15 < 0$.

A. $x < -3$

B. $x < 5$

C. $-3 < x < 5$

D. $x > -3$ or $x > 5$

Solution

$$x^2 - 2x - 15 = (x + 3)(x - 5)$$

Critical points: $x = -3, 5$

Required sign occurs between the roots.

Final Answer

$$-3 < x < 5$$

MCQ 100Solve $x^2 - 12x + 20 > 0$.

A. $2 < x < 10$

B. $x > 2$

C. $x < 10$

D. $x > 10$ or $x < 2$

Solution

$$x^2 - 12x + 20 = (x - 2)(x - 10)$$

Critical points: $x = 2, 10$

Required sign occurs outside the roots.

Final Answer

$$x > 10 \text{ or } x < 2$$

RAPID REVISION GRID | QUADRATICS

Quadratic formula

$$x = \frac{-b \pm \sqrt{D}}{2a}$$

Discriminant

$D > 0$: 2 real, $D = 0$: equal, $D < 0$: no real roots

Sum/product

$$\alpha + \beta = -b/a, \quad \alpha\beta = c/a$$

Equation from roots

$$x^2 - (\alpha + \beta)x + \alpha\beta = 0$$

Linear inequality Negative multiplication/division reverses $<$, $>$, $\leq$, $\geq$.

Quadratic sign For an upward-opening factored quadratic, it is negative between distinct real roots and positive outside.

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INDICES, EXPONENTS, ROOTS & SURDS MCQs

100 FULLY SOLVED MCQs

PPSC, FPSC & ONE PAPER EXAMS

NTS • CSS MPT • PMS • Government Job Tests

Indices • Exponents • Roots • Surds • Rationalization

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The Science Academy - Chak No. 84 NB

INDICES, EXPONENTS, ROOTS & SURDS MCQs | 100 FULLY SOLVED MCQs**Fast Foundation for One-Paper Exams****Product and quotient laws**

$$a^m a^n = a^{m+n}, \quad \frac{a^m}{a^n} = a^{m-n}$$

Power laws

$$(a^m)^n = a^{mn}, \quad (ab)^n = a^n b^n$$

Zero and negative indices

$$a^0 = 1, \quad a^{-n} = \frac{1}{a^n} \quad (a \neq 0)$$

Fractional indices

$$a^{1/n} = \sqrt[n]{a}, \quad a^{m/n} = \sqrt[n]{a^m}$$

Surd simplification

$$\sqrt{ab} = \sqrt{a}\sqrt{b} \quad (a, b \geq 0)$$

Rationalization

$$\frac{1}{\sqrt{a}} = \frac{\sqrt{a}}{a}, \quad \frac{1}{a + \sqrt{b}} \times \frac{a - \sqrt{b}}{a - \sqrt{b}}$$

Laws of Indices and Exponents**MCQ 1**Simplify $2^3 \times 2^5$ as a single power.

- A. 2^8 B. 2^{15}
 C. 2^2 D. 2^9

Solution

$$2^3 \times 2^5 = 2^{3+5} = 2^8$$

Final Answer**2⁸****MCQ 2**Simplify $3^4 \times 3^2$ as a single power.

- A. 3^8 B. 3^6
 C. 3^2 D. 3^7

Solution

$$3^4 \times 3^2 = 3^{4+2} = 3^6$$

Final Answer**3⁶****MCQ 3**Simplify $5^2 \times 5^3$ as a single power.

- A. 5^6 B. 5^1
 C. 5^5 D. 5^4

Solution

$$5^2 \times 5^3 = 5^{2+3} = 5^5$$

Final Answer**5⁵****MCQ 4**Simplify $7^1 \times 7^4$ as a single power.

- A. 7^4 B. 7^3
 C. 7^6 D. 7^5

Solution

$$7^1 \times 7^4 = 7^{1+4} = 7^5$$

Final Answer**7⁵****MCQ 5**Simplify $10^2 \times 10^5$ as a single power.

- A. 10^7 B. 10^{10}
 C. 10^3 D. 10^8

Solution

$$10^2 \times 10^5 = 10^{2+5} = 10^7$$

Final Answer**10⁷****MCQ 6**Simplify $\frac{2^9}{2^4}$ as a single power.

- A. 2^{13} B. 2^5
 C. 2^{36} D. 2^6

Solution

$$\frac{2^9}{2^4} = 2^{9-4} = 2^5$$

Final Answer**2⁵****MCQ 7**Simplify $\frac{3^7}{3^3}$ as a single power.

- A. 3^{10} B. 3^{21}
 C. 3^4 D. 3^5

Solution

$$\frac{3^7}{3^3} = 3^{7-3} = 3^4$$

Final Answer**3⁴****MCQ 8**Simplify $\frac{5^6}{5^2}$ as a single power.

- A. 5^8 B. 5^{12}
 C. 5^5 D. 5^4

Solution

$$\frac{5^6}{5^2} = 5^{6-2} = 5^4$$

Final Answer**5⁴**

MCQ 9Simplify $\frac{7^5}{7^1}$ as a single power.

- A. 7^4 B. 7^6
 C. 7^5 D. 7^3

Solution

$$\frac{7^5}{7^1} = 7^{5-1} = 7^4$$

Final Answer**7⁴****MCQ 10**Simplify $\frac{10^8}{10^3}$ as a single power.

- A. 10^{11} B. 10^5
 C. 10^{24} D. 10^6

Solution

$$\frac{10^8}{10^3} = 10^{8-3} = 10^5$$

Final Answer**10⁵****MCQ 11**Simplify $(2^3)^4$.

- A. 2^7 B. 2^1
 C. 2^{12} D. 2^{13}

Solution

$$(2^3)^4 = 2^{3 \times 4} = 2^{12}$$

Final Answer**2¹²****MCQ 12**Simplify $(3^2)^5$.

- A. 3^7 B. 3^3
 C. 3^{11} D. 3^{10}

Solution

$$(3^2)^5 = 3^{2 \times 5} = 3^{10}$$

Final Answer**3¹⁰****MCQ 13**Simplify $(5^2)^3$.

- A. 5^6 B. 5^5
 C. 5^1 D. 5^7

Solution

$$(5^2)^3 = 5^{2 \times 3} = 5^6$$

Final Answer**5⁶****MCQ 14**Simplify $(7^1)^6$.

- A. 7^7 B. 7^6
 C. 7^5 D. 7^4

Solution

$$(7^1)^6 = 7^{1 \times 6} = 7^6$$

Final Answer**7⁶****MCQ 15**Simplify $(4^3)^2$.

- A. 4^5 B. 4^1
 C. 4^6 D. 4^7

Solution

$$(4^3)^2 = 4^{3 \times 2} = 4^6$$

Final Answer**4⁶****MCQ 16**Write 2^{-5} with a positive exponent.

- A. -2^5 B. $\frac{1}{5^2}$
 C. 2^5 D. $\frac{1}{2^5}$

Solution

$$2^{-5} = \frac{1}{2^5}$$

Final Answer **$\frac{1}{2^5}$**

MCQ 17Write 3^{-4} with a positive exponent.

- A. $\frac{1}{3^4}$ B. -3^4
 C. $\frac{1}{4^3}$ D. 3^4

Solution

$$3^{-4} = \frac{1}{3^4}$$

Final Answer

$$\frac{1}{3^4}$$

MCQ 18Write 5^{-3} with a positive exponent.

- A. -5^3 B. $\frac{1}{5^3}$
 C. $\frac{1}{3^5}$ D. 5^3

Solution

$$5^{-3} = \frac{1}{5^3}$$

Final Answer

$$\frac{1}{5^3}$$

MCQ 19Write 7^{-2} with a positive exponent.

- A. -7^2 B. $\frac{1}{2^7}$
 C. $\frac{1}{7^2}$ D. 7^2

Solution

$$7^{-2} = \frac{1}{7^2}$$

Final Answer

$$\frac{1}{7^2}$$

MCQ 20Write 10^{-4} with a positive exponent.

- A. -10^4 B. $\frac{1}{4^{10}}$
 C. 10^4 D. $\frac{1}{10^4}$

Solution

$$10^{-4} = \frac{1}{10^4}$$

Final Answer

$$\frac{1}{10^4}$$

Evaluating Powers and Fractional Indices**MCQ 21**Evaluate 2^5 .

- A. 32 B. 16
 C. 25 D. 64

Solution

$$2^5 = 32$$

Final Answer

$$32$$

MCQ 22Evaluate 3^4 .

- A. 27 B. 81
 C. 64 D. 243

Solution

$$3^4 = 81$$

Final Answer

$$81$$

MCQ 23Evaluate 5^3 .

- A. 25 B. 75
 C. 125 D. 625

Solution

$$5^3 = 125$$

Final Answer

$$125$$

MCQ 24Evaluate 10^0 .

- A. 0 B. 10
 C. 100 D. 1

Solution

$$10^0 = 1$$

Final Answer

$$1$$

MCQ 25Evaluate $16^{1/2}$.

- A. 4 B. 2
 C. 8 D. 16

Solution

$$16^{1/2} = 4$$

Final Answer

$$4$$

MCQ 26Evaluate $27^{1/3}$.

- A. 9
B. 3
C. 6
D. 27

Solution

$$27^{1/3} = 3$$

Final Answer

3

MCQ 27Evaluate $81^{3/4}$.

- A. 9
B. 18
C. 27
D. 81

Solution

$$81^{3/4} = 27$$

Final Answer

27

MCQ 28Evaluate $32^{2/5}$.

- A. 2
B. 8
C. 16
D. 4

Solution

$$32^{2/5} = 4$$

Final Answer

4

MCQ 29Evaluate $64^{-1/2}$.

- A. $\frac{1}{8}$
B. $\frac{1}{4}$
C. 8
D. $\frac{1}{64}$

Solution

$$64^{-1/2} = \frac{1}{8}$$

Final Answer $\frac{1}{8}$ **MCQ 30**Evaluate $125^{-1/3}$.

- A. $\frac{1}{25}$
B. $\frac{1}{5}$
C. 5
D. $\frac{1}{125}$

Solution

$$125^{-1/3} = \frac{1}{5}$$

Final Answer $\frac{1}{5}$ **MCQ 31**If $2^x = 32$, find x .

- A. 4
B. 6
C. 5
D. 10

Solution

$$32 = 2^5$$

$$2^x = 2^5 \Rightarrow x = 5$$

Final Answer $x = 5$ **MCQ 32**If $3^x = 243$, find x .

- A. 4
B. 6
C. 10
D. 5

Solution

$$243 = 3^5$$

$$3^x = 3^5 \Rightarrow x = 5$$

Final Answer $x = 5$ **MCQ 33**If $5^x = 625$, find x .

- A. 4
B. 3
C. 5
D. 8

Solution

$$625 = 5^4$$

$$5^x = 5^4 \Rightarrow x = 4$$

Final Answer $x = 4$

MCQ 34If $10^x = 100000$, find x .

- A. 4 B. 5
C. 6 D. 10

Solution

$$100000 = 10^5$$

$$10^x = 10^5 \Rightarrow x = 5$$

Final Answer

$$x = 5$$

MCQ 35If $4^x = 64$, find x .

- A. 2 B. 4
C. 3 D. 6

Solution

$$64 = 4^3$$

$$4^x = 4^3 \Rightarrow x = 3$$

Final Answer

$$x = 3$$

MCQ 36If $7^x = 343$, find x .

- A. 2 B. 4
C. 6 D. 3

Solution

$$343 = 7^3$$

$$7^x = 7^3 \Rightarrow x = 3$$

Final Answer

$$x = 3$$

MCQ 37If $2^x = 1024$, find x .

- A. 10 B. 9
C. 11 D. 20

Solution

$$1024 = 2^{10}$$

$$2^x = 2^{10} \Rightarrow x = 10$$

Final Answer

$$x = 10$$

MCQ 38If $9^x = 729$, find x .

- A. 2 B. 3
C. 4 D. 6

Solution

$$729 = 9^3$$

$$9^x = 9^3 \Rightarrow x = 3$$

Final Answer

$$x = 3$$

MCQ 39If $8^x = 512$, find x .

- A. 2 B. 4
C. 3 D. 6

Solution

$$512 = 8^3$$

$$8^x = 8^3 \Rightarrow x = 3$$

Final Answer

$$x = 3$$

MCQ 40If $6^x = 216$, find x .

- A. 2 B. 4
C. 6 D. 3

Solution

$$216 = 6^3$$

$$6^x = 6^3 \Rightarrow x = 3$$

Final Answer

$$x = 3$$

Square Roots, Cube Roots and Perfect Powers**MCQ 41**Find $\sqrt{144}$.

- A. 12 B. 11
C. 13 D. 24

Solution

$$144 = 12^2$$

$$\sqrt{144} = 12$$

Final Answer

$$12$$

MCQ 42Find $\sqrt{225}$.

A. 14

B. 15

C. 16

D. 30

Solution

$$225 = 15^2$$

$$\sqrt{225} = 15$$

Final Answer

15

MCQ 46Find $\sqrt{784}$.

A. 27

B. 28

C. 29

D. 56

Solution

$$784 = 28^2$$

$$\sqrt{784} = 28$$

Final Answer

28

MCQ 43Find $\sqrt{324}$.

A. 17

B. 19

C. 18

D. 36

Solution

$$324 = 18^2$$

$$\sqrt{324} = 18$$

Final Answer

18

MCQ 47Find $\sqrt{900}$.

A. 29

B. 31

C. 30

D. 60

Solution

$$900 = 30^2$$

$$\sqrt{900} = 30$$

Final Answer

30

MCQ 44Find $\sqrt{441}$.

A. 20

B. 22

C. 42

D. 21

Solution

$$441 = 21^2$$

$$\sqrt{441} = 21$$

Final Answer

21

MCQ 48Find $\sqrt{1024}$.

A. 31

B. 33

C. 64

D. 32

Solution

$$1024 = 32^2$$

$$\sqrt{1024} = 32$$

Final Answer

32

MCQ 45Find $\sqrt{625}$.

A. 25

B. 24

C. 26

D. 50

Solution

$$625 = 25^2$$

$$\sqrt{625} = 25$$

Final Answer

25

MCQ 49Find $\sqrt{1225}$.

A. 35

B. 34

C. 36

D. 70

Solution

$$1225 = 35^2$$

$$\sqrt{1225} = 35$$

Final Answer

35

MCQ 50Find $\sqrt{1600}$.

- A. 39 B. 40
C. 41 D. 80

Solution

$$1600 = 40^2$$

$$\sqrt{1600} = 40$$

Final Answer

40

MCQ 54Find $\sqrt[3]{343}$.

- A. 6 B. 7
C. 8 D. 14

Solution

$$343 = 7^3$$

$$\sqrt[3]{343} = 7$$

Final Answer

7

MCQ 51Find $\sqrt[3]{64}$.

- A. 3 B. 5
C. 4 D. 8

Solution

$$64 = 4^3$$

$$\sqrt[3]{64} = 4$$

Final Answer

4

MCQ 55Find $\sqrt[3]{512}$.

- A. 7 B. 9
C. 8 D. 16

Solution

$$512 = 8^3$$

$$\sqrt[3]{512} = 8$$

Final Answer

8

MCQ 52Find $\sqrt[3]{125}$.

- A. 4 B. 6
C. 10 D. 5

Solution

$$125 = 5^3$$

$$\sqrt[3]{125} = 5$$

Final Answer

5

MCQ 56Find $\sqrt[3]{729}$.

- A. 8 B. 10
C. 18 D. 9

Solution

$$729 = 9^3$$

$$\sqrt[3]{729} = 9$$

Final Answer

9

MCQ 53Find $\sqrt[3]{216}$.

- A. 6 B. 5
C. 7 D. 12

Solution

$$216 = 6^3$$

$$\sqrt[3]{216} = 6$$

Final Answer

6

MCQ 57Find $\sqrt[3]{1000}$.

- A. 10 B. 9
C. 11 D. 20

Solution

$$1000 = 10^3$$

$$\sqrt[3]{1000} = 10$$

Final Answer

10

MCQ 58Find $\sqrt[3]{1728}$.

- A. 11 B. 12
C. 13 D. 24

Solution

$$1728 = 12^3$$

$$\sqrt[3]{1728} = 12$$

Final Answer

12

MCQ 59Find $\sqrt[3]{2197}$.

- A. 12 B. 14
C. 13 D. 26

Solution

$$2197 = 13^3$$

$$\sqrt[3]{2197} = 13$$

Final Answer

13

MCQ 60Find $\sqrt[3]{3375}$.

- A. 14 B. 16
C. 30 D. 15

Solution

$$3375 = 15^3$$

$$\sqrt[3]{3375} = 15$$

Final Answer

15

Simplifying and Operating on Surds**MCQ 61**Simplify $\sqrt{8}$.

- A. $2\sqrt{2}$ B. $3\sqrt{2}$
C. $2\sqrt{3}$ D. $\sqrt{2}$

Solution

$$\sqrt{8} = \sqrt{4 \times 2} = 2\sqrt{2}$$

Final Answer $2\sqrt{2}$ **MCQ 62**Simplify $\sqrt{12}$.

- A. $3\sqrt{2}$ B. $2\sqrt{3}$
C. $3\sqrt{3}$ D. $2\sqrt{4}$

Solution

$$\sqrt{12} = \sqrt{4 \times 3} = 2\sqrt{3}$$

Final Answer $2\sqrt{3}$ **MCQ 63**Simplify $\sqrt{18}$.

- A. $2\sqrt{3}$ B. $4\sqrt{2}$
C. $3\sqrt{2}$ D. $3\sqrt{3}$

Solution

$$\sqrt{18} = \sqrt{9 \times 2} = 3\sqrt{2}$$

Final Answer $3\sqrt{2}$ **MCQ 64**Simplify $\sqrt{20}$.

- A. $5\sqrt{2}$ B. $3\sqrt{5}$
C. $2\sqrt{6}$ D. $2\sqrt{5}$

Solution

$$\sqrt{20} = \sqrt{4 \times 5} = 2\sqrt{5}$$

Final Answer $2\sqrt{5}$ **MCQ 65**Simplify $\sqrt{27}$.

- A. $3\sqrt{3}$ B. $4\sqrt{3}$
C. $3\sqrt{4}$ D. $\sqrt{3}$

Solution

$$\sqrt{27} = \sqrt{9 \times 3} = 3\sqrt{3}$$

Final Answer $3\sqrt{3}$

MCQ 66Simplify $\sqrt{32}$.

A. $2\sqrt{4}$

B. $4\sqrt{2}$

C. $5\sqrt{2}$

D. $4\sqrt{3}$

Solution

$$\sqrt{32} = \sqrt{16 \times 2} = 4\sqrt{2}$$

Final Answer

$$4\sqrt{2}$$

MCQ 67Simplify $\sqrt{45}$.

A. $5\sqrt{3}$

B. $4\sqrt{5}$

C. $3\sqrt{5}$

D. $3\sqrt{6}$

Solution

$$\sqrt{45} = \sqrt{9 \times 5} = 3\sqrt{5}$$

Final Answer

$$3\sqrt{5}$$

MCQ 68Simplify $\sqrt{48}$.

A. $3\sqrt{4}$

B. $5\sqrt{3}$

C. $4\sqrt{4}$

D. $4\sqrt{3}$

Solution

$$\sqrt{48} = \sqrt{16 \times 3} = 4\sqrt{3}$$

Final Answer

$$4\sqrt{3}$$

MCQ 69Simplify $\sqrt{50}$.

A. $5\sqrt{2}$

B. $2\sqrt{5}$

C. $6\sqrt{2}$

D. $5\sqrt{3}$

Solution

$$\sqrt{50} = \sqrt{25 \times 2} = 5\sqrt{2}$$

Final Answer

$$5\sqrt{2}$$

MCQ 70Simplify $\sqrt{72}$.

A. $2\sqrt{6}$

B. $6\sqrt{2}$

C. $7\sqrt{2}$

D. $6\sqrt{3}$

Solution

$$\sqrt{72} = \sqrt{36 \times 2} = 6\sqrt{2}$$

Final Answer

$$6\sqrt{2}$$

MCQ 71Simplify $2\sqrt{5} + 3\sqrt{5}$.

A. $6\sqrt{5}$

B. $5\sqrt{6}$

C. $5\sqrt{5}$

D. $1\sqrt{5}$

Solution

$$2\sqrt{5} + 3\sqrt{5} = (2 + 3)\sqrt{5} = 5\sqrt{5}$$

Final Answer

$$5\sqrt{5}$$

MCQ 72Simplify $4\sqrt{7} + 1\sqrt{7}$.

A. $4\sqrt{7}$

B. $5\sqrt{8}$

C. $3\sqrt{7}$

D. $5\sqrt{7}$

Solution

$$4\sqrt{7} + 1\sqrt{7} = (4 + 1)\sqrt{7} = 5\sqrt{7}$$

Final Answer

$$5\sqrt{7}$$

MCQ 73Simplify $7\sqrt{2} - 3\sqrt{2}$.

A. $4\sqrt{2}$

B. $21\sqrt{2}$

C. $4\sqrt{3}$

D. $\sqrt{2}$

Solution

$$7\sqrt{2} - 3\sqrt{2} = (7 - 3)\sqrt{2} = 4\sqrt{2}$$

Final Answer

$$4\sqrt{2}$$

MCQ 74Simplify $9\sqrt{3} - 4\sqrt{3}$.

- A. $36\sqrt{3}$ B. $5\sqrt{3}$
 C. $5\sqrt{4}$ D. $\sqrt{3}$

Solution

$$9\sqrt{3} - 4\sqrt{3} = (9 - 4)\sqrt{3} = 5\sqrt{3}$$

Final Answer

$$5\sqrt{3}$$

MCQ 75Simplify $3\sqrt{6} + 2\sqrt{6}$.

- A. $6\sqrt{6}$ B. $5\sqrt{7}$
 C. $5\sqrt{6}$ D. $1\sqrt{6}$

Solution

$$3\sqrt{6} + 2\sqrt{6} = (3 + 2)\sqrt{6} = 5\sqrt{6}$$

Final Answer

$$5\sqrt{6}$$

MCQ 76Simplify $\sqrt{2} \times \sqrt{3}$.

- A. $\sqrt{5}$ B. 6
 C. $\sqrt{1}$ D. $\sqrt{6}$

Solution

$$\sqrt{2}\sqrt{3} = \sqrt{6} = \sqrt{6}$$

Final Answer

$$\sqrt{6}$$

MCQ 77Simplify $\sqrt{3} \times \sqrt{5}$.

- A. $\sqrt{15}$ B. $\sqrt{8}$
 C. 15 D. $\sqrt{2}$

Solution

$$\sqrt{3}\sqrt{5} = \sqrt{15} = \sqrt{15}$$

Final Answer

$$\sqrt{15}$$

MCQ 78Simplify $\sqrt{2} \times \sqrt{7}$.

- A. $\sqrt{9}$ B. $\sqrt{14}$
 C. 14 D. $\sqrt{5}$

Solution

$$\sqrt{2}\sqrt{7} = \sqrt{14} = \sqrt{14}$$

Final Answer

$$\sqrt{14}$$

MCQ 79Simplify $\sqrt{5} \times \sqrt{10}$.

- A. $\sqrt{15}$ B. 50
 C. $5\sqrt{2}$ D. $\sqrt{5}$

Solution

$$\sqrt{5}\sqrt{10} = \sqrt{50} = 5\sqrt{2}$$

Final Answer

$$5\sqrt{2}$$

MCQ 80Simplify $\sqrt{6} \times \sqrt{15}$.

- A. $\sqrt{21}$ B. 90
 C. $\sqrt{9}$ D. $3\sqrt{10}$

Solution

$$\sqrt{6}\sqrt{15} = \sqrt{90} = 3\sqrt{10}$$

Final Answer

$$3\sqrt{10}$$

Rationalization and Mixed High-Yield Patterns**MCQ 81**Rationalize $\frac{1}{\sqrt{2}}$.

- A. $\frac{\sqrt{2}}{2}$ B. $\frac{1}{2}$
 C. $\sqrt{2}$ D. $\frac{2}{\sqrt{2}}$

Solution

$$\frac{1}{\sqrt{2}} \times \frac{\sqrt{2}}{\sqrt{2}} = \frac{\sqrt{2}}{2}$$

Final Answer

$$\frac{\sqrt{2}}{2}$$

MCQ 82Rationalize $\frac{1}{\sqrt{3}}$.

- A. $\frac{1}{3}$
C. $\sqrt{3}$

- B. $\frac{\sqrt{3}}{3}$
D. $\frac{3}{\sqrt{3}}$

Solution

$$\frac{1}{\sqrt{3}} \times \frac{\sqrt{3}}{\sqrt{3}} = \frac{\sqrt{3}}{3}$$

Final Answer

$$\frac{\sqrt{3}}{3}$$

MCQ 85Rationalize $\frac{1}{\sqrt{7}}$.

- A. $\frac{\sqrt{7}}{7}$
C. $\sqrt{7}$

- B. $\frac{1}{7}$
D. $\frac{7}{\sqrt{7}}$

Solution

$$\frac{1}{\sqrt{7}} \times \frac{\sqrt{7}}{\sqrt{7}} = \frac{\sqrt{7}}{7}$$

Final Answer

$$\frac{\sqrt{7}}{7}$$

MCQ 83Rationalize $\frac{1}{\sqrt{5}}$.

- A. $\frac{1}{5}$
C. $\frac{\sqrt{5}}{5}$

- B. $\sqrt{5}$
D. $\frac{5}{\sqrt{5}}$

Solution

$$\frac{1}{\sqrt{5}} \times \frac{\sqrt{5}}{\sqrt{5}} = \frac{\sqrt{5}}{5}$$

Final Answer

$$\frac{\sqrt{5}}{5}$$

MCQ 86Rationalize $\frac{1}{\sqrt{10}}$.

- A. $\frac{1}{10}$
C. $\sqrt{10}$

- B. $\frac{\sqrt{10}}{10}$
D. $\frac{10}{\sqrt{10}}$

Solution

$$\frac{1}{\sqrt{10}} \times \frac{\sqrt{10}}{\sqrt{10}} = \frac{\sqrt{10}}{10}$$

Final Answer

$$\frac{\sqrt{10}}{10}$$

MCQ 84Rationalize $\frac{1}{\sqrt{6}}$.

- A. $\frac{1}{6}$
C. $\frac{6}{\sqrt{6}}$

- B. $\sqrt{6}$
D. $\frac{\sqrt{6}}{6}$

Solution

$$\frac{1}{\sqrt{6}} \times \frac{\sqrt{6}}{\sqrt{6}} = \frac{\sqrt{6}}{6}$$

Final Answer

$$\frac{\sqrt{6}}{6}$$

MCQ 87Rationalize $\frac{1}{\sqrt{11}}$.

- A. $\frac{1}{11}$
C. $\frac{\sqrt{11}}{11}$

- B. $\sqrt{11}$
D. $\frac{11}{\sqrt{11}}$

Solution

$$\frac{1}{\sqrt{11}} \times \frac{\sqrt{11}}{\sqrt{11}} = \frac{\sqrt{11}}{11}$$

Final Answer

$$\frac{\sqrt{11}}{11}$$

MCQ 88Rationalize $\frac{1}{\sqrt{13}}$.

A. $\frac{1}{13}$

B. $\sqrt{13}$

C. $\frac{13}{\sqrt{13}}$

D. $\frac{\sqrt{13}}{13}$

Solution

$$\frac{1}{\sqrt{13}} \times \frac{\sqrt{13}}{\sqrt{13}} = \frac{\sqrt{13}}{13}$$

Final Answer

$$\frac{\sqrt{13}}{13}$$

MCQ 89Rationalize $\frac{1}{\sqrt{15}}$.

A. $\frac{\sqrt{15}}{15}$

B. $\frac{1}{15}$

C. $\sqrt{15}$

D. $\frac{15}{\sqrt{15}}$

Solution

$$\frac{1}{\sqrt{15}} \times \frac{\sqrt{15}}{\sqrt{15}} = \frac{\sqrt{15}}{15}$$

Final Answer

$$\frac{\sqrt{15}}{15}$$

MCQ 90Rationalize $\frac{1}{\sqrt{17}}$.

A. $\frac{1}{17}$

B. $\frac{\sqrt{17}}{17}$

C. $\sqrt{17}$

D. $\frac{17}{\sqrt{17}}$

Solution

$$\frac{1}{\sqrt{17}} \times \frac{\sqrt{17}}{\sqrt{17}} = \frac{\sqrt{17}}{17}$$

Final Answer

$$\frac{\sqrt{17}}{17}$$

MCQ 91Rationalize $\frac{1}{3 + \sqrt{2}}$.

A. $\frac{3+\sqrt{2}}{7}$

B. $3 + \sqrt{2}$

C. $\frac{3-\sqrt{2}}{7}$

D. $\frac{1}{7}$

Solution

$$\begin{aligned} \frac{1}{3 + \sqrt{2}} &\times \frac{3 - \sqrt{2}}{3 - \sqrt{2}} \\ &= \frac{3 - \sqrt{2}}{9 - 2} = \frac{3 - \sqrt{2}}{7} \end{aligned}$$

Final Answer

$$\frac{3 - \sqrt{2}}{7}$$

MCQ 92Rationalize $\frac{1}{4 + \sqrt{3}}$.

A. $\frac{4+\sqrt{3}}{13}$

B. $4 + \sqrt{3}$

C. $\frac{1}{13}$

D. $\frac{4-\sqrt{3}}{13}$

Solution

$$\begin{aligned} \frac{1}{4 + \sqrt{3}} &\times \frac{4 - \sqrt{3}}{4 - \sqrt{3}} \\ &= \frac{4 - \sqrt{3}}{16 - 3} = \frac{4 - \sqrt{3}}{13} \end{aligned}$$

Final Answer

$$\frac{4 - \sqrt{3}}{13}$$

MCQ 93Rationalize $\frac{1}{5 + \sqrt{6}}$.

A. $\frac{5-\sqrt{6}}{19}$

B. $\frac{5+\sqrt{6}}{19}$

C. $5 + \sqrt{6}$

D. $\frac{1}{19}$

Solution

$$\begin{aligned} \frac{1}{5 + \sqrt{6}} &\times \frac{5 - \sqrt{6}}{5 - \sqrt{6}} \\ &= \frac{5 - \sqrt{6}}{25 - 6} = \frac{5 - \sqrt{6}}{19} \end{aligned}$$

Final Answer

$$\frac{5 - \sqrt{6}}{19}$$

MCQ 94Rationalize $\frac{1}{6 + \sqrt{5}}$.

A. $\frac{6+\sqrt{5}}{31}$

B. $\frac{6-\sqrt{5}}{31}$

C. $6 + \sqrt{5}$

D. $\frac{1}{31}$

Solution

$$\begin{aligned} \frac{1}{6 + \sqrt{5}} &\times \frac{6 - \sqrt{5}}{6 - \sqrt{5}} \\ &= \frac{6 - \sqrt{5}}{36 - 5} = \frac{6 - \sqrt{5}}{31} \end{aligned}$$

Final Answer

$$\frac{6 - \sqrt{5}}{31}$$

MCQ 95Rationalize $\frac{1}{7 + \sqrt{3}}$.

A. $\frac{7+\sqrt{3}}{46}$

B. $7 + \sqrt{3}$

C. $\frac{7-\sqrt{3}}{46}$

D. $\frac{1}{46}$

Solution

$$\begin{aligned} \frac{1}{7 + \sqrt{3}} &\times \frac{7 - \sqrt{3}}{7 - \sqrt{3}} \\ &= \frac{7 - \sqrt{3}}{49 - 3} = \frac{7 - \sqrt{3}}{46} \end{aligned}$$

Final Answer

$$\frac{7 - \sqrt{3}}{46}$$

MCQ 96Simplify $\sqrt{50} + \sqrt{8}$.

A. $2\sqrt{2}$

B. $4\sqrt{3}$

C. 8

D. $7\sqrt{2}$

Solution

$$\begin{aligned} \sqrt{50} &= 5\sqrt{2}, \sqrt{8} = 2\sqrt{2} \\ 5\sqrt{2} + 2\sqrt{2} &= 7\sqrt{2} \end{aligned}$$

Final Answer

$$7\sqrt{2}$$

MCQ 97Simplify $\sqrt{75} - \sqrt{12}$.

A. $3\sqrt{3}$

B. $2\sqrt{2}$

C. $4\sqrt{3}$

D. 8

Solution

$$\begin{aligned} \sqrt{75} &= 5\sqrt{3}, \sqrt{12} = 2\sqrt{3} \\ 5\sqrt{3} - 2\sqrt{3} &= 3\sqrt{3} \end{aligned}$$

Final Answer

$$3\sqrt{3}$$

MCQ 98Simplify $(\sqrt{5})^2$.

A. $2\sqrt{2}$

B. 5

C. $4\sqrt{3}$

D. 8

Solution

$$(\sqrt{5})^2 = 5$$

Final Answer

$$5$$

MCQ 99Simplify $\sqrt{2} \cdot \sqrt{18}$.

A. $2\sqrt{2}$

B. $4\sqrt{3}$

C. 6

D. 8

Solution

$$\sqrt{2}\sqrt{18} = \sqrt{36} = 6$$

Final Answer

$$6$$

MCQ 100Simplify $\frac{\sqrt{48}}{\sqrt{3}}$.

A. $2\sqrt{2}$

B. $4\sqrt{3}$

C. 8

D. 4

Solution

$$\frac{\sqrt{48}}{\sqrt{3}} = \sqrt{16} = 4$$

Final Answer

$$4$$

RAPID REVISION GRID | INDICES / ROOTS / SURDS

Indices Add exponents when multiplying same bases; subtract when dividing; multiply exponents for a power of a power.

Roots

$$\sqrt{a^2} = |a|, \quad \sqrt[3]{a^3} = a$$

Perfect-square extraction

$$\sqrt{ka^2} = a\sqrt{k} \quad (a \geq 0)$$

Like surds Only like surds combine: $p\sqrt{m} + q\sqrt{m} = (p + q)\sqrt{m}$.

Conjugates

$$(a + b\sqrt{m})(a - b\sqrt{m}) = a^2 - b^2m$$

Exam check Keep answers exact unless a decimal is explicitly requested.

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NUMBER SERIES, SEQUENCES & MISSING-NUMBER MCQs | 100 FULLY SOLVED MCQs**Fast Foundation for One-Paper Exams****Arithmetic sequence**

$$a_n = a_1 + (n - 1)d$$

Geometric sequence

$$a_n = a_1 r^{n-1}$$

Difference method Check first differences, then second differences if needed.

Alternating patterns Split odd-position and even-position terms into two separate sequences.

Square/cube patterns Common one-paper forms include n^2 , n^3 , triangular numbers, and mixed powers.

Speed rule Test the simplest consistent rule first; verify it against every visible term.

Arithmetic and Constant-Difference Series**MCQ 1**

Find the next term: 3, 7, 11, 15, 19, ?

- A. 23 B. 19
C. 27 D. 31

Solution

$$d = 7 - 3 = 4$$

$$\text{Next} = 19 + (4) = 23$$

Final Answer

23

MCQ 2

Find the next term: 5, 11, 17, 23, 29, ?

- A. 29 B. 35
C. 41 D. 47

Solution

$$d = 11 - 5 = 6$$

$$\text{Next} = 29 + (6) = 35$$

Final Answer

35

MCQ 3

Find the next term: 12, 17, 22, 27, 32, ?

- A. 32 B. 42
C. 37 D. 47

Solution

$$d = 17 - 12 = 5$$

$$\text{Next} = 32 + (5) = 37$$

Final Answer

37

MCQ 4

Find the next term: 20, 27, 34, 41, 48, ?

- A. 48 B. 62
C. 69 D. 55

Solution

$$d = 27 - 20 = 7$$

$$\text{Next} = 48 + (7) = 55$$

Final Answer

55

MCQ 5

Find the next term: 2, 11, 20, 29, 38, ?

- A. 47 B. 38
C. 56 D. 65

Solution

$$d = 11 - 2 = 9$$

$$\text{Next} = 38 + (9) = 47$$

Final Answer

47

MCQ 6

Find the next term: 15, 18, 21, 24, 27, ?

- A. 27 B. 30
C. 33 D. 36

Solution

$$d = 18 - 15 = 3$$

$$\text{Next} = 27 + (3) = 30$$

Final Answer

30

MCQ 7

Find the next term: 7, 15, 23, 31, 39, ?

- A. 39 B. 55
C. 47 D. 63

Solution

$$d = 15 - 7 = 8$$

$$\text{Next} = 39 + (8) = 47$$

Final Answer

47

MCQ 8

Find the next term: 30, 26, 22, 18, 14, ?

- A. 14 B. 6
C. 2 D. 10

Solution

$$d = 26 - 30 = -4$$

$$\text{Next} = 14 + (-4) = 10$$

Final Answer

10

MCQ 9

Find the next term: 50, 44, 38, 32, 26, ?

- A. 20 B. 26
C. 14 D. 8

Solution

$$d = 44 - 50 = -6$$

$$\text{Next} = 26 + (-6) = 20$$

Final Answer

20

MCQ 10

Find the next term: 1, 12, 23, 34, 45, ?

- A. 45 B. 56
C. 67 D. 78

Solution

$$d = 12 - 1 = 11$$

$$\text{Next} = 45 + (11) = 56$$

Final Answer

56

MCQ 11

Find the next term: 9, 14, 19, 24, 29, ?

- A. 29 B. 39
C. 34 D. 44

Solution

$$d = 14 - 9 = 5$$

$$\text{Next} = 29 + (5) = 34$$

Final Answer

34

MCQ 12

Find the next term: 18, 24, 30, 36, 42, ?

- A. 42 B. 54
C. 60 D. 48

Solution

$$d = 24 - 18 = 6$$

$$\text{Next} = 42 + (6) = 48$$

Final Answer

48

MCQ 13

Find the next term: 4, 11, 18, 25, 32, ?

- A. 39 B. 32
C. 46 D. 53

Solution

$$d = 11 - 4 = 7$$

$$\text{Next} = 32 + (7) = 39$$

Final Answer

39

MCQ 14

Find the next term: 25, 35, 45, 55, 65, ?

- A. 65 B. 75
C. 85 D. 95

Solution

$$d = 35 - 25 = 10$$

$$\text{Next} = 65 + (10) = 75$$

Final Answer

75

MCQ 15

Find the next term: 100, 90, 80, 70, 60, ?

- A. 60 B. 40
C. 50 D. 30

Solution

$$d = 90 - 100 = -10$$

$$\text{Next} = 60 + (-10) = 50$$

Final Answer

50

MCQ 16

Find the next term: 6, 18, 30, 42, 54, ?

- A. 54 B. 78
C. 90 D. 66

Solution

$$d = 18 - 6 = 12$$

$$\text{Next} = 54 + (12) = 66$$

Final Answer

66

MCQ 17

Find the next term: 11, 20, 29, 38, 47, ?

- A. 56 B. 47
C. 65 D. 74

Solution

$$d = 20 - 11 = 9$$

$$\text{Next} = 47 + (9) = 56$$

Final Answer

56

MCQ 18

Find the next term: 14, 18, 22, 26, 30, ?

- A. 30 B. 34
C. 38 D. 42

Solution

$$d = 18 - 14 = 4$$

$$\text{Next} = 30 + (4) = 34$$

Final Answer

34

MCQ 19

Find the next term: 8, 21, 34, 47, 60, ?

- A. 60 B. 86
C. 73 D. 99

Solution

$$d = 21 - 8 = 13$$

$$\text{Next} = 60 + (13) = 73$$

Final Answer

73

MCQ 20

Find the next term: 40, 35, 30, 25, 20, ?

- A. 20 B. 10
C. 5 D. 15

Solution

$$d = 35 - 40 = -5$$

$$\text{Next} = 20 + (-5) = 15$$

Final Answer

15

MCQ 21

Find the next term: 17, 24, 31, 38, 45, ?

- A. 52 B. 45
C. 59 D. 66

Solution

$$d = 24 - 17 = 7$$

$$\text{Next} = 45 + (7) = 52$$

Final Answer

52

MCQ 22

Find the next term: 21, 27, 33, 39, 45, ?

- A. 45 B. 51
C. 57 D. 63

Solution

$$d = 27 - 21 = 6$$

$$\text{Next} = 45 + (6) = 51$$

Final Answer

51

MCQ 23

Find the next term: 32, 40, 48, 56, 64, ?

- A. 64 B. 80
C. 72 D. 88

Solution

$$d = 40 - 32 = 8$$

$$\text{Next} = 64 + (8) = 72$$

Final Answer

72

MCQ 24

Find the next term: 5, 20, 35, 50, 65, ?

- A. 65 B. 95
C. 110 D. 80

Solution

$$d = 20 - 5 = 15$$

$$\text{Next} = 65 + (15) = 80$$

Final Answer

80

MCQ 25

Find the next term: 60, 53, 46, 39, 32, ?

A. 25**B. 32****C. 18****D. 11****Solution**

$$d = 53 - 60 = -7$$

$$\text{Next} = 32 + (-7) = 25$$

Final Answer**25**

Geometric and Constant-Ratio Series**MCQ 26**

Find the next term: 2, 4, 8, 16, 32, ?

A. 34 **B.** 64**C.** 32 **D.** 66**Solution**

$$r = \frac{4}{2} = 2$$

$$\text{Next} = 32 \times 2 = 64$$

Final Answer

64

MCQ 27

Find the next term: 3, 9, 27, 81, 243, ?

A. 246 **B.** 243**C.** 729 **D.** 732**Solution**

$$r = \frac{9}{3} = 3$$

$$\text{Next} = 243 \times 3 = 729$$

Final Answer

729

MCQ 28

Find the next term: 5, 10, 20, 40, 80, ?

A. 82 **B.** 80**C.** 162 **D.** 160**Solution**

$$r = \frac{10}{5} = 2$$

$$\text{Next} = 80 \times 2 = 160$$

Final Answer

160

MCQ 29

Find the next term: 1, 4, 16, 64, 256, ?

A. 1024 **B.** 260**C.** 256 **D.** 1028**Solution**

$$r = \frac{4}{1} = 4$$

$$\text{Next} = 256 \times 4 = 1024$$

Final Answer

1024

MCQ 30

Find the next term: 4, 12, 36, 108, 324, ?

A. 327 **B.** 972**C.** 324 **D.** 975**Solution**

$$r = \frac{12}{4} = 3$$

$$\text{Next} = 324 \times 3 = 972$$

Final Answer

972

MCQ 31

Find the next term: 7, 14, 28, 56, 112, ?

A. 114 **B.** 112**C.** 224 **D.** 226**Solution**

$$r = \frac{14}{7} = 2$$

$$\text{Next} = 112 \times 2 = 224$$

Final Answer

224

MCQ 32

Find the next term: 2, 10, 50, 250, 1250, ?

A. 1255 **B.** 1250**C.** 6255 **D.** 6250**Solution**

$$r = \frac{10}{2} = 5$$

$$\text{Next} = 1250 \times 5 = 6250$$

Final Answer

6250

MCQ 33

Find the next term: 6, 12, 24, 48, 96, ?

A. 192 **B.** 98**C.** 96 **D.** 194**Solution**

$$r = \frac{12}{6} = 2$$

$$\text{Next} = 96 \times 2 = 192$$

Final Answer

192

MCQ 34

Find the next term: 9, 27, 81, 243, 729, ?

- A. 732 B. 2187
C. 729 D. 2190

Solution

$$r = \frac{27}{9} = 3$$

$$\text{Next} = 729 \times 3 = 2187$$

Final Answer

2187

MCQ 35

Find the next term: 10, 20, 40, 80, 160, ?

- A. 162 B. 160
C. 320 D. 322

Solution

$$r = \frac{20}{10} = 2$$

$$\text{Next} = 160 \times 2 = 320$$

Final Answer

320

MCQ 36

Find the next term: 1, 5, 25, 125, 625, ?

- A. 630 B. 625
C. 3130 D. 3125

Solution

$$r = \frac{5}{1} = 5$$

$$\text{Next} = 625 \times 5 = 3125$$

Final Answer

3125

MCQ 37

Find the next term: 8, 16, 32, 64, 128, ?

- A. 256 B. 130
C. 128 D. 258

Solution

$$r = \frac{16}{8} = 2$$

$$\text{Next} = 128 \times 2 = 256$$

Final Answer

256

MCQ 38

Find the next term: 3, 12, 48, 192, 768, ?

- A. 772 B. 3072
C. 768 D. 3076

Solution

$$r = \frac{12}{3} = 4$$

$$\text{Next} = 768 \times 4 = 3072$$

Final Answer

3072

MCQ 39

Find the next term: 5, 15, 45, 135, 405, ?

- A. 408 B. 405
C. 1215 D. 1218

Solution

$$r = \frac{15}{5} = 3$$

$$\text{Next} = 405 \times 3 = 1215$$

Final Answer

1215

MCQ 40

Find the next term: 12, 24, 48, 96, 192, ?

- A. 194 B. 192
C. 386 D. 384

Solution

$$r = \frac{24}{12} = 2$$

$$\text{Next} = 192 \times 2 = 384$$

Final Answer

384

MCQ 41

Find the next term: 2, 6, 18, 54, 162, ?

- A. 486 B. 165
C. 162 D. 489

Solution

$$r = \frac{6}{2} = 3$$

$$\text{Next} = 162 \times 3 = 486$$

Final Answer

486

MCQ 42

Find the next term: 16, 32, 64, 128, 256, ?

- A. 258 B. 512
C. 256 D. 514

Solution

$$r = \frac{32}{16} = 2$$

$$\text{Next} = 256 \times 2 = 512$$

Final Answer

512

MCQ 43

Find the next term: 4, 20, 100, 500, 2500, ?

- A. 2505 B. 2500
C. 12500 D. 12505

Solution

$$r = \frac{20}{4} = 5$$

$$\text{Next} = 2500 \times 5 = 12500$$

Final Answer

12500

MCQ 44

Find the next term: 6, 18, 54, 162, 486, ?

- A. 489 B. 486
C. 1461 D. 1458

Solution

$$r = \frac{18}{6} = 3$$

$$\text{Next} = 486 \times 3 = 1458$$

Final Answer

1458

MCQ 45

Find the next term: 25, 50, 100, 200, 400, ?

- A. 800 B. 402
C. 400 D. 802

Solution

$$r = \frac{50}{25} = 2$$

$$\text{Next} = 400 \times 2 = 800$$

Final Answer

800

Difference and Second-Difference Patterns**MCQ 46**

Find the next term: 1, 4, 9, 16, 25, ?

- A. 34 B. 36
C. 38 D. 37

Solution

$$\Delta : 3, 5, 7, 9$$

The differences rise regularly; next term = 36

Final Answer

36

MCQ 47

Find the next term: 2, 5, 10, 17, 26, ?

- A. 35 B. 39
C. 37 D. 38

Solution

$$\Delta : 3, 5, 7, 9$$

The differences rise regularly; next term = 37

Final Answer

37

MCQ 48

Find the next term: 2, 8, 18, 32, 50, ?

- A. 70 B. 74
C. 68 D. 72

Solution

$$\Delta : 6, 10, 14, 18$$

The differences rise regularly; next term = 72

Final Answer

72

MCQ 49

Find the next term: 3, 9, 19, 33, 51, ?

- A. 73 B. 71
C. 75 D. 69

Solution

$$\Delta : 6, 10, 14, 18$$

The differences rise regularly; next term = 73

Final Answer

73

MCQ 50

Find the next term: 3, 12, 27, 48, 75, ?

- A. 106 B. 108
C. 110 D. 102

Solution

$$\Delta : 9, 15, 21, 27$$

The differences rise regularly; next term = 108

Final Answer

108

MCQ 51

Find the next term: 3, 6, 11, 18, 27, ?

- A. 36 B. 40
C. 38 D. 39

Solution

$$\Delta : 3, 5, 7, 9$$

The differences rise regularly; next term = 38

Final Answer

38

MCQ 52

Find the next term: 5, 11, 21, 35, 53, ?

- A. 73 B. 77
C. 71 D. 75

Solution

$$\Delta : 6, 10, 14, 18$$

The differences rise regularly; next term = 75

Final Answer

75

MCQ 53

Find the next term: 5, 14, 29, 50, 77, ?

- A. 110 B. 108
C. 112 D. 104

Solution

$$\Delta : 9, 15, 21, 27$$

The differences rise regularly; next term = 110

Final Answer

110

MCQ 54

Find the next term: 4, 16, 36, 64, 100, ?

- A. 142 B. 144
C. 146 D. 136

Solution

$$\Delta : 12, 20, 28, 36$$

The differences rise regularly; next term = 144

Final Answer

144

MCQ 55

Find the next term: 5, 17, 37, 65, 101, ?

- A. 143 B. 147
C. 145 D. 137

Solution

$$\Delta : 12, 20, 28, 36$$

The differences rise regularly; next term = 145

Final Answer

145

MCQ 56

Find the next term: 0, 2, 6, 12, 20, ?

- A. 28 B. 32
C. 31 D. 30

Solution

$$\Delta : 2, 4, 6, 8$$

The differences rise regularly; next term = 30

Final Answer

30

MCQ 57

Find the next term: 2, 4, 8, 14, 22, ?

- A. 32 B. 30
C. 34 D. 33

Solution

$$\Delta : 2, 4, 6, 8$$

The differences rise regularly; next term = 32

Final Answer

32

MCQ 58

Find the next term: 5, 7, 11, 17, 25, ?

- A. 33 B. 35
C. 37 D. 36

Solution

$$\Delta : 2, 4, 6, 8$$

The differences rise regularly; next term = 35

Final Answer

35

MCQ 59

Find the next term: 10, 12, 16, 22, 30, ?

- A. 38 B. 42
C. 40 D. 41

Solution

$$\Delta : 2, 4, 6, 8$$

The differences rise regularly; next term = 40

Final Answer

40

MCQ 60

Find the next term: 20, 22, 26, 32, 40, ?

- A. 48 B. 52
C. 51 D. 50

Solution

$$\Delta : 2, 4, 6, 8$$

The differences rise regularly; next term = 50

Final Answer

50

MCQ 61

Find the next term: 30, 32, 36, 42, 50, ?

- A. 60 B. 58
C. 62 D. 61

Solution

$$\Delta : 2, 4, 6, 8$$

The differences rise regularly; next term = 60

Final Answer

60

MCQ 62

Find the next term: 50, 52, 56, 62, 70, ?

- A. 78 B. 80
C. 82 D. 81

Solution

$$\Delta : 2, 4, 6, 8$$

The differences rise regularly; next term = 80

Final Answer

80

MCQ 63

Find the next term: 100, 102, 106, 112, 120, ?

- A. 128 B. 132
C. 130 D. 131

Solution

$$\Delta : 2, 4, 6, 8$$

The differences rise regularly; next term = 130

Final Answer

130

MCQ 64

Find the next term: 7, 9, 13, 19, 27, ?

- A. 35 B. 39
C. 38 D. 37

Solution

$$\Delta : 2, 4, 6, 8$$

The differences rise regularly; next term = 37

Final Answer

37

MCQ 65

Find the next term: 13, 15, 19, 25, 33, ?

- A. 43 B. 41
C. 45 D. 44

Solution

$$\Delta : 2, 4, 6, 8$$

The differences rise regularly; next term = 43

Final Answer

43

Alternating, Interleaved and Power Patterns

MCQ 66

Find the next term: 1, 4, 9, 16, 25, ?

- A. 35 B. 36
C. 37 D. 27

Solution

Pattern: consecutive perfect squares

Next term = 36

Final Answer

36

MCQ 67

Find the next term: 4, 9, 16, 25, 36, ?

- A. 48 B. 50
C. 49 D. 38

Solution

Pattern: consecutive perfect squares

Next term = 49

Final Answer

49

MCQ 68

Find the next term: 9, 16, 25, 36, 49, ?

- A. 63 B. 65
C. 51 D. 64

Solution

Pattern: consecutive perfect squares

Next term = 64

Final Answer

64

MCQ 69

Find the next term: 16, 25, 36, 49, 64, ?

- A. 81 B. 80
C. 82 D. 66

Solution

Pattern: consecutive perfect squares

Next term = 81

Final Answer

81

MCQ 70

Find the next term: 25, 36, 49, 64, 81, ?

- A. 99 B. 100
C. 101 D. 83

Solution

Pattern: consecutive perfect squares

Next term = 100

Final Answer

100

MCQ 71

Find the next term: 1, 8, 27, 64, 125, ?

- A. 215 B. 217
C. 216 D. 127

Solution

Pattern: consecutive perfect cubes

Next term = 216

Final Answer

216

MCQ 72

Find the next term: 8, 27, 64, 125, 216, ?

- A. 342 B. 344
C. 218 D. 343

Solution

Pattern: consecutive perfect cubes

Next term = 343

Final Answer

343

MCQ 73

Find the next term: 27, 64, 125, 216, 343, ?

- A. 512 B. 511
C. 513 D. 345

Solution

Pattern: consecutive perfect cubes

Next term = 512

Final Answer

512

MCQ 74

Find the next term: 64, 125, 216, 343, 512, ?

- A. 728 B. 729
C. 730 D. 514

Solution

Pattern: consecutive perfect cubes

Next term = 729

Final Answer

729

MCQ 75

Find the next term: 125, 216, 343, 512, 729, ?

- A. 999 B. 1001
C. 1000 D. 731

Solution

Pattern: consecutive perfect cubes

Next term = 1000

Final Answer

1000

MCQ 76

Find the next term: 2, 5, 12, 15, 22, ?

- A. 24 B. 26
C. 27 D. 25

Solution

The additions alternate in a repeating cycle.

Next term = 25

Final Answer

25

MCQ 77

Find the next term: 5, 9, 18, 22, 31, ?

- A. 35 B. 34
C. 36 D. 33

Solution

The additions alternate in a repeating cycle.

Next term = 35

Final Answer

35

MCQ 78

Find the next term: 10, 15, 17, 22, 24, ?

- A. 28 B. 29
C. 30 D. 26

Solution

The additions alternate in a repeating cycle.

Next term = 29

Final Answer

29

MCQ 79

Find the next term: 1, 7, 10, 16, 19, ?

- A. 24 B. 26
C. 25 D. 21

Solution

The additions alternate in a repeating cycle.

Next term = 25

Final Answer

25

MCQ 80

Find the next term: 20, 18, 23, 21, 26, ?

- A. 23 B. 25
C. 28 D. 24

Solution

The additions alternate in a repeating cycle.

Next term = 24

Final Answer

24

MCQ 81

Find the next term: 2, 10, 5, 15, 8, ?

- A. 20 B. 19
C. 21 D. 10

Solution

Separate odd and even positions into two sequences.

Next term = 20

Final Answer

20

MCQ 82

Find the next term: 5, 20, 9, 22, 13, ?

A. 23 **B.** 24**C.** 25 **D.** 15**Solution**

Separate odd and even positions into two sequences.

Next term = 24

Final Answer

24

MCQ 83

Find the next term: 1, 3, 6, 10, 11, ?

A. 16 **B.** 18**C.** 17 **D.** 13**Solution**

Separate odd and even positions into two sequences.

Next term = 17

Final Answer

17

MCQ 84

Find the next term: 12, 4, 18, 8, 24, ?

A. 11 **B.** 13**C.** 26 **D.** 12**Solution**

Separate odd and even positions into two sequences.

Next term = 12

Final Answer

12

MCQ 85

Find the next term: 30, 2, 27, 8, 24, ?

A. 14 **B.** 13**C.** 15 **D.** 26**Solution**

Separate odd and even positions into two sequences.

Next term = 14

Final Answer

14

Mixed High-Yield and Past-Paper-Style Patterns**MCQ 86**

Find the next term: 16, 24, 32, 40, 48, ?

A. 57 **B.** 56**C.** 55 **D.** 48**Solution**

Rule: + 8

Next term = 56

Final Answer

56

MCQ 87

Find the next term: 1, 8, 4, 27, 9, ?

A. 65 **B.** 63**C.** 64 **D.** 9**Solution**Rule: *interleaved squares/cubes*

Next term = 64

Final Answer

64

MCQ 88

Find the next term: 3, 6, 8, 16, 18, ?

A. 37 **B.** 35**C.** 18 **D.** 36**Solution**Rule: *alternating $\times 2, +2$*

Next term = 36

Final Answer

36

MCQ 89

Find the next term: 6, 11, 21, 36, 56, ?

A. 81 **B.** 82**C.** 80 **D.** 56**Solution**

Rule: + 5, +10, +15, +20, +25

Next term = 81

Final Answer

81

MCQ 90

Find the next term: 2, 6, 12, 20, 30, ?

- A. 43 B. 42
C. 41 D. 30

SolutionRule: $n(n + 1)$

Next term = 42

Final Answer

42

MCQ 91

Find the next term: 1, 2, 6, 24, 120, ?

- A. 721 B. 719
C. 720 D. 120

SolutionRule: *factorial*

Next term = 720

Final Answer

720

MCQ 92

Find the next term: 2, 5, 10, 17, 26, ?

- A. 38 B. 36
C. 26 D. 37

SolutionRule: $+3, +5, +7, +9, +11$

Next term = 37

Final Answer

37

MCQ 93

Find the next term: 100, 90, 78, 64, 48, ?

- A. 30 B. 32
C. 28 D. 48

SolutionDifferences: $-10, -12, -14, -16$ Next difference = -18 Next term = $48 - 18 = 30$ **Final Answer**

30

MCQ 94

Find the next term: 4, 9, 16, 25, 36, ?

- A. 50 B. 49
C. 48 D. 36

SolutionRule: *squares*

Next term = 49

Final Answer

49

MCQ 95

Find the next term: 2, 8, 18, 32, 50, ?

- A. 73 B. 71
C. 72 D. 50

SolutionRule: $2n^2$

Next term = 72

Final Answer

72

MCQ 96

Find the next term: 81, 27, 9, 3, 1, ?

- A. $\frac{4}{3}$ B. $\frac{-2}{3}$
C. 1 D. $\frac{1}{3}$

SolutionRule: $\div 3$ Next term = $\frac{1}{3}$ **Final Answer** $\frac{1}{3}$ **MCQ 97**

Find the next term: 5, 10, 20, 40, 80, ?

- A. 160 B. 161
C. 159 D. 80

SolutionRule: $\times 2$

Next term = 160

Final Answer

160

MCQ 98

Find the next term: 7, 14, 12, 24, 22, ?

- A. 45 B. 44
C. 43 D. 22

SolutionRule: $\times 2, -2$ alternating

Next term = 44

Final Answer

44

MCQ 99

Find the next term: 1, 4, 10, 22, 46, ?

- A. 95 B. 93
C. 94 D. 46

SolutionRule: $\times 2, +2$

Next term = 94

Final Answer

94

MCQ 100

Find the next term: 2, 3, 5, 8, 12, ?

- A. 18 B. 16
C. 12 D. 17

SolutionRule: $+1, +2, +3, +4, +5$

Next term = 17

Final Answer

17

RAPID REVISION GRID | NUMBER SERIES

AP Constant first difference.

GP Constant ratio.

Second difference A constant second difference usually signals a quadratic pattern.

Alternating Analyze positions 1,3,5,... and 2,4,6,... separately.

Power cycles Look for squares, cubes and alternating operations.

Final check The proposed rule must reproduce all given terms, not only the last two.

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GEOMETRY MCQs: LINES, ANGLES, TRIANGLES, POLYGONS & CIRCLES | 100 FULLY SOLVED MCQs**Fast Foundation for One-Paper Exams****Straight line**

Angles on a straight line = 180°

Around a point

Angles around a point = 360°

Triangle

$$A + B + C = 180^\circ$$

Polygon interior sum

$$(n - 2)180^\circ$$

Pythagoras

$$a^2 + b^2 = c^2$$

Circle basics

$$d = 2r, \quad \angle \text{ in a semicircle} = 90^\circ$$

Lines and Angles**MCQ 1**

One angle on a straight line is 35° . Find the adjacent angle.

- A. 145° B. 155°
C. 135° D. 35°

Solution

$$x + 35^\circ = 180^\circ$$

$$x = 145^\circ$$

Final Answer**145°****MCQ 2**

One angle on a straight line is 42° . Find the adjacent angle.

- A. 148° B. 138°
C. 128° D. 42°

Solution

$$x + 42^\circ = 180^\circ$$

$$x = 138^\circ$$

Final Answer**138°****MCQ 3**

One angle on a straight line is 55° . Find the adjacent angle.

- A. 135° B. 115°
C. 125° D. 55°

Solution

$$x + 55^\circ = 180^\circ$$

$$x = 125^\circ$$

Final Answer**125°****MCQ 4**

One angle on a straight line is 68° . Find the adjacent angle.

- A. 122° B. 102°
C. 68° D. 112°

Solution

$$x + 68^\circ = 180^\circ$$

$$x = 112^\circ$$

Final Answer**112°****MCQ 5**

One angle on a straight line is 73° . Find the adjacent angle.

- A. 107° B. 117°
C. 97° D. 73°

Solution

$$x + 73^\circ = 180^\circ$$

$$x = 107^\circ$$

Final Answer**107°****MCQ 6**

One angle on a straight line is 84° . Find the adjacent angle.

- A. 106° B. 96°
C. 86° D. 84°

Solution

$$x + 84^\circ = 180^\circ$$

$$x = 96^\circ$$

Final Answer**96°****MCQ 7**

One angle on a straight line is 95° . Find the adjacent angle.

- A. 95° B. 75°
C. 85° D. 86°

Solution

$$x + 95^\circ = 180^\circ$$

$$x = 85^\circ$$

Final Answer**85°****MCQ 8**

One angle on a straight line is 110° . Find the adjacent angle.

- A. 80° B. 60°
C. 110° D. 70°

Solution

$$x + 110^\circ = 180^\circ$$

$$x = 70^\circ$$

Final Answer**70°**

MCQ 9

One angle on a straight line is 125° . Find the adjacent angle.

- A. 55° B. 65°
C. 45° D. 125°

Solution

$$x + 125^\circ = 180^\circ$$

$$x = 55^\circ$$

Final Answer**55°****MCQ 10**

One angle on a straight line is 145° . Find the adjacent angle.

- A. 45° B. 35°
C. 25° D. 145°

Solution

$$x + 145^\circ = 180^\circ$$

$$x = 35^\circ$$

Final Answer**35°****MCQ 11**

Three angles around a point are $80^\circ, 90^\circ, 70^\circ$. Find the fourth angle.

- A. 130° B. 110°
C. 120° D. 60°

Solution

$$x + 80 + 90 + 70 = 360$$

$$x = 120^\circ$$

Final Answer**120°****MCQ 12**

Three angles around a point are $45^\circ, 120^\circ, 95^\circ$. Find the fourth angle.

- A. 110° B. 90°
C. 80° D. 100°

Solution

$$x + 45 + 120 + 95 = 360$$

$$x = 100^\circ$$

Final Answer**100°****MCQ 13**

Three angles around a point are $100^\circ, 85^\circ, 60^\circ$. Find the fourth angle.

- A. 115° B. 125°
C. 105° D. 65°

Solution

$$x + 100 + 85 + 60 = 360$$

$$x = 115^\circ$$

Final Answer**115°****MCQ 14**

Three angles around a point are $72^\circ, 88^\circ, 110^\circ$. Find the fourth angle.

- A. 100° B. 90°
C. 80° D. 91°

Solution

$$x + 72 + 88 + 110 = 360$$

$$x = 90^\circ$$

Final Answer**90°****MCQ 15**

Three angles around a point are $130^\circ, 50^\circ, 90^\circ$. Find the fourth angle.

- A. 100° B. 80°
C. 90° D. 91°

Solution

$$x + 130 + 50 + 90 = 360$$

$$x = 90^\circ$$

Final Answer**90°****MCQ 16**

An angle is 25° . Find its complement.

- A. 75° B. 55°
C. 115° D. 65°

Solution

$$x + 25 = 90$$

$$x = 65^\circ$$

Final Answer**65°**

MCQ 17

An angle is 38° . Find its complement.

- A. 52° B. 62°
C. 42° D. 128°

Solution

$$x + 38 = 90$$

$$x = 52^\circ$$

Final Answer **52°** **MCQ 18**

An angle is 47° . Find its complement.

- A. 53° B. 43°
C. 33° D. 137°

Solution

$$x + 47 = 90$$

$$x = 43^\circ$$

Final Answer **43°** **MCQ 19**

An angle is 59° . Find its complement.

- A. 41° B. 21°
C. 31° D. 149°

Solution

$$x + 59 = 90$$

$$x = 31^\circ$$

Final Answer **31°** **MCQ 20**

An angle is 64° . Find its complement.

- A. 36° B. 16°
C. 154° D. 26°

Solution

$$x + 64 = 90$$

$$x = 26^\circ$$

Final Answer **26°** **Triangles and Pythagoras****MCQ 21**

Two angles of a triangle are 50° and 60° . Find the third angle.

- A. 70° B. 75°
C. 65° D. 80°

Solution

$$x + 50 + 60 = 180$$

$$x = 70^\circ$$

Final Answer **70°** **MCQ 22**

Two angles of a triangle are 35° and 75° . Find the third angle.

- A. 75° B. 70°
C. 65° D. 80°

Solution

$$x + 35 + 75 = 180$$

$$x = 70^\circ$$

Final Answer **70°** **MCQ 23**

Two angles of a triangle are 45° and 45° . Find the third angle.

- A. 95° B. 85°
C. 90° D. 100°

Solution

$$x + 45 + 45 = 180$$

$$x = 90^\circ$$

Final Answer **90°** **MCQ 24**

Two angles of a triangle are 70° and 55° . Find the third angle.

- A. 60° B. 50°
C. 65° D. 55°

Solution

$$x + 70 + 55 = 180$$

$$x = 55^\circ$$

Final Answer **55°**

MCQ 25

Two angles of a triangle are 30° and 90° . Find the third angle.

- A. 60° B. 65°
C. 55° D. 70°

Solution

$$x + 30 + 90 = 180$$

$$x = 60^\circ$$

Final Answer**60°****MCQ 26**

Two angles of a triangle are 65° and 45° . Find the third angle.

- A. 75° B. 70°
C. 65° D. 80°

Solution

$$x + 65 + 45 = 180$$

$$x = 70^\circ$$

Final Answer**70°****MCQ 27**

Two angles of a triangle are 40° and 80° . Find the third angle.

- A. 65° B. 55°
C. 60° D. 70°

Solution

$$x + 40 + 80 = 180$$

$$x = 60^\circ$$

Final Answer**60°****MCQ 28**

Two angles of a triangle are 25° and 95° . Find the third angle.

- A. 65° B. 55°
C. 70° D. 60°

Solution

$$x + 25 + 95 = 180$$

$$x = 60^\circ$$

Final Answer**60°****MCQ 29**

Two angles of a triangle are 58° and 62° . Find the third angle.

- A. 60° B. 65°
C. 55° D. 70°

Solution

$$x + 58 + 62 = 180$$

$$x = 60^\circ$$

Final Answer**60°****MCQ 30**

Two angles of a triangle are 72° and 48° . Find the third angle.

- A. 65° B. 60°
C. 55° D. 70°

Solution

$$x + 72 + 48 = 180$$

$$x = 60^\circ$$

Final Answer**60°****MCQ 31**

Two angles of a triangle are 33° and 77° . Find the third angle.

- A. 75° B. 65°
C. 70° D. 80°

Solution

$$x + 33 + 77 = 180$$

$$x = 70^\circ$$

Final Answer**70°****MCQ 32**

Two angles of a triangle are 85° and 35° . Find the third angle.

- A. 65° B. 55°
C. 70° D. 60°

Solution

$$x + 85 + 35 = 180$$

$$x = 60^\circ$$

Final Answer**60°**

MCQ 33

Two angles of a triangle are 20° and 110° . Find the third angle.

- A. 50° B. 55°
C. 45° D. 60°

Solution

$$x + 20 + 110 = 180$$

$$x = 50^\circ$$

Final Answer**50°****MCQ 34**

Two angles of a triangle are 67° and 53° . Find the third angle.

- A. 65° B. 60°
C. 55° D. 70°

Solution

$$x + 67 + 53 = 180$$

$$x = 60^\circ$$

Final Answer**60°****MCQ 35**

Two angles of a triangle are 49° and 71° . Find the third angle.

- A. 65° B. 55°
C. 60° D. 70°

Solution

$$x + 49 + 71 = 180$$

$$x = 60^\circ$$

Final Answer**60°****MCQ 36**

An isosceles triangle has vertex angle 20° . Find each base angle.

- A. 85° B. 75°
C. 90° D. 80°

Solution

$$2x + 20 = 180$$

$$x = \frac{180 - 20}{2} = 80^\circ$$

Final Answer**80°****MCQ 37**

An isosceles triangle has vertex angle 30° . Find each base angle.

- A. 75° B. 80°
C. 70° D. 85°

Solution

$$2x + 30 = 180$$

$$x = \frac{180 - 30}{2} = 75^\circ$$

Final Answer**75°****MCQ 38**

An isosceles triangle has vertex angle 40° . Find each base angle.

- A. 75° B. 70°
C. 65° D. 80°

Solution

$$2x + 40 = 180$$

$$x = \frac{180 - 40}{2} = 70^\circ$$

Final Answer**70°****MCQ 39**

An isosceles triangle has vertex angle 50° . Find each base angle.

- A. 70° B. 60°
C. 65° D. 75°

Solution

$$2x + 50 = 180$$

$$x = \frac{180 - 50}{2} = 65^\circ$$

Final Answer**65°**

MCQ 40

An isosceles triangle has vertex angle 60° . Find each base angle.

- A. 65° B. 55°
C. 70° D. 60°

Solution

$$2x + 60 = 180$$

$$x = \frac{180 - 60}{2} = 60^\circ$$

Final Answer

60°

MCQ 41

A right triangle has perpendicular sides 3 cm and 4 cm. Find the hypotenuse.

- A. 5 cm B. 10 cm
C. 1 cm D. 15 cm

Solution

$$c^2 = 3^2 + 4^2 = 25 = 5^2$$

$$c = 5 \text{ cm}$$

Final Answer

5 cm

MCQ 42

A right triangle has perpendicular sides 5 cm and 12 cm. Find the hypotenuse.

- A. 18 cm B. 13 cm
C. 8 cm D. 23 cm

Solution

$$c^2 = 5^2 + 12^2 = 169 = 13^2$$

$$c = 13 \text{ cm}$$

Final Answer

13 cm

MCQ 43

A right triangle has perpendicular sides 8 cm and 15 cm. Find the hypotenuse.

- A. 22 cm B. 12 cm
C. 17 cm D. 27 cm

Solution

$$c^2 = 8^2 + 15^2 = 289 = 17^2$$

$$c = 17 \text{ cm}$$

Final Answer

17 cm

MCQ 44

A right triangle has perpendicular sides 7 cm and 24 cm. Find the hypotenuse.

- A. 30 cm B. 20 cm
C. 35 cm D. 25 cm

Solution

$$c^2 = 7^2 + 24^2 = 625 = 25^2$$

$$c = 25 \text{ cm}$$

Final Answer

25 cm

MCQ 45

A right triangle has perpendicular sides 9 cm and 40 cm. Find the hypotenuse.

- A. 41 cm B. 46 cm
C. 36 cm D. 51 cm

Solution

$$c^2 = 9^2 + 40^2 = 1681 = 41^2$$

$$c = 41 \text{ cm}$$

Final Answer

41 cm

Quadrilaterals and Polygons**MCQ 46**

Find the sum of the interior angles of a 4-sided polygon.

- A. 180° B. 360°
C. 540° D. 720°

Solution

$$(n - 2)180^\circ = (4 - 2)180^\circ = 360^\circ$$

Final Answer

360°

MCQ 47

Find the sum of the interior angles of a 5-sided polygon.

- A. 360° B. 720°
C. 540° D. 900°

Solution

$$(n - 2)180^\circ = (5 - 2)180^\circ = 540^\circ$$

Final Answer

540°

MCQ 48

Find the sum of the interior angles of a 6-sided polygon.

- A. 540° B. 900°
C. 1080° D. 720°

Solution

$$(n - 2)180^\circ = (6 - 2)180^\circ = 720^\circ$$

Final Answer**720°****MCQ 49**

Find the sum of the interior angles of a 7-sided polygon.

- A. 900° B. 720°
C. 1080° D. 1260°

Solution

$$(n - 2)180^\circ = (7 - 2)180^\circ = 900^\circ$$

Final Answer**900°****MCQ 50**

Find the sum of the interior angles of a 8-sided polygon.

- A. 900° B. 1080°
C. 1260° D. 1440°

Solution

$$(n - 2)180^\circ = (8 - 2)180^\circ = 1080^\circ$$

Final Answer**1080°****MCQ 51**

Find the sum of the interior angles of a 9-sided polygon.

- A. 1080° B. 1440°
C. 1260° D. 1620°

Solution

$$(n - 2)180^\circ = (9 - 2)180^\circ = 1260^\circ$$

Final Answer**1260°****MCQ 52**

Find the sum of the interior angles of a 10-sided polygon.

- A. 1260° B. 1620°
C. 1800° D. 1440°

Solution

$$(n - 2)180^\circ = (10 - 2)180^\circ = 1440^\circ$$

Final Answer**1440°****MCQ 53**

Find the sum of the interior angles of a 11-sided polygon.

- A. 1620° B. 1440°
C. 1800° D. 1980°

Solution

$$(n - 2)180^\circ = (11 - 2)180^\circ = 1620^\circ$$

Final Answer**1620°****MCQ 54**

Find the sum of the interior angles of a 12-sided polygon.

- A. 1620° B. 1800°
C. 1980° D. 2160°

Solution

$$(n - 2)180^\circ = (12 - 2)180^\circ = 1800^\circ$$

Final Answer**1800°****MCQ 55**

Find the sum of the interior angles of a 13-sided polygon.

- A. 1800° B. 2160°
C. 1980° D. 2340°

Solution

$$(n - 2)180^\circ = (13 - 2)180^\circ = 1980^\circ$$

Final Answer**1980°**

MCQ 56

Find each interior angle of a regular 3-gon.

- A. 70° B. 50°
 C. 120° D. 60°

Solution

$$\text{Exterior} = \frac{360^\circ}{3} = 120^\circ$$

$$\text{Interior} = 180^\circ - 120^\circ = 60^\circ$$

Final Answer**60°****MCQ 57**

Find each exterior angle of a regular 4-gon.

- A. 90° B. 100°
 C. 80° D. 91°

Solution

$$\text{Exterior} = \frac{360^\circ}{4} = 90^\circ$$

Final Answer**90°****MCQ 58**

Find each interior angle of a regular 5-gon.

- A. 118° B. 108°
 C. 98° D. 72°

Solution

$$\text{Exterior} = \frac{360^\circ}{5} = 72^\circ$$

$$\text{Interior} = 180^\circ - 72^\circ = 108^\circ$$

Final Answer**108°****MCQ 59**

Find each exterior angle of a regular 6-gon.

- A. 70° B. 50°
 C. 60° D. 120°

Solution

$$\text{Exterior} = \frac{360^\circ}{6} = 60^\circ$$

Final Answer**60°****MCQ 60**

Find each exterior angle of a regular 8-gon.

- A. 55° B. 35°
 C. 135° D. 45°

Solution

$$\text{Exterior} = \frac{360^\circ}{8} = 45^\circ$$

Final Answer**45°****MCQ 61**

Find each interior angle of a regular 9-gon.

- A. 140° B. 150°
 C. 130° D. 40°

Solution

$$\text{Exterior} = \frac{360^\circ}{9} = 40^\circ$$

$$\text{Interior} = 180^\circ - 40^\circ = 140^\circ$$

Final Answer**140°****MCQ 62**

Find each exterior angle of a regular 10-gon.

- A. 46° B. 36°
 C. 26° D. 144°

Solution

$$\text{Exterior} = \frac{360^\circ}{10} = 36^\circ$$

Final Answer**36°****MCQ 63**

Find each exterior angle of a regular 12-gon.

- A. 40° B. 20°
 C. 30° D. 150°

Solution

$$\text{Exterior} = \frac{360^\circ}{12} = 30^\circ$$

Final Answer**30°**

MCQ 64

Find each interior angle of a regular 15-gon.

- A. 166° B. 146°
 C. 24° D. 156°

Solution

$$\text{Exterior} = \frac{360^\circ}{15} = 24^\circ$$

$$\text{Interior} = 180^\circ - 24^\circ = 156^\circ$$

Final Answer**156°****MCQ 65**

Find each exterior angle of a regular 18-gon.

- A. 20° B. 30°
 C. 10° D. 160°

Solution

$$\text{Exterior} = \frac{360^\circ}{18} = 20^\circ$$

Final Answer**20°****Circles and Chords****MCQ 66**

A circle has radius 3 cm. Find its diameter.

- A. 16 cm B. 6 cm
 C. 0 cm D. 12 cm

Solution

$$d = 2r = 2(3) = 6 \text{ cm}$$

Final Answer**6 cm****MCQ 67**

A circle has radius 5 cm. Find its diameter.

- A. 20 cm B. 0 cm
 C. 10 cm D. 11 cm

Solution

$$d = 2r = 2(5) = 10 \text{ cm}$$

Final Answer**10 cm****MCQ 68**

A circle has radius 7 cm. Find its diameter.

- A. 24 cm B. 4 cm
 C. 28 cm D. 14 cm

Solution

$$d = 2r = 2(7) = 14 \text{ cm}$$

Final Answer**14 cm****MCQ 69**

A circle has radius 9 cm. Find its diameter.

- A. 18 cm B. 28 cm
 C. 8 cm D. 36 cm

Solution

$$d = 2r = 2(9) = 18 \text{ cm}$$

Final Answer**18 cm****MCQ 70**

A circle has radius 12 cm. Find its diameter.

- A. 34 cm B. 24 cm
 C. 14 cm D. 48 cm

Solution

$$d = 2r = 2(12) = 24 \text{ cm}$$

Final Answer**24 cm****MCQ 71**

A circle has diameter 8 cm. Find its radius.

- A. 14 cm B. 0 cm
 C. 4 cm D. 8 cm

Solution

$$r = \frac{d}{2} = \frac{8}{2} = 4 \text{ cm}$$

Final Answer**4 cm****MCQ 72**

A circle has diameter 14 cm. Find its radius.

- A. 17 cm B. 0 cm
 C. 14 cm D. 7 cm

Solution

$$r = \frac{d}{2} = \frac{14}{2} = 7 \text{ cm}$$

Final Answer**7 cm**

MCQ 73

A circle has diameter 20 cm. Find its radius.

- A. 10 cm B. 20 cm
C. 0 cm D. 11 cm

Solution

$$r = \frac{d}{2} = \frac{20}{2} = 10 \text{ cm}$$

Final Answer

10 cm

MCQ 74

A circle has diameter 30 cm. Find its radius.

- A. 25 cm B. 15 cm
C. 5 cm D. 30 cm

Solution

$$r = \frac{d}{2} = \frac{30}{2} = 15 \text{ cm}$$

Final Answer

15 cm

MCQ 75

A circle has diameter 50 cm. Find its radius.

- A. 35 cm B. 15 cm
C. 25 cm D. 50 cm

Solution

$$r = \frac{d}{2} = \frac{50}{2} = 25 \text{ cm}$$

Final Answer

25 cm

MCQ 76

An angle at the circumference standing on an arc is 30° . Find the angle at the center on the same arc.

- A. 70° B. 50°
C. 120° D. 60°

Solution

$$\theta_c = 2\theta_s = 2(30) = 60^\circ$$

Final Answer 60° **MCQ 77**

An angle at the circumference standing on an arc is 40° . Find the angle at the center on the same arc.

- A. 80° B. 90°
C. 70° D. 160°

Solution

$$\theta_c = 2\theta_s = 2(40) = 80^\circ$$

Final Answer 80° **MCQ 78**

An angle at the circumference standing on an arc is 45° . Find the angle at the center on the same arc.

- A. 100° B. 90°
C. 80° D. 180°

Solution

$$\theta_c = 2\theta_s = 2(45) = 90^\circ$$

Final Answer 90° **MCQ 79**

An angle at the circumference standing on an arc is 55° . Find the angle at the center on the same arc.

- A. 120° B. 100°
C. 110° D. 220°

Solution

$$\theta_c = 2\theta_s = 2(55) = 110^\circ$$

Final Answer 110° **MCQ 80**

An angle at the circumference standing on an arc is 70° . Find the angle at the center on the same arc.

- A. 150° B. 130°
C. 280° D. 140°

Solution

$$\theta_c = 2\theta_s = 2(70) = 140^\circ$$

Final Answer 140°

MCQ 81

An angle at the center is 80° . Find the angle at the circumference on the same arc.

- A. 40° B. 50°
C. 30° D. 80°

Solution

$$\theta_s = \frac{\theta_c}{2} = \frac{80}{2} = 40^\circ$$

Final Answer**40°****MCQ 82**

An angle at the center is 100° . Find the angle at the circumference on the same arc.

- A. 60° B. 50°
C. 40° D. 100°

Solution

$$\theta_s = \frac{\theta_c}{2} = \frac{100}{2} = 50^\circ$$

Final Answer**50°****MCQ 83**

An angle at the center is 120° . Find the angle at the circumference on the same arc.

- A. 70° B. 50°
C. 60° D. 120°

Solution

$$\theta_s = \frac{\theta_c}{2} = \frac{120}{2} = 60^\circ$$

Final Answer**60°****MCQ 84**

An angle at the center is 140° . Find the angle at the circumference on the same arc.

- A. 80° B. 60°
C. 140° D. 70°

Solution

$$\theta_s = \frac{\theta_c}{2} = \frac{140}{2} = 70^\circ$$

Final Answer**70°****MCQ 85**

An angle at the center is 160° . Find the angle at the circumference on the same arc.

- A. 80° B. 90°
C. 70° D. 160°

Solution

$$\theta_s = \frac{\theta_c}{2} = \frac{160}{2} = 80^\circ$$

Final Answer**80°****Mixed High-Yield Geometry****MCQ 86**

How many degrees are in a right angle?

- A. 45 B. 90
C. 180 D. 360

SolutionRight angle = 90° **Final Answer****90°****MCQ 87**

How many degrees are in a full turn?

- A. 90 B. 180
C. 360 D. 270

SolutionFull turn = 360° **Final Answer****360°****MCQ 88**

How many sides does a hexagon have?

- A. 5 B. 7
C. 8 D. 6

Solution

Hexagon = 6 sides

Final Answer**6**

MCQ 89

How many diagonals does a quadrilateral have?

- A. 2 B. 1
C. 3 D. 4

Solution

$$\frac{n(n-3)}{2} = \frac{4(1)}{2} = 2$$

Final Answer

2

MCQ 90

How many diagonals does a pentagon have?

- A. 4 B. 5
C. 6 D. 10

Solution

$$\frac{5(5-3)}{2} = 5$$

Final Answer

5

MCQ 91

What is the angle in a semicircle?

- A. 45 B. 60
C. 90 D. 180

Solution

$$\angle \text{ in a semicircle} = 90^\circ$$

Final Answer

90°

MCQ 92

The tangent to a circle is perpendicular to the radius at the point of contact. What is the angle?

- A. 45 B. 60
C. 180 D. 90

Solution

$$\text{Radius} \perp \text{tangent} \Rightarrow 90^\circ$$

Final Answer

90°

MCQ 93

A square has how many lines of symmetry?

- A. 4 B. 2
C. 3 D. 8

Solution

Square has 4 symmetry axes

Final Answer

4

MCQ 94

An equilateral triangle has how many lines of symmetry?

- A. 1 B. 3
C. 2 D. 6

Solution

Equilateral triangle has 3

Final Answer

3

MCQ 95

Find the distance between (0, 0) and (3, 4).

- A. 4 B. 6
C. 5 D. 7

Solution

$$d = \sqrt{3^2 + 4^2} = \sqrt{25} = 5$$

Final Answer

5

MCQ 96

Find the midpoint of (2, 4) and (6, 8).

- A. (8, 12) B. (2, 2)
C. (3, 4) D. (4, 6)

Solution

$$M = \left(\frac{2+6}{2}, \frac{4+8}{2} \right) = (4, 6)$$

Final Answer

(4, 6)

MCQ 97

A triangle with all three equal sides is called what?

- A. Equilateral B. Isosceles
C. Scalene D. Right

Solution

$$a = b = c \Rightarrow \text{equilateral triangle}$$

Final Answer

Equilateral

MCQ 98

A quadrilateral with both pairs of opposite sides parallel is a?

- A. Kite B. Parallelogram
C. Trapezoid only D. Triangle

Solution

Two pairs of opposite parallel sides $\Rightarrow$ parallelogram

Final Answer

Parallelogram

MCQ 99

The sum of exterior angles of any convex polygon is?

- A. 180 B. 540
C. 360 D. 720

Solution

$$\sum \text{exterior angles} = 360^\circ$$

Final Answer

360°

MCQ 100

If two lines are perpendicular, the angle between them is?

- A. 0° B. 45°
C. 180° D. 90°

Solution

$$\text{Perpendicular lines} \Rightarrow 90^\circ$$

Final Answer

90°

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Parallel lines Corresponding and alternate angles are equal; co-interior angles sum to 180° .

Triangle Exterior angle = sum of the two opposite interior angles.

Regular polygon

$$\text{Exterior angle} = 360^\circ/n$$

Right triangle

$$c = \sqrt{a^2 + b^2}$$

Circle Angle at the center is twice the angle at the circumference on the same arc.

Exam check Draw a tiny sketch and mark all known equal/supplementary angles before calculating.

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MENSURATION MCQs **PERIMETER, AREA, SURFACE AREA &** **VOLUME**

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MENSURATION MCQs: PERIMETER, AREA, SURFACE AREA & VOLUME | 100 FULLY SOLVED MCQs**Fast Foundation for One-Paper Exams****Rectangle and square**

$$P_{rect} = 2(l + w), A_{rect} = lw, P_{sq} = 4a, A_{sq} = a^2$$

Triangle

$$A = \frac{1}{2}bh$$

Circle

$$C = 2\pi r, A = \pi r^2$$

Cuboid and cube

$$V = lwh, V_{cube} = a^3$$

Cylinder

$$V = \pi r^2 h, TSA = 2\pi r(r + h)$$

Cone and sphere

$$V_{cone} = \frac{1}{3}\pi r^2 h, V_{sphere} = \frac{4}{3}\pi r^3$$

Perimeter and Area: Rectangles and Squares

MCQ 1

Find the area of a rectangle of length 12 cm and width 7 cm.

- A. 84 cm^2 B. 38 cm^2
C. 96 cm^2 D. 77 cm^2

Solution

$$A = lw = 12(7) = 84 \text{ cm}^2$$

Final Answer

84 cm^2

MCQ 2

Find the area of a rectangle of length 15 cm and width 9 cm.

- A. 48 cm^2 B. 135 cm^2
C. 150 cm^2 D. 126 cm^2

Solution

$$A = lw = 15(9) = 135 \text{ cm}^2$$

Final Answer

135 cm^2

MCQ 3

Find the area of a rectangle of length 20 cm and width 6 cm.

- A. 52 cm^2 B. 140 cm^2
C. 120 cm^2 D. 114 cm^2

Solution

$$A = lw = 20(6) = 120 \text{ cm}^2$$

Final Answer

120 cm^2

MCQ 4

Find the area of a rectangle of length 18 cm and width 11 cm.

- A. 58 cm^2 B. 216 cm^2
C. 187 cm^2 D. 198 cm^2

Solution

$$A = lw = 18(11) = 198 \text{ cm}^2$$

Final Answer

198 cm^2

MCQ 5

Find the area of a rectangle of length 25 cm and width 8 cm.

- A. 200 cm^2 B. 66 cm^2
C. 225 cm^2 D. 192 cm^2

Solution

$$A = lw = 25(8) = 200 \text{ cm}^2$$

Final Answer

200 cm^2

MCQ 6

Find the area of a rectangle of length 14 cm and width 10 cm.

- A. 48 cm^2 B. 140 cm^2
C. 154 cm^2 D. 130 cm^2

Solution

$$A = lw = 14(10) = 140 \text{ cm}^2$$

Final Answer

140 cm^2

MCQ 7

Find the area of a rectangle of length 30 cm and width 12 cm.

- A. 84 cm^2 B. 390 cm^2
C. 360 cm^2 D. 348 cm^2

Solution

$$A = lw = 30(12) = 360 \text{ cm}^2$$

Final Answer

360 cm^2

MCQ 8

Find the area of a rectangle of length 16 cm and width 13 cm.

- A. 58 cm^2 B. 224 cm^2
C. 195 cm^2 D. 208 cm^2

Solution

$$A = lw = 16(13) = 208 \text{ cm}^2$$

Final Answer

208 cm^2

MCQ 9

Find the area of a rectangle of length 22 cm and width 5 cm.

- A. 110 cm^2 B. 54 cm^2
C. 132 cm^2 D. 105 cm^2

Solution

$$A = lw = 22(5) = 110 \text{ cm}^2$$

Final Answer**110 cm²****MCQ 10**

Find the area of a rectangle of length 24 cm and width 15 cm.

- A. 78 cm^2 B. 360 cm^2
C. 384 cm^2 D. 345 cm^2

Solution

$$A = lw = 24(15) = 360 \text{ cm}^2$$

Final Answer**360 cm²****MCQ 11**

Find the perimeter of a rectangle of length 8 cm and width 5 cm.

- A. 13 cm B. 40 cm
C. 26 cm D. 28 cm

Solution

$$P = 2(l + w) = 2(8 + 5) = 26 \text{ cm}$$

Final Answer**26 cm****MCQ 12**

Find the perimeter of a rectangle of length 13 cm and width 7 cm.

- A. 20 cm B. 91 cm
C. 42 cm D. 40 cm

Solution

$$P = 2(l + w) = 2(13 + 7) = 40 \text{ cm}$$

Final Answer**40 cm****MCQ 13**

Find the perimeter of a rectangle of length 21 cm and width 9 cm.

- A. 60 cm B. 30 cm
C. 189 cm D. 62 cm

Solution

$$P = 2(l + w) = 2(21 + 9) = 60 \text{ cm}$$

Final Answer**60 cm****MCQ 14**

Find the perimeter of a rectangle of length 17 cm and width 12 cm.

- A. 29 cm B. 58 cm
C. 204 cm D. 60 cm

Solution

$$P = 2(l + w) = 2(17 + 12) = 58 \text{ cm}$$

Final Answer**58 cm****MCQ 15**

Find the perimeter of a rectangle of length 26 cm and width 14 cm.

- A. 40 cm B. 364 cm
C. 80 cm D. 82 cm

Solution

$$P = 2(l + w) = 2(26 + 14) = 80 \text{ cm}$$

Final Answer**80 cm****MCQ 16**

Find the perimeter of a rectangle of length 10 cm and width 6 cm.

- A. 16 cm B. 60 cm
C. 34 cm D. 32 cm

Solution

$$P = 2(l + w) = 2(10 + 6) = 32 \text{ cm}$$

Final Answer**32 cm**

MCQ 17

Find the perimeter of a rectangle of length 19 cm and width 8 cm.

- A. 54 cm B. 27 cm
C. 152 cm D. 56 cm

Solution

$$P = 2(l + w) = 2(19 + 8) = 54 \text{ cm}$$

Final Answer

54 cm

MCQ 18

Find the perimeter of a rectangle of length 23 cm and width 11 cm.

- A. 34 cm B. 68 cm
C. 253 cm D. 70 cm

Solution

$$P = 2(l + w) = 2(23 + 11) = 68 \text{ cm}$$

Final Answer

68 cm

MCQ 19

Find the perimeter of a rectangle of length 30 cm and width 20 cm.

- A. 50 cm B. 600 cm
C. 100 cm D. 102 cm

Solution

$$P = 2(l + w) = 2(30 + 20) = 100 \text{ cm}$$

Final Answer

100 cm

MCQ 20

Find the perimeter of a rectangle of length 16 cm and width 4 cm.

- A. 20 cm B. 64 cm
C. 42 cm D. 40 cm

Solution

$$P = 2(l + w) = 2(16 + 4) = 40 \text{ cm}$$

Final Answer

40 cm

MCQ 21

Find the area of a square of side 6 cm.

- A. 36 cm^2 B. 42 cm^2
C. 30 cm^2 D. 12 cm^2

Solution

$$A = a^2 = 6^2 = 36 \text{ cm}^2$$

Final Answer36 cm²**MCQ 22**

Find the perimeter of a square of side 9 cm.

- A. 45 cm B. 36 cm
C. 27 cm D. 18 cm

Solution

$$P = 4a = 4(9) = 36 \text{ cm}$$

Final Answer

36 cm

MCQ 23

Find the area of a square of side 12 cm.

- A. 156 cm^2 B. 132 cm^2
C. 144 cm^2 D. 24 cm^2

Solution

$$A = a^2 = 12^2 = 144 \text{ cm}^2$$

Final Answer144 cm²**MCQ 24**

Find the perimeter of a square of side 15 cm.

- A. 75 cm B. 45 cm
C. 30 cm D. 60 cm

Solution

$$P = 4a = 4(15) = 60 \text{ cm}$$

Final Answer

60 cm

MCQ 25

Find the area of a square of side 20 cm.

- A. 400 cm^2 B. 420 cm^2
C. 380 cm^2 D. 40 cm^2

Solution

$$A = a^2 = 20^2 = 400 \text{ cm}^2$$

Final Answer400 cm²

Triangles, Parallelograms and Trapezia**MCQ 26**

Find the area of a triangle with base 10 cm and height 6 cm.

- A. 60 cm^2 B. 30 cm^2
C. 35 cm^2 D. 25 cm^2

Solution

$$A = \frac{1}{2}bh = \frac{1}{2}(10)(6) = 30 \text{ cm}^2$$

Final Answer**30 cm²****MCQ 27**

Find the area of a triangle with base 12 cm and height 9 cm.

- A. 108 cm^2 B. 59 cm^2
C. 54 cm^2 D. 49 cm^2

Solution

$$A = \frac{1}{2}bh = \frac{1}{2}(12)(9) = 54 \text{ cm}^2$$

Final Answer**54 cm²****MCQ 28**

Find the area of a triangle with base 15 cm and height 8 cm.

- A. 120 cm^2 B. 65 cm^2
C. 55 cm^2 D. 60 cm^2

Solution

$$A = \frac{1}{2}bh = \frac{1}{2}(15)(8) = 60 \text{ cm}^2$$

Final Answer**60 cm²****MCQ 29**

Find the area of a triangle with base 18 cm and height 7 cm.

- A. 63 cm^2 B. 126 cm^2
C. 68 cm^2 D. 58 cm^2

Solution

$$A = \frac{1}{2}bh = \frac{1}{2}(18)(7) = 63 \text{ cm}^2$$

Final Answer**63 cm²****MCQ 30**

Find the area of a triangle with base 20 cm and height 11 cm.

- A. 220 cm^2 B. 110 cm^2
C. 115 cm^2 D. 105 cm^2

Solution

$$A = \frac{1}{2}bh = \frac{1}{2}(20)(11) = 110 \text{ cm}^2$$

Final Answer**110 cm²****MCQ 31**

Find the area of a triangle with base 24 cm and height 10 cm.

- A. 240 cm^2 B. 125 cm^2
C. 120 cm^2 D. 115 cm^2

Solution

$$A = \frac{1}{2}bh = \frac{1}{2}(24)(10) = 120 \text{ cm}^2$$

Final Answer**120 cm²****MCQ 32**

Find the area of a triangle with base 14 cm and height 12 cm.

- A. 168 cm^2 B. 89 cm^2
C. 79 cm^2 D. 84 cm^2

Solution

$$A = \frac{1}{2}bh = \frac{1}{2}(14)(12) = 84 \text{ cm}^2$$

Final Answer**84 cm²****MCQ 33**

Find the area of a triangle with base 16 cm and height 5 cm.

- A. 40 cm^2 B. 80 cm^2
C. 45 cm^2 D. 35 cm^2

Solution

$$A = \frac{1}{2}bh = \frac{1}{2}(16)(5) = 40 \text{ cm}^2$$

Final Answer**40 cm²**

MCQ 34

Find the area of a triangle with base 30 cm and height 8 cm.

- A. 240 cm^2 B. 120 cm^2
C. 125 cm^2 D. 115 cm^2

Solution

$$A = \frac{1}{2}bh = \frac{1}{2}(30)(8) = 120 \text{ cm}^2$$

Final Answer**120 cm²****MCQ 35**

Find the area of a triangle with base 22 cm and height 9 cm.

- A. 198 cm^2 B. 104 cm^2
C. 99 cm^2 D. 94 cm^2

Solution

$$A = \frac{1}{2}bh = \frac{1}{2}(22)(9) = 99 \text{ cm}^2$$

Final Answer**99 cm²****MCQ 36**

Find the area of a parallelogram with base 8 cm and perpendicular height 7 cm.

- A. 28 cm^2 B. 64 cm^2
C. 112 cm^2 D. 56 cm^2

Solution

$$A = bh = 8(7) = 56 \text{ cm}^2$$

Final Answer**56 cm²****MCQ 37**

Find the area of a parallelogram with base 12 cm and perpendicular height 5 cm.

- A. 60 cm^2 B. 30 cm^2
C. 72 cm^2 D. 120 cm^2

Solution

$$A = bh = 12(5) = 60 \text{ cm}^2$$

Final Answer**60 cm²****MCQ 38**

Find the area of a parallelogram with base 15 cm and perpendicular height 9 cm.

- A. $\frac{135}{2} \text{ cm}^2$ B. 135 cm^2
C. 150 cm^2 D. 270 cm^2

Solution

$$A = bh = 15(9) = 135 \text{ cm}^2$$

Final Answer**135 cm²****MCQ 39**

Find the area of a parallelogram with base 20 cm and perpendicular height 6 cm.

- A. 60 cm^2 B. 140 cm^2
C. 120 cm^2 D. 240 cm^2

Solution

$$A = bh = 20(6) = 120 \text{ cm}^2$$

Final Answer**120 cm²****MCQ 40**

Find the area of a parallelogram with base 18 cm and perpendicular height 11 cm.

- A. 99 cm^2 B. 216 cm^2
C. 396 cm^2 D. 198 cm^2

Solution

$$A = bh = 18(11) = 198 \text{ cm}^2$$

Final Answer**198 cm²****MCQ 41**

Find the area of a trapezium with parallel sides 8 cm and 12 cm and height 5 cm.

- A. 50 cm^2 B. 55 cm^2
C. 45 cm^2 D. 100 cm^2

Solution

$$A = \frac{1}{2}(a + b)h = \frac{1}{2}(8 + 12)(5) = 50 \text{ cm}^2$$

Final Answer**50 cm²**

MCQ 42

Find the area of a trapezium with parallel sides 10 cm and 16 cm and height 7 cm.

- A. 98 cm² B. 91 cm²
C. 84 cm² D. 182 cm²

Solution

$$A = \frac{1}{2}(a+b)h = \frac{1}{2}(10+16)(7) = 91 \text{ cm}^2$$

Final Answer91 cm²**MCQ 43**

Find the area of a trapezium with parallel sides 6 cm and 14 cm and height 9 cm.

- A. 99 cm² B. 81 cm²
C. 90 cm² D. 180 cm²

Solution

$$A = \frac{1}{2}(a+b)h = \frac{1}{2}(6+14)(9) = 90 \text{ cm}^2$$

Final Answer90 cm²**MCQ 44**

Find the area of a trapezium with parallel sides 15 cm and 25 cm and height 8 cm.

- A. 168 cm² B. 152 cm²
C. 320 cm² D. 160 cm²

Solution

$$A = \frac{1}{2}(a+b)h = \frac{1}{2}(15+25)(8) = 160 \text{ cm}^2$$

Final Answer160 cm²**MCQ 45**

Find the area of a trapezium with parallel sides 12 cm and 18 cm and height 10 cm.

- A. 150 cm² B. 160 cm²
C. 140 cm² D. 300 cm²

Solution

$$A = \frac{1}{2}(a+b)h = \frac{1}{2}(12+18)(10) = 150 \text{ cm}^2$$

Final Answer150 cm²**Circles and Semicircles****MCQ 46**

Using $\pi = 22/7$, find the area of a circle of radius 7 cm.

- A. 176 cm² B. 154 cm²
C. 132 cm² D. 308 cm²

Solution

$$A = \pi r^2 = \frac{22}{7}(7)^2 = 154 \text{ cm}^2$$

Final Answer154 cm²**MCQ 47**

Using $\pi = 22/7$, find the area of a circle of radius 14 cm.

- A. 638 cm² B. 594 cm²
C. 616 cm² D. 1,232 cm²

Solution

$$A = \pi r^2 = \frac{22}{7}(14)^2 = 616 \text{ cm}^2$$

Final Answer616 cm²**MCQ 48**

Using $\pi = 22/7$, find the area of a circle of radius 21 cm.

- A. 1,408 cm² B. 1,364 cm²
C. 2,772 cm² D. 1,386 cm²

Solution

$$A = \pi r^2 = \frac{22}{7}(21)^2 = 1,386 \text{ cm}^2$$

Final Answer1,386 cm²**MCQ 49**

Using $\pi = 22/7$, find the area of a circle of radius 28 cm.

- A. 2,464 cm² B. 2,486 cm²
C. 2,442 cm² D. 4,928 cm²

Solution

$$A = \pi r^2 = \frac{22}{7}(28)^2 = 2,464 \text{ cm}^2$$

Final Answer2,464 cm²

MCQ 50

Using $\pi = 22/7$, find the area of a circle of radius 35 cm.

- A. 3,872 cm² B. 3,850 cm²
C. 3,828 cm² D. 7,700 cm²

Solution

$$A = \pi r^2 = \frac{22}{7}(35)^2 = 3,850 \text{ cm}^2$$

Final Answer3,850 cm²**MCQ 51**

Using $\pi = 22/7$, find the area of a circle of radius 7/2 cm.

- A. $\frac{121}{2}$ cm² B. $\frac{33}{2}$ cm²
C. $\frac{77}{2}$ cm² D. 77 cm²

Solution

$$A = \pi r^2 = \frac{22}{7}\left(\frac{7}{2}\right)^2 = \frac{77}{2} \text{ cm}^2$$

Final Answer $\frac{77}{2}$ cm²**MCQ 52**

Using $\pi = 22/7$, find the area of a circle of radius 21/2 cm.

- A. $\frac{737}{2}$ cm² B. $\frac{649}{2}$ cm²
C. 693 cm² D. $\frac{693}{2}$ cm²

Solution

$$A = \pi r^2 = \frac{22}{7}\left(\frac{21}{2}\right)^2 = \frac{693}{2} \text{ cm}^2$$

Final Answer $\frac{693}{2}$ cm²**MCQ 53**

Using $\pi = 22/7$, find the area of a circle of radius 35/2 cm.

- A. $\frac{1925}{2}$ cm² B. $\frac{1969}{2}$ cm²
C. $\frac{1881}{2}$ cm² D. 1,925 cm²

Solution

$$A = \pi r^2 = \frac{22}{7}\left(\frac{35}{2}\right)^2 = \frac{1925}{2} \text{ cm}^2$$

Final Answer $\frac{1925}{2}$ cm²**MCQ 54**

Using $\pi = 22/7$, find the circumference of a circle of radius 7 cm.

- A. 22 cm B. 44 cm
C. 66 cm D. 45 cm

Solution

$$C = 2\pi r = 2\left(\frac{22}{7}\right)(7) = 44 \text{ cm}$$

Final Answer

44 cm

MCQ 55

Using $\pi = 22/7$, find the circumference of a circle of radius 14 cm.

- A. 44 cm B. 110 cm
C. 88 cm D. 66 cm

Solution

$$C = 2\pi r = 2\left(\frac{22}{7}\right)(14) = 88 \text{ cm}$$

Final Answer

88 cm

MCQ 56

Using $\pi = 22/7$, find the circumference of a circle of radius 21 cm.

- A. 66 cm B. 154 cm
C. 110 cm D. 132 cm

Solution

$$C = 2\pi r = 2\left(\frac{22}{7}\right)(21) = 132 \text{ cm}$$

Final Answer

132 cm

MCQ 57

Using $\pi = 22/7$, find the circumference of a circle of radius 28 cm.

- A. 176 cm B. 88 cm
C. 198 cm D. 154 cm

Solution

$$C = 2\pi r = 2\left(\frac{22}{7}\right)(28) = 176 \text{ cm}$$

Final Answer

176 cm

MCQ 58

Using $\pi = 22/7$, find the circumference of a circle of radius 35 cm.

- A. 110 cm B. 220 cm
C. 242 cm D. 198 cm

Solution

$$C = 2\pi r = 2 \left(\frac{22}{7} \right) (35) = 220 \text{ cm}$$

Final Answer

220 cm

MCQ 59

Using $\pi = 22/7$, find the circumference of a circle of radius $7/2$ cm.

- A. 11 cm B. 44 cm
C. 22 cm D. 1 cm

Solution

$$C = 2\pi r = 2 \left(\frac{22}{7} \right) \left(\frac{7}{2} \right) = 22 \text{ cm}$$

Final Answer

22 cm

MCQ 60

Using $\pi = 22/7$, find the circumference of a circle of radius $21/2$ cm.

- A. 33 cm B. 88 cm
C. 44 cm D. 66 cm

Solution

$$C = 2\pi r = 2 \left(\frac{22}{7} \right) \left(\frac{21}{2} \right) = 66 \text{ cm}$$

Final Answer

66 cm

Surface Area and Volume of Solids**MCQ 61**

Find the volume of a cube of side 3 cm.

- A. 27 cm^3 B. 54 cm^3
C. 9 cm^3 D. 12 cm^3

Solution

$$V = a^3 = 3^3 = 27 \text{ cm}^3$$

Final Answer 27 cm^3 **MCQ 62**

Find the volume of a cube of side 4 cm.

- A. 96 cm^3 B. 64 cm^3
C. 16 cm^3 D. 65 cm^3

Solution

$$V = a^3 = 4^3 = 64 \text{ cm}^3$$

Final Answer 64 cm^3 **MCQ 63**

Find the volume of a cube of side 5 cm.

- A. 150 cm^3 B. 25 cm^3
C. 125 cm^3 D. 20 cm^3

Solution

$$V = a^3 = 5^3 = 125 \text{ cm}^3$$

Final Answer 125 cm^3 **MCQ 64**

Find the volume of a cube of side 6 cm.

- A. 36 cm^3 B. 24 cm^3
C. 217 cm^3 D. 216 cm^3

Solution

$$V = a^3 = 6^3 = 216 \text{ cm}^3$$

Final Answer 216 cm^3 **MCQ 65**

Find the volume of a cube of side 8 cm.

- A. 512 cm^3 B. 384 cm^3
C. 64 cm^3 D. 32 cm^3

Solution

$$V = a^3 = 8^3 = 512 \text{ cm}^3$$

Final Answer 512 cm^3 **MCQ 66**

Find the total surface area of a cube of side 3 cm.

- A. 27 cm^2 B. 54 cm^2
C. 36 cm^2 D. 60 cm^2

Solution

$$TSA = 6a^2 = 6(3^2) = 54 \text{ cm}^2$$

Final Answer 54 cm^2

MCQ 67

Find the total surface area of a cube of side 5 cm.

A. 125 cm²**B.** 100 cm²**C.** 150 cm²**D.** 156 cm²**Solution**

$$TSA = 6a^2 = 6(5^2) = 150 \text{ cm}^2$$

Final Answer150 cm²**MCQ 68**

Find the total surface area of a cube of side 7 cm.

A. 343 cm²**B.** 196 cm²**C.** 300 cm²**D.** 294 cm²**Solution**

$$TSA = 6a^2 = 6(7^2) = 294 \text{ cm}^2$$

Final Answer294 cm²**MCQ 69**

Find the total surface area of a cube of side 9 cm.

A. 486 cm²**B.** 729 cm²**C.** 324 cm²**D.** 492 cm²**Solution**

$$TSA = 6a^2 = 6(9^2) = 486 \text{ cm}^2$$

Final Answer486 cm²**MCQ 70**

Find the total surface area of a cube of side 10 cm.

A. 1000 cm²**B.** 600 cm²**C.** 400 cm²**D.** 606 cm²**Solution**

$$TSA = 6a^2 = 6(10^2) = 600 \text{ cm}^2$$

Final Answer600 cm²**MCQ 71**

Find the volume of a cuboid 8 cm × 5 cm × 4 cm.

A. 44 cm³**B.** 184 cm³**C.** 160 cm³**D.** 164 cm³**Solution**

$$V = lwh = 8(5)(4) = 160 \text{ cm}^3$$

Final Answer160 cm³**MCQ 72**

Find the volume of a cuboid 10 cm × 6 cm × 3 cm.

A. 63 cm³**B.** 216 cm³**C.** 183 cm³**D.** 180 cm³**Solution**

$$V = lwh = 10(6)(3) = 180 \text{ cm}^3$$

Final Answer180 cm³**MCQ 73**

Find the volume of a cuboid 12 cm × 7 cm × 5 cm.

A. 420 cm³**B.** 89 cm³**C.** 358 cm³**D.** 425 cm³**Solution**

$$V = lwh = 12(7)(5) = 420 \text{ cm}^3$$

Final Answer420 cm³**MCQ 74**

Find the volume of a cuboid 15 cm × 8 cm × 6 cm.

A. 126 cm³**B.** 720 cm³**C.** 516 cm³**D.** 726 cm³**Solution**

$$V = lwh = 15(8)(6) = 720 \text{ cm}^3$$

Final Answer720 cm³**MCQ 75**

Find the volume of a cuboid 20 cm × 10 cm × 4 cm.

A. 204 cm³**B.** 640 cm³**C.** 800 cm³**D.** 804 cm³**Solution**

$$V = lwh = 20(10)(4) = 800 \text{ cm}^3$$

Final Answer800 cm³

MCQ 76

Using $\pi = 22/7$, find the volume of a cylinder of radius 7 cm and height 5 cm.

- A. 154 cm^3 B. 814 cm^3
C. 726 cm^3 D. 770 cm^3

Solution

$$V = \pi r^2 h = \frac{22}{7}(7^2)(5) = 770 \text{ cm}^3$$

Final Answer**770 cm³****MCQ 77**

Using $\pi = 22/7$, find the volume of a cylinder of radius 7 cm and height 10 cm.

- A. $1,540 \text{ cm}^3$ B. 154 cm^3
C. $1,584 \text{ cm}^3$ D. $1,496 \text{ cm}^3$

Solution

$$V = \pi r^2 h = \frac{22}{7}(7^2)(10) = 1,540 \text{ cm}^3$$

Final Answer**1,540 cm³****MCQ 78**

Using $\pi = 22/7$, find the volume of a cylinder of radius 14 cm and height 6 cm.

- A. 616 cm^3 B. $3,696 \text{ cm}^3$
C. $3,740 \text{ cm}^3$ D. $3,652 \text{ cm}^3$

Solution

$$V = \pi r^2 h = \frac{22}{7}(14^2)(6) = 3,696 \text{ cm}^3$$

Final Answer**3,696 cm³****MCQ 79**

Using $\pi = 22/7$, find the volume of a cylinder of radius 14 cm and height 12 cm.

- A. 616 cm^3 B. $7,436 \text{ cm}^3$
C. $7,392 \text{ cm}^3$ D. $7,348 \text{ cm}^3$

Solution

$$V = \pi r^2 h = \frac{22}{7}(14^2)(12) = 7,392 \text{ cm}^3$$

Final Answer**7,392 cm³****MCQ 80**

Using $\pi = 22/7$, find the volume of a cylinder of radius 21 cm and height 4 cm.

- A. $1,386 \text{ cm}^3$ B. $5,588 \text{ cm}^3$
C. $5,500 \text{ cm}^3$ D. $5,544 \text{ cm}^3$

Solution

$$V = \pi r^2 h = \frac{22}{7}(21^2)(4) = 5,544 \text{ cm}^3$$

Final Answer**5,544 cm³****MCQ 81**

Using $\pi = 22/7$, find the volume of a cone of radius 7 cm and height 6 cm.

- A. 308 cm^3 B. 924 cm^3
C. 330 cm^3 D. 286 cm^3

Solution

$$V = \frac{1}{3}\pi r^2 h = \frac{1}{3}\left(\frac{22}{7}\right)(7^2)(6) = 308 \text{ cm}^3$$

Final Answer**308 cm³****MCQ 82**

Using $\pi = 22/7$, find the volume of a cone of radius 7 cm and height 9 cm.

- A. $1,386 \text{ cm}^3$ B. 462 cm^3
C. 484 cm^3 D. 440 cm^3

Solution

$$V = \frac{1}{3}\pi r^2 h = \frac{1}{3}\left(\frac{22}{7}\right)(7^2)(9) = 462 \text{ cm}^3$$

Final Answer**462 cm³****MCQ 83**

Using $\pi = 22/7$, find the volume of a cone of radius 14 cm and height 3 cm.

- A. $1,848 \text{ cm}^3$ B. 638 cm^3
C. 616 cm^3 D. 594 cm^3

Solution

$$V = \frac{1}{3}\pi r^2 h = \frac{1}{3}\left(\frac{22}{7}\right)(14^2)(3) = 616 \text{ cm}^3$$

Final Answer**616 cm³**

MCQ 84

Using $\pi = 22/7$, find the volume of a cone of radius 14 cm and height 6 cm.

- A. 3,696 cm³ B. 1,254 cm³
C. 1,210 cm³ D. 1,232 cm³

Solution

$$V = \frac{1}{3}\pi r^2 h = \frac{1}{3}\left(\frac{22}{7}\right)(14^2)(6) = 1,232 \text{ cm}^3$$

Final Answer1,232 cm³**MCQ 85**

Using $\pi = 22/7$, find the volume of a cone of radius 21 cm and height 3 cm.

- A. 1,386 cm³ B. 4,158 cm³
C. 1,408 cm³ D. 1,364 cm³

Solution

$$V = \frac{1}{3}\pi r^2 h = \frac{1}{3}\left(\frac{22}{7}\right)(21^2)(3) = 1,386 \text{ cm}^3$$

Final Answer1,386 cm³**MCQ 86**

Using $\pi = 22/7$, find the volume of a sphere of radius 3 cm.

- A. $\frac{198}{7}$ cm³ B. $\frac{792}{7}$ cm³
C. $\frac{1100}{7}$ cm³ D. $\frac{484}{7}$ cm³

Solution

$$V = \frac{4}{3}\pi r^3 = \frac{4}{3}\left(\frac{22}{7}\right)(3^3) = \frac{792}{7} \text{ cm}^3$$

Final Answer $\frac{792}{7}$ cm³**MCQ 87**

Using $\pi = 22/7$, find the volume of a sphere of radius 6 cm.

- A. $\frac{792}{7}$ cm³ B. $\frac{6644}{7}$ cm³
C. $\frac{6336}{7}$ cm³ D. $\frac{6028}{7}$ cm³

Solution

$$V = \frac{4}{3}\pi r^3 = \frac{4}{3}\left(\frac{22}{7}\right)(6^3) = \frac{6336}{7} \text{ cm}^3$$

Final Answer $\frac{6336}{7}$ cm³**MCQ 88**

Using $\pi = 22/7$, find the volume of a sphere of radius 7 cm.

- A. 154 cm³ B. $\frac{4444}{3}$ cm³
C. $\frac{4180}{3}$ cm³ D. $\frac{4312}{3}$ cm³

Solution

$$V = \frac{4}{3}\pi r^3 = \frac{4}{3}\left(\frac{22}{7}\right)(7^3) = \frac{4312}{3} \text{ cm}^3$$

Final Answer $\frac{4312}{3}$ cm³**MCQ 89**

Using $\pi = 22/7$, find the volume of a sphere of radius 9 cm.

- A. $\frac{21384}{7}$ cm³ B. $\frac{1782}{7}$ cm³
C. $\frac{21692}{7}$ cm³ D. $\frac{21076}{7}$ cm³

Solution

$$V = \frac{4}{3}\pi r^3 = \frac{4}{3}\left(\frac{22}{7}\right)(9^3) = \frac{21384}{7} \text{ cm}^3$$

Final Answer $\frac{21384}{7}$ cm³**MCQ 90**

Using $\pi = 22/7$, find the volume of a sphere of radius 14 cm.

- A. 616 cm³ B. $\frac{34496}{3}$ cm³
C. $\frac{34628}{3}$ cm³ D. $\frac{34364}{3}$ cm³

Solution

$$V = \frac{4}{3}\pi r^3 = \frac{4}{3}\left(\frac{22}{7}\right)(14^3) = \frac{34496}{3} \text{ cm}^3$$

Final Answer $\frac{34496}{3}$ cm³**Mixed High-Yield Mensuration****MCQ 91**

A square has area 144 cm². Find its side.

- A. 10 B. 14
C. 12 D. 24

Solution

$$a = \sqrt{144} = 12 \text{ cm}$$

Final Answer

12 cm

MCQ 92

A rectangle has area 96 cm^2 and length 12 cm . Find its width.

- A. 6
B. 10
C. 12
D. 8

Solution

$$w = \frac{A}{l} = \frac{96}{12} = 8 \text{ cm}$$

Final Answer

8 cm

MCQ 93

A rectangle has perimeter 50 cm and length 15 cm . Find its width.

- A. 10
B. 5
C. 15
D. 20

Solution

$$2(l + w) = 50 \Rightarrow l + w = 25$$

$$w = 25 - 15 = 10 \text{ cm}$$

Final Answer

10 cm

MCQ 94

A circle has diameter 14 cm . Using $\pi = 22/7$, find its area.

- A. 44
B. 154
C. 308
D. 616

Solution

$$r = 7$$

$$A = \frac{22}{7}(7)^2 = 154 \text{ cm}^2$$

Final Answer154 cm²**MCQ 95**

Convert 2.5 m^2 to cm^2 .

- A. 250
B. 2500
C. 25000
D. 250000

Solution

$$1 \text{ m}^2 = 10,000 \text{ cm}^2$$

$$2.5 \times 10,000 = 25,000 \text{ cm}^2$$

Final Answer25,000 cm²**MCQ 96**

Convert 3 litres to cubic centimetres.

- A. 300
B. 30
C. 30000
D. 3000

Solution

$$1 \text{ L} = 1000 \text{ cm}^3$$

$$3 \text{ L} = 3000 \text{ cm}^3$$

Final Answer3000 cm³**MCQ 97**

A cube has volume 512 cm^3 . Find its side.

- A. 8
B. 6
C. 16
D. 64

Solution

$$a = \sqrt[3]{512} = 8 \text{ cm}$$

Final Answer

8 cm

MCQ 98

A cylinder has base area 154 cm^2 and height 10 cm . Find its volume.

- A. 154
B. 1540
C. 15400
D. 1640

Solution

$$V = (\text{base area})(h) = 154(10) = 1540 \text{ cm}^3$$

Final Answer1540 cm³**MCQ 99**

A triangular prism has triangular cross-section area 24 cm^2 and length 10 cm . Find its volume.

- A. 120
B. 34
C. 240
D. 480

Solution

$$V = (24)(10) = 240 \text{ cm}^3$$

Final Answer240 cm³

MCQ 100

A square field has perimeter 80 m. Find its area.

- A.** 80 **B.** 160
C. 800 **D.** 400

Solution

$$4a = 80 \Rightarrow a = 20$$

$$A = 20^2 = 400 \text{ m}^2$$

Final Answer**400 m²**

RAPID REVISION GRID | MENSURATION

Units Perimeter uses linear units, area uses square units, volume uses cubic units.

Circle Use $\pi = 22/7$ when the data are chosen for exact arithmetic unless told otherwise.

Prism

$$V = (\text{area of cross-section})(\text{length})$$

Cylinder Curved surface area = $2\pi rh$.

Cone Slant height $l = \sqrt{r^2 + h^2}$ when needed.

Exam check Write the formula first, substitute values, and attach the correct unit.

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**SETS, VENN DIAGRAMS, SYMBOLS, ROUNDING & APPROXIMATION
MCQs | 100 FULLY SOLVED MCQs****Fast Foundation for One-Paper Exams****Two-set union**

$$n(A \cup B) = n(A) + n(B) - n(A \cap B)$$

Three-set union

$$n(A \cup B \cup C) = \sum n(A) - \sum n(A \cap B) + n(A \cap B \cap C)$$

Complement

$$n(A^c) = n(U) - n(A)$$

Rounding

Next digit $\geq 5 \Rightarrow$ round up

Symbols

$\in, \notin, \subseteq, \cup, \cap, \geq, \leq$

Estimation

Round first, then calculate

Set Language and Basic Operations

MCQ 1

If $A = \{1, 2, 3, 4\}$, which symbol correctly completes $2 _ A$?

- A. $\in$ B. $\notin$
C. $\subset$ D. $=$

Solution

$$2 \in A$$

Final Answer

 $\in$

MCQ 2

If $A = \{2, 4, 6, 8\}$, which symbol correctly completes $5 _ A$?

- A. $\in$ B. $\subset$
C. $=$ D. $\notin$

Solution

$$5 \notin A$$

Final Answer

 $\notin$

MCQ 3

If $A = \{3, 6, 9\}$, which symbol correctly completes $9 _ A$?

- A. $\subset$ B. $=$
C. $\in$ D. $\notin$

Solution

$$9 \in A$$

Final Answer

 $\in$

MCQ 4

If $A = \{5, 10, 15, 20\}$, which symbol correctly completes $12 _ A$?

- A. $=$ B. $\notin$
C. $\in$ D. $\subset$

Solution

$$12 \notin A$$

Final Answer

 $\notin$

MCQ 5

If $A = \{1, 3, 5, 7, 9\}$, which symbol correctly completes $7 _ A$?

- A. $\in$ B. $\notin$
C. $\subset$ D. $=$

Solution

$$7 \in A$$

Final Answer

 $\in$

MCQ 6

Find $n(A)$ if $A = \{1, 2, 3\}$.

- A. 4 B. 2
C. 5 D. 3

Solution

$$n(A) = 3$$

Final Answer

3

MCQ 7

Find $n(A)$ if $A = \{2, 4, 6, 8\}$.

- A. 3 B. 6
C. 4 D. 5

Solution

$$n(A) = 4$$

Final Answer

4

MCQ 8

Find $n(A)$ if $A = \{1, 3, 5, 7, 9\}$.

- A. 7 B. 5
C. 6 D. 4

Solution

$$n(A) = 5$$

Final Answer

5

MCQ 9

Find $n(A)$ if $A = \{10, 20\}$.

- A. 2 B. 3
C. 1 D. 4

Solution

$$n(A) = 2$$

Final Answer

2

MCQ 10Find $n(A)$ if $A = \{0, 1, 2, 3, 4, 5\}$.

- A. 7 B. 5
C. 8 D. 6

Solution

$$n(A) = 6$$

Final Answer

6

MCQ 11If $A = \{1, 2, 3\}$ and $B = \{3, 4, 5\}$, find $A \cup B$.

- A. $\{3, 4, 5\}$ B. $\{3\}$
C. $\{1, 2, 3, 4, 5\}$ D. $\{1, 2, 3\}$

Solution

$$A \cup B = \{1, 2, 3, 4, 5\}$$

Final Answer $\{1, 2, 3, 4, 5\}$ **MCQ 12**If $A = \{2, 4, 6\}$ and $B = \{4, 6, 8\}$, find $A \cup B$.

- A. $\{4, 6\}$ B. $\{2, 4, 6, 8\}$
C. $\{2, 4, 6\}$ D. $\{4, 6, 8\}$

Solution

$$A \cup B = \{2, 4, 6, 8\}$$

Final Answer $\{2, 4, 6, 8\}$ **MCQ 13**If $A = \{1, 3, 5\}$ and $B = \{2, 4, 6\}$, find $A \cup B$.

- A. $\{1, 2, 3, 4, 5, 6\}$ B. $\{1, 3, 5\}$
C. $\{2, 4, 6\}$ D. $\{\}$

Solution

$$A \cup B = \{1, 2, 3, 4, 5, 6\}$$

Final Answer $\{1, 2, 3, 4, 5, 6\}$ **MCQ 14**If $A = \{1, 2, 4, 8\}$ and $B = \{2, 8, 10\}$, find $A \cup B$.

- A. $\{1, 2, 4, 8\}$ B. $\{2, 8, 10\}$
C. $\{2, 8\}$ D. $\{1, 2, 4, 8, 10\}$

Solution

$$A \cup B = \{1, 2, 4, 8, 10\}$$

Final Answer $\{1, 2, 4, 8, 10\}$ **MCQ 15**If $A = \{0, 1, 2\}$ and $B = \{2, 3, 4\}$, find $A \cup B$.

- A. $\{2, 3, 4\}$ B. $\{2\}$
C. $\{0, 1, 2, 3, 4\}$ D. $\{0, 1, 2\}$

Solution

$$A \cup B = \{0, 1, 2, 3, 4\}$$

Final Answer $\{0, 1, 2, 3, 4\}$ **MCQ 16**If $A = \{1, 2, 3\}$ and $B = \{3, 4, 5\}$, find $A \cap B$.

- A. $\{4, 5\}$ B. $\{3\}$
C. $\{1, 2, 3, 4, 5\}$ D. $\{1, 2\}$

Solution

$$A \cap B = \{3\}$$

Final Answer $\{3\}$ **MCQ 17**If $A = \{2, 4, 6\}$ and $B = \{4, 6, 8\}$, find $A \cap B$.

- A. $\{4, 6\}$ B. $\{2, 4, 6, 8\}$
C. $\{2\}$ D. $\{8\}$

Solution

$$A \cap B = \{4, 6\}$$

Final Answer $\{4, 6\}$ **MCQ 18**If $A = \{1, 3, 5\}$ and $B = \{2, 4, 6\}$, find $A \cap B$.

- A. $\{1, 2, 3, 4, 5, 6\}$ B. $\{1, 3, 5\}$
C. $\{2, 4, 6\}$ D. $\emptyset$

Solution

$$A \cap B = \emptyset$$

Final Answer $\emptyset$ **MCQ 19**If $A = \{1, 2, 4, 8\}$ and $B = \{2, 8, 10\}$, find $A \cap B$.

- A. $\{1, 4\}$ B. $\{10\}$
C. $\{2, 8\}$ D. $\{1, 2, 4, 8, 10\}$

Solution

$$A \cap B = \{2, 8\}$$

Final Answer $\{2, 8\}$

MCQ 20

If $A = \{0, 1, 2\}$ and $B = \{2, 3, 4\}$, find $A \cap B$.

- A. $\{3, 4\}$ B. $\{2\}$
 C. $\{0, 1, 2, 3, 4\}$ D. $\{0, 1\}$

Solution

$$A \cap B = \{2\}$$

Final Answer

{2}

Two-Set Venn Problems**MCQ 21**

In a group of 40, $n(A) = 22$, $n(B) = 18$, and $n(A \cap B) = 8$. Find $n(A \cup B)$.

- A. 32 B. 34
 C. 29 D. 37

Solution

$$n(A \cup B) = 22 + 18 - 8 = 32$$

Final Answer

32

MCQ 22

In a group of 40, $n(A) = 22$, $n(B) = 18$, and $n(A \cap B) = 8$. How many are in neither set?

- A. 10 B. 5
 C. 13 D. 8

Solution

$$n(A \cup B) = 22 + 18 - 8 = 32$$

$$\text{Neither} = 40 - 32 = 8$$

Final Answer

8

MCQ 23

In a group of 50, $n(A) = 28$, $n(B) = 25$, and $n(A \cap B) = 10$. Find $n(A \cup B)$.

- A. 40 B. 48
 C. 43 D. 45

Solution

$$n(A \cup B) = 28 + 25 - 10 = 43$$

Final Answer

43

MCQ 24

In a group of 50, $n(A) = 28$, $n(B) = 25$, and $n(A \cap B) = 10$. How many are in neither set?

- A. 12 B. 7
 C. 9 D. 4

Solution

$$n(A \cup B) = 28 + 25 - 10 = 43$$

$$\text{Neither} = 50 - 43 = 7$$

Final Answer

7

MCQ 25

In a group of 60, $n(A) = 35$, $n(B) = 30$, and $n(A \cap B) = 15$. Find $n(A \cup B)$.

- A. 50 B. 52
 C. 47 D. 55

Solution

$$n(A \cup B) = 35 + 30 - 15 = 50$$

Final Answer

50

MCQ 26

In a group of 60, $n(A) = 35$, $n(B) = 30$, and $n(A \cap B) = 15$. How many are in neither set?

- A. 12 B. 7
 C. 15 D. 10

Solution

$$n(A \cup B) = 35 + 30 - 15 = 50$$

$$\text{Neither} = 60 - 50 = 10$$

Final Answer

10

MCQ 27

In a group of 45, $n(A) = 20$, $n(B) = 24$, and $n(A \cap B) = 9$. Find $n(A \cup B)$.

- A. 32 B. 40
 C. 35 D. 37

Solution

$$n(A \cup B) = 20 + 24 - 9 = 35$$

Final Answer

35

MCQ 28

In a group of 45, $n(A) = 20$, $n(B) = 24$, and $n(A \cap B) = 9$. How many are in neither set?

- A. 15 B. 10
C. 12 D. 7

Solution

$$n(A \cup B) = 20 + 24 - 9 = 35$$

$$\text{Neither} = 45 - 35 = 10$$

Final Answer

10

MCQ 29

In a group of 80, $n(A) = 46$, $n(B) = 38$, and $n(A \cap B) = 20$. Find $n(A \cup B)$.

- A. 64 B. 66
C. 61 D. 69

Solution

$$n(A \cup B) = 46 + 38 - 20 = 64$$

Final Answer

64

MCQ 30

In a group of 80, $n(A) = 46$, $n(B) = 38$, and $n(A \cap B) = 20$. How many are in neither set?

- A. 18 B. 13
C. 21 D. 16

Solution

$$n(A \cup B) = 46 + 38 - 20 = 64$$

$$\text{Neither} = 80 - 64 = 16$$

Final Answer

16

MCQ 31

In a group of 70, $n(A) = 40$, $n(B) = 32$, and $n(A \cap B) = 18$. Find $n(A \cup B)$.

- A. 51 B. 59
C. 54 D. 56

Solution

$$n(A \cup B) = 40 + 32 - 18 = 54$$

Final Answer

54

MCQ 32

In a group of 70, $n(A) = 40$, $n(B) = 32$, and $n(A \cap B) = 18$. How many are in neither set?

- A. 21 B. 16
C. 18 D. 13

Solution

$$n(A \cup B) = 40 + 32 - 18 = 54$$

$$\text{Neither} = 70 - 54 = 16$$

Final Answer

16

MCQ 33

In a group of 55, $n(A) = 31$, $n(B) = 27$, and $n(A \cap B) = 12$. Find $n(A \cup B)$.

- A. 46 B. 48
C. 43 D. 51

Solution

$$n(A \cup B) = 31 + 27 - 12 = 46$$

Final Answer

46

MCQ 34

In a group of 55, $n(A) = 31$, $n(B) = 27$, and $n(A \cap B) = 12$. How many are in neither set?

- A. 11 B. 6
C. 14 D. 9

Solution

$$n(A \cup B) = 31 + 27 - 12 = 46$$

$$\text{Neither} = 55 - 46 = 9$$

Final Answer

9

MCQ 35

In a group of 90, $n(A) = 50$, $n(B) = 45$, and $n(A \cap B) = 25$. Find $n(A \cup B)$.

- A. 67 B. 75
C. 70 D. 72

Solution

$$n(A \cup B) = 50 + 45 - 25 = 70$$

Final Answer

70

MCQ 36

In a group of 90, $n(A) = 50$, $n(B) = 45$, and $n(A \cap B) = 25$. How many are in neither set?

- A. 25 B. 20
C. 22 D. 17

Solution

$$n(A \cup B) = 50 + 45 - 25 = 70$$

$$\text{Neither} = 90 - 70 = 20$$

Final Answer

20

MCQ 37

In a group of 65, $n(A) = 36$, $n(B) = 29$, and $n(A \cap B) = 14$. Find $n(A \cup B)$.

- A. 51 B. 53
C. 48 D. 56

Solution

$$n(A \cup B) = 36 + 29 - 14 = 51$$

Final Answer

51

MCQ 38

In a group of 65, $n(A) = 36$, $n(B) = 29$, and $n(A \cap B) = 14$. How many are in neither set?

- A. 16 B. 11
C. 19 D. 14

Solution

$$n(A \cup B) = 36 + 29 - 14 = 51$$

$$\text{Neither} = 65 - 51 = 14$$

Final Answer

14

MCQ 39

In a group of 100, $n(A) = 60$, $n(B) = 55$, and $n(A \cap B) = 30$. Find $n(A \cup B)$.

- A. 82 B. 90
C. 85 D. 87

Solution

$$n(A \cup B) = 60 + 55 - 30 = 85$$

Final Answer

85

MCQ 40

In a group of 100, $n(A) = 60$, $n(B) = 55$, and $n(A \cap B) = 30$. How many are in neither set?

- A. 20 B. 15
C. 17 D. 12

Solution

$$n(A \cup B) = 60 + 55 - 30 = 85$$

$$\text{Neither} = 100 - 85 = 15$$

Final Answer

15

Only-One and Three-Set Problems**MCQ 41**

If $n(A) = 22$, $n(B) = 18$, and $n(A \cap B) = 8$, find the number in A only.

- A. 14 B. 15
C. 12 D. 18

Solution

$$\text{A only} = 22 - 8 = 14$$

Final Answer

14

MCQ 42

If $n(A) = 22$, $n(B) = 18$, and $n(A \cap B) = 8$, find the number in B only.

- A. 11 B. 8
C. 14 D. 10

Solution

$$\text{B only} = 18 - 8 = 10$$

Final Answer

10

MCQ 43

If $n(A) = 28$, $n(B) = 25$, and $n(A \cap B) = 10$, find the number in A only.

- A. 16 B. 22
C. 18 D. 19

Solution

$$\text{A only} = 28 - 10 = 18$$

Final Answer

18

MCQ 44

If $n(A) = 28$, $n(B) = 25$, and $n(A \cap B) = 10$, find the number in B only.

- A. 19 B. 15
C. 16 D. 13

Solution

$$B \text{ only} = 25 - 10 = 15$$

Final Answer

15

MCQ 45

If $n(A) = 35$, $n(B) = 30$, and $n(A \cap B) = 15$, find the number in A only.

- A. 20 B. 21
C. 18 D. 24

Solution

$$A \text{ only} = 35 - 15 = 20$$

Final Answer

20

MCQ 46

If $n(A) = 35$, $n(B) = 30$, and $n(A \cap B) = 15$, find the number in B only.

- A. 16 B. 13
C. 19 D. 15

Solution

$$B \text{ only} = 30 - 15 = 15$$

Final Answer

15

MCQ 47

If $n(A) = 20$, $n(B) = 24$, and $n(A \cap B) = 9$, find the number in A only.

- A. 9 B. 15
C. 11 D. 12

Solution

$$A \text{ only} = 20 - 9 = 11$$

Final Answer

11

MCQ 48

If $n(A) = 20$, $n(B) = 24$, and $n(A \cap B) = 9$, find the number in B only.

- A. 19 B. 15
C. 16 D. 13

Solution

$$B \text{ only} = 24 - 9 = 15$$

Final Answer

15

MCQ 49

If $n(A) = 46$, $n(B) = 38$, and $n(A \cap B) = 20$, find the number in A only.

- A. 26 B. 27
C. 24 D. 30

Solution

$$A \text{ only} = 46 - 20 = 26$$

Final Answer

26

MCQ 50

If $n(A) = 46$, $n(B) = 38$, and $n(A \cap B) = 20$, find the number in B only.

- A. 19 B. 16
C. 22 D. 18

Solution

$$B \text{ only} = 38 - 20 = 18$$

Final Answer

18

MCQ 51

In a group of 100, $n(A) = 50$, $n(B) = 45$, $n(C) = 40$, pairwise intersections are 20, 18, 15, and $n(A \cap B \cap C) = 8$. Find the number in at least one set.

- A. 86 B. 97
C. 90 D. 93

Solution

$$n(A \cup B \cup C) = 50 + 45 + 40 - 20 - 18 - 15 + 8 = 90$$

Final Answer

90

MCQ 52

In a group of 100, $n(A) = 50$, $n(B) = 45$, $n(C) = 40$, pair-wise intersections are 20, 18, 15, and $n(A \cap B \cap C) = 8$. Find the number in none of the three sets.

- A. 17 B. 10
C. 13 D. 6

Solution

$$n(A \cup B \cup C) = 50 + 45 + 40 - 20 - 18 - 15 + 8 = 90$$

$$\text{None} = 100 - 90 = 10$$

Final Answer

10

MCQ 53

In a group of 120, $n(A) = 60$, $n(B) = 55$, $n(C) = 50$, pair-wise intersections are 25, 20, 18, and $n(A \cap B \cap C) = 10$. Find the number in at least one set.

- A. 112 B. 115
C. 108 D. 119

Solution

$$n(A \cup B \cup C) = 60 + 55 + 50 - 25 - 20 - 18 + 10 = 112$$

Final Answer

112

MCQ 54

In a group of 120, $n(A) = 60$, $n(B) = 55$, $n(C) = 50$, pair-wise intersections are 25, 20, 18, and $n(A \cap B \cap C) = 10$. Find the number in none of the three sets.

- A. 11 B. 4
C. 15 D. 8

Solution

$$n(A \cup B \cup C) = 60 + 55 + 50 - 25 - 20 - 18 + 10 = 112$$

$$\text{None} = 120 - 112 = 8$$

Final Answer

8

MCQ 55

In a group of 80, $n(A) = 42$, $n(B) = 38$, $n(C) = 35$, pair-wise intersections are 16, 14, 12, and $n(A \cap B \cap C) = 6$. Find the number in at least one set.

- A. 75 B. 86
C. 79 D. 82

Solution

$$n(A \cup B \cup C) = 42 + 38 + 35 - 16 - 14 - 12 + 6 = 79$$

Final Answer

79

MCQ 56

In a group of 80, $n(A) = 42$, $n(B) = 38$, $n(C) = 35$, pair-wise intersections are 16, 14, 12, and $n(A \cap B \cap C) = 6$. Find the number in none of the three sets.

- A. 8 B. 1
C. 4 D. 0

Solution

$$n(A \cup B \cup C) = 42 + 38 + 35 - 16 - 14 - 12 + 6 = 79$$

$$\text{None} = 80 - 79 = 1$$

Final Answer

1

MCQ 57

In a group of 90, $n(A) = 48$, $n(B) = 44$, $n(C) = 36$, pair-wise intersections are 18, 17, 13, and $n(A \cap B \cap C) = 7$. Find the number in at least one set.

- A. 87 B. 90
C. 83 D. 94

Solution

$$n(A \cup B \cup C) = 48 + 44 + 36 - 18 - 17 - 13 + 7 = 87$$

Final Answer

87

MCQ 58

In a group of 90, $n(A) = 48$, $n(B) = 44$, $n(C) = 36$, pair-wise intersections are 18, 17, 13, and $n(A \cap B \cap C) = 7$. Find the number in none of the three sets.

- A. 6 B. 0
C. 10 D. 3

Solution

$$n(A \cup B \cup C) = 48 + 44 + 36 - 18 - 17 - 13 + 7 = 87$$

$$\text{None} = 90 - 87 = 3$$

Final Answer

3

MCQ 59

In a group of 150, $n(A) = 80$, $n(B) = 70$, $n(C) = 65$, pair-wise intersections are 30, 28, 25, and $n(A \cap B \cap C) = 12$. Find the number in at least one set.

- A. 140 B. 151
C. 144 D. 147

Solution

$$n(A \cup B \cup C) = 80 + 70 + 65 - 30 - 28 - 25 + 12 = 144$$

Final Answer

144

MCQ 60

In a group of 150, $n(A) = 80$, $n(B) = 70$, $n(C) = 65$, pair-wise intersections are 30, 28, 25, and $n(A \cap B \cap C) = 12$. Find the number in none of the three sets.

- A. 13 B. 6
C. 9 D. 2

Solution

$$n(A \cup B \cup C) = 80 + 70 + 65 - 30 - 28 - 25 + 12 = 144$$

$$\text{None} = 150 - 144 = 6$$

Final Answer

6

Symbols and Relations**MCQ 61**

Which statement is equivalent to $x \geq 5$?

- A. $x > 5$ or $x = 5$ B. $x < 5$
C. $x > 5$ only D. $x \leq 5$

Solution

$$x > 5 \text{ or } x = 5$$

Final Answer $x > 5 \text{ or } x = 5$ **MCQ 62**

What does $A \subseteq B$ mean?

- A. $A \cap B = \emptyset$ B. $A = B$ always
C. Every element of B is in A D. Every element of A is in B

Solution

Every element of A is in B

Final AnswerEvery element of A is in B **MCQ 63**

What does A^c represent?

- A. Only elements of A B. $A \cap U$
C. Elements outside A in the universal set D. $A \cup A$

Solution

Elements outside A in the universal set

Final AnswerElements outside A in the universal set**MCQ 64**

Which symbol denotes the empty set?

- A. $\subset$ B. $\emptyset$
C. $\in$ D. $\cup$

Solution $\emptyset$ **Final Answer** $\emptyset$ **MCQ 65**

Which symbol means “is an element of”?

- A. $\in$ B. $\subset$
C. $\cap$ D. $\geq$

Solution $\in$ **Final Answer** $\in$ **MCQ 66**

Is the statement $7 > 5$ true?

- A. False B. Undefined
C. Cannot say D. True

Solution

$$7 > 5 \quad \checkmark$$

Final Answer

True

MCQ 67Is the statement $3 < 9$ true?

- A. Undefined B. Cannot say
C. True D. False

Solution

$$3 < 9 \quad \checkmark$$

Final Answer

True

MCQ 68Is the statement $6 = 6$ true?

- A. Cannot say B. True
C. False D. Undefined

Solution

$$6 = 6 \quad \checkmark$$

Final Answer

True

MCQ 69Is the statement $10 \leq 10$ true?

- A. True B. False
C. Undefined D. Cannot say

Solution

$$10 \leq 10 \quad \checkmark$$

Final Answer

True

MCQ 70Is the statement $12 \geq 11$ true?

- A. False B. Undefined
C. Cannot say D. True

Solution

$$12 \geq 11 \quad \checkmark$$

Final Answer

True

Rounding and Significant Figures**MCQ 71**

Round 47 to the nearest ten.

- A. 40 B. 70
C. 50 D. 60

Solution

$$47 \approx 50$$

Final Answer

50

MCQ 72

Round 143 to the nearest ten.

- A. 160 B. 140
C. 150 D. 130

Solution

$$143 \approx 140$$

Final Answer

140

MCQ 73

Round 386 to the nearest hundred.

- A. 400 B. 500
C. 300 D. 600

Solution

$$386 \approx 400$$

Final Answer

400

MCQ 74

Round 1249 to the nearest hundred.

- A. 1300 B. 1100
C. 1400 D. 1200

Solution

$$1249 \approx 1200$$

Final Answer

1200

MCQ 75

Round 1785 to the nearest thousand.

- A. 1000 B. 4000
C. 2000 D. 3000

Solution

$$1785 \approx 2000$$

Final Answer

2000

MCQ 76

Round 6.47 to the nearest whole number.

- A. 8 B. 6
C. 7 D. 5

Solution

$$6.47 \approx 6$$

Final Answer

6

MCQ 77

Round 6.58 to the nearest whole number.

- A. 7 B. 8
C. 6 D. 9

Solution

$$6.58 \approx 7$$

Final Answer

7

MCQ 78

Round 12.346 to the nearest tenth.

- A. 12.4 B. 12.2
C. 12.5 D. 12.3

Solution

$$12.346 \approx 12.3$$

Final Answer

12.3

MCQ 79

Round 9.876 to the nearest tenth.

- A. 9.8 B. 10.1
C. 9.9 D. 10

Solution

$$9.876 \approx 9.9$$

Final Answer

9.9

MCQ 80

Round 15.274 to the nearest hundredth.

- A. 15.29 B. 15.27
C. 15.28 D. 15.26

Solution

$$15.274 \approx 15.27$$

Final Answer

15.27

MCQ 81

Round 3.146 to the nearest hundredth.

- A. 3.15 B. 3.16
C. 3.14 D. 3.17

Solution

$$3.146 \approx 3.15$$

Final Answer

3.15

MCQ 82

Round 0.7648 to the nearest thousandth.

- A. 0.766 B. 0.764
C. 0.767 D. 0.765

Solution

$$0.7648 \approx 0.765$$

Final Answer

0.765

MCQ 83

Round 24.995 to the nearest hundredth.

- A. 24.99 B. 25.02
C. 25 D. 25.01

Solution

$$24.995 \approx 25$$

Final Answer

25

MCQ 84

Round 999 to the nearest hundred.

- A. 1200 B. 1000
C. 1100 D. 900

Solution

$$999 \approx 1000$$

Final Answer

1000

MCQ 85

Round 1499 to the nearest thousand.

- A. 1000 B. 2000
C. 0 D. 3000

Solution

$$1499 \approx 1000$$

Final Answer

1000

MCQ 86

Round 4832 to 2 significant figures.

- A. 5280 B. 4320
C. 4900 D. 4800

Solution

$$4832 \approx 4800$$

Final Answer

4800

MCQ 87

Round 75649 to 3 significant figures.

- A. 68040 B. 75700
C. 75600 D. 83160

Solution

$$75649 \approx 75600$$

Final Answer

75600

MCQ 88

Round 0.004786 to 2 significant figures.

- A. 1.0048 B. 0.0048
C. 0.00528 D. 0.00432

Solution

$$0.004786 \approx 0.0048$$

Final Answer

0.0048

MCQ 89

Round 12.345 to 3 significant figures.

- A. 12.3 B. 13.53
C. 11.07 D. 13.3

Solution

$$12.345 \approx 12.3$$

Final Answer

12.3

MCQ 90

Round 998.7 to 2 significant figures.

- A. 1100 B. 900
C. 1200 D. 1000

Solution

$$998.7 \approx 1000$$

Final Answer

1000

MCQ 91

Round 0.07654 to 3 significant figures.

- A. 0.06885 B. 1.0765
C. 0.0765 D. 0.08415

Solution

$$0.07654 \approx 0.0765$$

Final Answer

0.0765

MCQ 92

Round 34567 to 1 significant figures.

- A. 30100 B. 30000
C. 33000 D. 27000

Solution

$$34567 \approx 30000$$

Final Answer

30000

MCQ 93

Round 6.789 to 2 significant figures.

- A. 6.8 B. 7.48
C. 6.12 D. 7.8

Solution

$$6.789 \approx 6.8$$

Final Answer

6.8

MCQ 94

Round 0.0009236 to 2 significant figures.

- A. 0.001012 B. 0.000828
C. 1.00092 D. 0.00092

Solution

$$0.0009236 \approx 0.00092$$

Final Answer

0.00092

MCQ 95

Round 15049 to 3 significant figures.

- A. 13500 B. 15100
C. 15000 D. 16500

Solution

$$15049 \approx 15000$$

Final Answer

15000

Approximation and Estimation**MCQ 96**Estimate 49×21 by rounding to convenient numbers.

- A. 2000 B. 1000
C. 1010 D. 990

Solution

$$49 \times 21 \approx 50 \times 20 = 1000$$

Final Answer

1000

MCQ 97

Estimate 198×31 by rounding to convenient numbers.

- A. 6000 B. 6010
C. 5990 D. 12000

Solution

$$198 \times 31 \approx 200 \times 30 = 6000$$

Final Answer

6000

MCQ 98

Estimate $603 - 197$ by rounding to convenient numbers.

- A. 410 B. 390
C. 800 D. 400

Solution

$$603 - 197 \approx 600 - 200 = 400$$

Final Answer

400

MCQ 99

Estimate $398 + 201$ by rounding to convenient numbers.

- A. 590 B. 1200
C. 600 D. 610

Solution

$$398 + 201 \approx 400 + 200 = 600$$

Final Answer

600

MCQ 100

Estimate $1002 \div 49$ by rounding to convenient numbers.

- A. 40 B. 20
C. 30 D. 10

Solution

$$1002 \div 49 \approx 1000 \div 50 = 20$$

Final Answer

20

RAPID REVISION GRID | SETS / VENN / ROUNDING

Only A

$$n(A \text{ only}) = n(A) - n(A \cap B)$$

Neither

$$\text{Neither} = n(U) - n(A \cup B)$$

Subset $A \subseteq B$ means every element of A belongs to B .

Significant figures Start counting from the first non-zero digit.

Fast check For a two-set Venn question, compute the intersection only once.

Exam shortcut Estimate before exact calculation to reject impossible options quickly.

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BASIC STATISTICS & DATA INTERPRETATION MCQs | 100 FULLY SOLVED MCQs**Fast Foundation for One-Paper Exams****Mean**

$$\bar{x} = \frac{\sum x}{n}$$

Frequency mean

$$\bar{x} = \frac{\sum fx}{\sum f}$$

Median Arrange the data first; use the middle observation.

Mode The value with the highest frequency.

Range

$$\text{Range} = \text{max} - \text{min}$$

Systematic sampling

$$k = \frac{N}{n}$$

Arithmetic Mean**MCQ 1**

Find the arithmetic mean of 4, 6, 8.

A. 6 **B.** 7**C.** 5 **D.** 8**Solution**

$$\bar{x} = \frac{4 + 6 + 8}{3} = \frac{18}{3} = 6$$

Final Answer

6

MCQ 2

Find the arithmetic mean of 5, 7, 9, 11.

A. 9 **B.** 7**C.** 10 **D.** 8**Solution**

$$\bar{x} = \frac{5 + 7 + 9 + 11}{4} = \frac{32}{4} = 8$$

Final Answer

8

MCQ 3

Find the arithmetic mean of 12, 15, 18.

A. 14 **B.** 17**C.** 15 **D.** 16**Solution**

$$\bar{x} = \frac{12 + 15 + 18}{3} = \frac{45}{3} = 15$$

Final Answer

15

MCQ 4

Find the arithmetic mean of 20, 25, 30, 35.

A. 29.5 **B.** 27.5**C.** 28.5 **D.** 26.5**Solution**

$$\bar{x} = \frac{20 + 25 + 30 + 35}{4} = \frac{110}{4} = 27.5$$

Final Answer

27.5

MCQ 5

Find the arithmetic mean of 3, 5, 7, 9, 11.

A. 7 **B.** 8**C.** 6 **D.** 9**Solution**

$$\bar{x} = \frac{3 + 5 + 7 + 9 + 11}{5} = \frac{35}{5} = 7$$

Final Answer

7

MCQ 6

Find the arithmetic mean of 14, 16, 18, 20.

A. 18 **B.** 16**C.** 19 **D.** 17**Solution**

$$\bar{x} = \frac{14 + 16 + 18 + 20}{4} = \frac{68}{4} = 17$$

Final Answer

17

MCQ 7

Find the arithmetic mean of 6, 8, 10, 12, 14.

A. 9 **B.** 12**C.** 10 **D.** 11**Solution**

$$\bar{x} = \frac{6 + 8 + 10 + 12 + 14}{5} = \frac{50}{5} = 10$$

Final Answer

10

MCQ 8

Find the arithmetic mean of 21, 24, 27.

A. 26 **B.** 24**C.** 25 **D.** 23**Solution**

$$\bar{x} = \frac{21 + 24 + 27}{3} = \frac{72}{3} = 24$$

Final Answer

24

MCQ 9

Find the arithmetic mean of 2, 4, 6, 8.

A. 5 **B.** 6**C.** 4 **D.** 7**Solution**

$$\bar{x} = \frac{2 + 4 + 6 + 8}{4} = \frac{20}{4} = 5$$

Final Answer

5

MCQ 10

Find the arithmetic mean of 11, 13, 15, 17, 19.

- A. 16 B. 14
C. 17 D. 15

Solution

$$\bar{x} = \frac{11 + 13 + 15 + 17 + 19}{5} = \frac{75}{5} = 15$$

Final Answer

15

MCQ 11

Find the arithmetic mean of 30, 40, 50.

- A. 39 B. 42
C. 40 D. 41

Solution

$$\bar{x} = \frac{30 + 40 + 50}{3} = \frac{120}{3} = 40$$

Final Answer

40

MCQ 12

Find the arithmetic mean of 7, 9, 10, 14.

- A. 12 B. 10
C. 11 D. 9

Solution

$$\bar{x} = \frac{7 + 9 + 10 + 14}{4} = \frac{40}{4} = 10$$

Final Answer

10

MCQ 13

Find the arithmetic mean of 18, 22, 26, 30.

- A. 24 B. 25
C. 23 D. 26

Solution

$$\bar{x} = \frac{18 + 22 + 26 + 30}{4} = \frac{96}{4} = 24$$

Final Answer

24

MCQ 14

Find the arithmetic mean of 5, 10, 15, 20, 25.

- A. 16 B. 14
C. 17 D. 15

Solution

$$\bar{x} = \frac{5 + 10 + 15 + 20 + 25}{5} = \frac{75}{5} = 15$$

Final Answer

15

MCQ 15

Find the arithmetic mean of 16, 18, 22, 24.

- A. 19 B. 22
C. 20 D. 21

Solution

$$\bar{x} = \frac{16 + 18 + 22 + 24}{4} = \frac{80}{4} = 20$$

Final Answer

20

Median**MCQ 16**

Find the median of 2, 4, 6.

- A. 6 B. 4
C. 5 D. 3

Solution

Middle value = 4

Final Answer

4

MCQ 17

Find the median of 1, 3, 5, 7.

- A. 4 B. 5
C. 3 D. 6

Solution

$$\text{Median} = \frac{3 + 5}{2} = 4$$

Final Answer

4

MCQ 18

Find the median of 4, 7, 9, 12, 15.

- A. 10 B. 8
C. 11 D. 9

Solution

Middle value = 9

Final Answer

9

MCQ 19

Find the median of 2, 5, 8, 11.

- A. 5.5 B. 8.5
C. 6.5 D. 7.5

Solution

$$\text{Median} = \frac{5 + 8}{2} = 6.5$$

Final Answer

6.5

MCQ 20

Find the median of 10, 12, 14, 16, 18.

- A. 16 B. 14
C. 15 D. 13

Solution

Middle value = 14

Final Answer

14

MCQ 21

Find the median of 3, 6, 9, 12, 15, 18.

- A. 10.5 B. 11.5
C. 9.5 D. 12.5

Solution

$$\text{Median} = \frac{9 + 12}{2} = 10.5$$

Final Answer

10.5

MCQ 22

Find the median of 5, 5, 7, 9, 11.

- A. 8 B. 6
C. 9 D. 7

Solution

Middle value = 7

Final Answer

7

MCQ 23

Find the median of 20, 25, 30, 35.

- A. 26.5 B. 29.5
C. 27.5 D. 28.5

Solution

$$\text{Median} = \frac{25 + 30}{2} = 27.5$$

Final Answer

27.5

MCQ 24

Find the median of 1, 2, 8, 9, 10.

- A. 10 B. 8
C. 9 D. 7

Solution

Middle value = 8

Final Answer

8

MCQ 25

Find the median of 6, 8, 10, 12, 14, 16, 18.

- A. 12 B. 13
C. 11 D. 14

Solution

Middle value = 12

Final Answer

12

MCQ 26

Find the median of 13, 17, 21.

- A. 18 B. 16
C. 19 D. 17

Solution

Middle value = 17

Final Answer

17

MCQ 27

Find the median of 4, 6, 8, 10.

- A. 6 B. 9
C. 7 D. 8

Solution

$$\text{Median} = \frac{6 + 8}{2} = 7$$

Final Answer

7

MCQ 28

Find the median of 7, 11, 13, 15, 19.

- A. 15 B. 13
C. 14 D. 12

Solution

Middle value = 13

Final Answer

13

MCQ 29

Find the median of 2, 3, 5, 8, 13, 21.

- A. 6.5 B. 7.5
C. 5.5 D. 8.5

Solution

$$\text{Median} = \frac{5 + 8}{2} = 6.5$$

Final Answer

6.5

MCQ 30

Find the median of 9, 12, 15, 18, 21.

- A. 16 B. 14
C. 17 D. 15

Solution

Middle value = 15

Final Answer

15

Mode and Range**MCQ 31**

Find the mode of 2, 2, 3, 4.

- A. 1 B. 4
C. 2 D. 3

Solution

2 occurs 2 times

Final Answer

2

MCQ 32

Find the mode of 5, 6, 6, 6, 8.

- A. 8 B. 6
C. 7 D. 5

Solution

6 occurs 3 times

Final Answer

6

MCQ 33

Find the mode of 1, 3, 3, 5, 7.

- A. 3 B. 4
C. 2 D. 7

Solution

3 occurs 2 times

Final Answer

3

MCQ 34

Find the mode of 9, 9, 10, 11, 12.

- A. 10 B. 8
C. 12 D. 9

Solution

9 occurs 2 times

Final Answer

9

MCQ 35

Find the mode of 4, 5, 5, 6, 7.

- A. 4 B. 7
C. 5 D. 6

Solution

5 occurs 2 times

Final Answer

5

MCQ 36

Find the mode of 2, 4, 4, 4, 5, 6.

- A. 6 B. 4
C. 5 D. 3

Solution

4 occurs 3 times

Final Answer

4

MCQ 37

Find the mode of 8, 9, 10, 10, 10, 11.

- A. 10 B. 11
C. 9 D. 12

Solution

10 occurs 3 times

Final Answer

10

MCQ 38

Find the mode of 3, 3, 3, 4, 5.

- A. 4 B. 2
C. 5 D. 3

Solution

3 occurs 3 times

Final Answer

3

MCQ 39

Find the mode of 12, 13, 13, 14.

- A. 12 B. 15
C. 13 D. 14

Solution

13 occurs 2 times

Final Answer

13

MCQ 40

Find the mode of 20, 21, 21, 21, 22.

- A. 23 B. 21
C. 22 D. 20

Solution

21 occurs 3 times

Final Answer

21

MCQ 41

Find the range of 4, 9, 15, 20.

- A. 16 B. 18
C. 14 D. 20

SolutionRange = $20 - 4 = 16$ **Final Answer**

16

MCQ 42

Find the range of 3, 7, 12, 18, 22.

- A. 21 B. 17
C. 22 D. 19

SolutionRange = $22 - 3 = 19$ **Final Answer**

19

MCQ 43

Find the range of 10, 25, 30, 45.

- A. 33 B. 45
C. 35 D. 37

SolutionRange = $45 - 10 = 35$ **Final Answer**

35

MCQ 44

Find the range of 2, 6, 11, 14, 19.

- A. 21 B. 17
C. 19 D. 15

SolutionRange = $19 - 2 = 17$ **Final Answer**

17

MCQ 45

Which formula gives the range of a data set?

- A. Maximum - Minimum B. Maximum + Minimum
C. Mean - Median D. Mode - Mean

Solution

Range = Maximum - Minimum

Final Answer

Maximum - Minimum

Frequency and Weighted Data**MCQ 46**

Find the mean from the frequency table.

Value	1	2	3
Freq.	2	3	1

- A. 2.833333333 B. 0.833333333
C. 3.833333333 D. 1.833333333

Solution

$$\bar{x} = \frac{\sum fx}{\sum f} = \frac{11}{6} = 1.833333333$$

Final Answer

1.833333333

MCQ 47

Find the mean from the frequency table.

Value	2	4	6
Freq.	1	2	1

- A. 3 B. 6
C. 4 D. 5

Solution

$$\bar{x} = \frac{\sum fx}{\sum f} = \frac{16}{4} = 4$$

Final Answer

4

MCQ 48

Find the mean from the frequency table.

Value	5	10	15
Freq.	2	1	1

A. 10.75**B.** 8.75**C.** 9.75**D.** 7.75**Solution**

$$\bar{x} = \frac{\sum fx}{\sum f} = \frac{35}{4} = 8.75$$

Final Answer

8.75

MCQ 49

Find the mean from the frequency table.

Value	10	20	30
Freq.	1	2	2

A. 22**B.** 23**C.** 21**D.** 24**Solution**

$$\bar{x} = \frac{\sum fx}{\sum f} = \frac{110}{5} = 22$$

Final Answer

22

MCQ 50

Find the mean from the frequency table.

Value	3	6	9
Freq.	3	2	1

A. 6**B.** 4**C.** 7**D.** 5**Solution**

$$\bar{x} = \frac{\sum fx}{\sum f} = \frac{30}{6} = 5$$

Final Answer

5

MCQ 51

Find the mean from the frequency table.

Value	4	8	12
Freq.	1	3	2

A. 7.666666667**B.** 10.66666667**C.** 8.666666667**D.** 9.666666667**Solution**

$$\bar{x} = \frac{\sum fx}{\sum f} = \frac{52}{6} = 8.666666667$$

Final Answer

8.666666667

MCQ 52

Find the mean from the frequency table.

Value	2	5	8
Freq.	2	2	2

A. 7**B.** 5**C.** 6**D.** 4**Solution**

$$\bar{x} = \frac{\sum fx}{\sum f} = \frac{30}{6} = 5$$

Final Answer

5

MCQ 53

Find the mean from the frequency table.

Value	1	5	9
Freq.	4	1	1

A. 3**B.** 4**C.** 2**D.** 5**Solution**

$$\bar{x} = \frac{\sum fx}{\sum f} = \frac{18}{6} = 3$$

Final Answer

3

MCQ 54

Find the mean from the frequency table.

Value	6	7	8
Freq.	1	4	1

A. 8**B.** 6**C.** 9**D.** 7**Solution**

$$\bar{x} = \frac{\sum fx}{\sum f} = \frac{42}{6} = 7$$

Final Answer

7

MCQ 55

Find the mean from the frequency table.

Value	10	15	20
Freq.	2	2	1

A. 13**B.** 16**C.** 14**D.** 15**Solution**

$$\bar{x} = \frac{\sum fx}{\sum f} = \frac{70}{5} = 14$$

Final Answer

14

MCQ 56

A score 70 has weight 2 and score 80 has weight 3. Find the weighted mean.

A. 75**B.** 76**C.** 78**D.** 74**Solution**

$$\bar{x}_w = \frac{70(2) + 80(3)}{5} = \frac{380}{5} = 76$$

Final Answer

76

MCQ 57

A score 60 has weight 1 and score 90 has weight 2. Find the weighted mean.

A. 80**B.** 82**C.** 78**D.** 75**Solution**

$$\bar{x}_w = \frac{60(1) + 90(2)}{3} = \frac{240}{3} = 80$$

Final Answer

80

MCQ 58

A score 75 has weight 4 and score 85 has weight 1. Find the weighted mean.

A. 79**B.** 75**C.** 80**D.** 77**Solution**

$$\bar{x}_w = \frac{75(4) + 85(1)}{5} = \frac{385}{5} = 77$$

Final Answer

77

MCQ 59

A score 50 has weight 3 and score 70 has weight 2. Find the weighted mean.

A. 56**B.** 64**C.** 58**D.** 60**Solution**

$$\bar{x}_w = \frac{50(3) + 70(2)}{5} = \frac{290}{5} = 58$$

Final Answer

58

MCQ 60

A score 80 has weight 2 and score 95 has weight 2. Find the weighted mean.

A. 87.6**B.** 87.5**C.** 89.5**D.** 85.5**Solution**

$$\bar{x}_w = \frac{80(2) + 95(2)}{4} = \frac{350}{4} = 87.5$$

Final Answer

87.5

Combined Statistics**MCQ 61**

Group A has 20 observations with mean 60; Group B has 30 observations with mean 70. Find the combined mean.

A. 66**B.** 67**C.** 65**D.** 73**Solution**

$$\bar{x} = \frac{20(60) + 30(70)}{50} = \frac{3300}{50} = 66$$

Final Answer

66

MCQ 62

Group A has 25 observations with mean 72; Group B has 15 observations with mean 68. Find the combined mean.

- A. 71.5 B. 69.5
C. 70 D. 70.5

Solution

$$\bar{x} = \frac{25(72) + 15(68)}{40} = \frac{2820}{40} = 70.5$$

Final Answer

70.5

MCQ 63

Group A has 40 observations with mean 55; Group B has 20 observations with mean 65. Find the combined mean.

- A. 57.33333333 B. 60
C. 58.33333333 D. 59.33333333

Solution

$$\bar{x} = \frac{40(55) + 20(65)}{60} = \frac{3500}{60} = 58.33333333$$

Final Answer

58.33333333

MCQ 64

Group A has 12 observations with mean 80; Group B has 18 observations with mean 75. Find the combined mean.

- A. 77.5 B. 77
C. 78 D. 76

Solution

$$\bar{x} = \frac{12(80) + 18(75)}{30} = \frac{2310}{30} = 77$$

Final Answer

77

MCQ 65

Group A has 30 observations with mean 50; Group B has 30 observations with mean 70. Find the combined mean.

- A. 60 B. 61
C. 59 D. 66

Solution

$$\bar{x} = \frac{30(50) + 30(70)}{60} = \frac{3600}{60} = 60$$

Final Answer

60

MCQ 66

Group A has 10 observations with mean 90; Group B has 20 observations with mean 75. Find the combined mean.

- A. 81 B. 79
C. 82.5 D. 80

Solution

$$\bar{x} = \frac{10(90) + 20(75)}{30} = \frac{2400}{30} = 80$$

Final Answer

80

MCQ 67

Group A has 35 observations with mean 64; Group B has 15 observations with mean 76. Find the combined mean.

- A. 66.6 B. 70
C. 67.6 D. 68.6

Solution

$$\bar{x} = \frac{35(64) + 15(76)}{50} = \frac{3380}{50} = 67.6$$

Final Answer

67.6

MCQ 68

Group A has 24 observations with mean 58; Group B has 16 observations with mean 67. Find the combined mean.

- A. 62.5 B. 61.6
C. 62.6 D. 60.6

Solution

$$\bar{x} = \frac{24(58) + 16(67)}{40} = \frac{2464}{40} = 61.6$$

Final Answer

61.6

MCQ 69

Group A has 18 observations with mean 82; Group B has 22 observations with mean 78. Find the combined mean.

- A. 79.8 B. 80.8
C. 78.8 D. 80

Solution

$$\bar{x} = \frac{18(82) + 22(78)}{40} = \frac{3192}{40} = 79.8$$

Final Answer

79.8

MCQ 70

Group A has 50 observations with mean 45; Group B has 25 observations with mean 60. Find the combined mean.

- A. 51
B. 49
C. 52.5
D. 50

Solution

$$\bar{x} = \frac{50(45) + 25(60)}{75} = \frac{3750}{75} = 50$$

Final Answer

50

MCQ 71

Group A has 15 observations with mean 70; Group B has 25 observations with mean 74. Find the combined mean.

- A. 71.5
B. 72
C. 72.5
D. 73.5

Solution

$$\bar{x} = \frac{15(70) + 25(74)}{40} = \frac{2900}{40} = 72.5$$

Final Answer

72.5

MCQ 72

Group A has 28 observations with mean 66; Group B has 12 observations with mean 72. Find the combined mean.

- A. 69
B. 67.8
C. 68.8
D. 66.8

Solution

$$\bar{x} = \frac{28(66) + 12(72)}{40} = \frac{2712}{40} = 67.8$$

Final Answer

67.8

MCQ 73

Group A has 32 observations with mean 59; Group B has 18 observations with mean 69. Find the combined mean.

- A. 62.6
B. 63.6
C. 61.6
D. 64

Solution

$$\bar{x} = \frac{32(59) + 18(69)}{50} = \frac{3130}{50} = 62.6$$

Final Answer

62.6

MCQ 74

Group A has 14 observations with mean 88; Group B has 21 observations with mean 84. Find the combined mean.

- A. 86.6
B. 84.6
C. 86
D. 85.6

Solution

$$\bar{x} = \frac{14(88) + 21(84)}{35} = \frac{2996}{35} = 85.6$$

Final Answer

85.6

MCQ 75

Group A has 20 observations with mean 62; Group B has 40 observations with mean 68. Find the combined mean.

- A. 65
B. 73
C. 66
D. 67

Solution

$$\bar{x} = \frac{20(62) + 40(68)}{60} = \frac{3960}{60} = 66$$

Final Answer

66

Data Interpretation Tables**MCQ 76**

Use the table.

	Jan	Feb	Mar	Apr	May
Monthly sales	120	150	180	160	190

Find the highest.

- A. 200
B. 190
C. 195
D. 185

Solution

max = 190

Final Answer

190

MCQ 77

Use the table.

	Jan	Feb	Mar	Apr	May
Monthly sales	120	150	180	160	190

Find the lowest.

A. 120**B.** 125**C.** 115**D.** 130**Solution**

$$\min = 120$$

Final Answer

120

MCQ 78

Use the table.

	Jan	Feb	Mar	Apr	May
Monthly sales	120	150	180	160	190

Find the range.

A. 75**B.** 65**C.** 80**D.** 70**Solution**

$$190 - 120 = 70$$

Final Answer

70

MCQ 79

Use the table.

	Jan	Feb	Mar	Apr	May
Monthly sales	120	150	180	160	190

Find the total.

A. 795**B.** 810**C.** 800**D.** 805**Solution**

$$120 + 150 + 180 + 160 + 190 = 800$$

Final Answer

800

MCQ 80

Use the table.

	Jan	Feb	Mar	Apr	May
Monthly sales	120	150	180	160	190

Find the mean.

A. 170**B.** 160**C.** 165**D.** 155**Solution**

$$\frac{800}{5} = 160$$

Final Answer

160

MCQ 81

Use the table.

	A	B	C	D	E
Marks	65	72	80	68	85

Find the highest.

A. 85**B.** 90**C.** 80**D.** 95**Solution**

$$\max = 85$$

Final Answer

85

MCQ 82

Use the table.

	A	B	C	D	E
Marks	65	72	80	68	85

Find the lowest.

A. 70**B.** 60**C.** 75**D.** 65**Solution**

$$\min = 65$$

Final Answer

65

MCQ 83

Use the table.

	A	B	C	D	E
Marks	65	72	80	68	85

Find the range.

A. 15**B.** 30**C.** 20**D.** 25**Solution**

$$85 - 65 = 20$$

Final Answer

20

MCQ 84

Use the table.

	A	B	C	D	E
Marks	65	72	80	68	85

Find the total.

A. 380**B.** 370**C.** 375**D.** 365**Solution**

$$65 + 72 + 80 + 68 + 85 = 370$$

Final Answer

370

MCQ 85

Use the table.

	A	B	C	D	E
Marks	65	72	80	68	85

Find the mean.

A. 74**B.** 79**C.** 69**D.** 84**Solution**

$$\frac{370}{5} = 74$$

Final Answer

74

MCQ 86

Use the table.

	Mon	Tue	Wed	Thu	Fri
Production	40	55	60	50	70

Find the highest.

A. 75**B.** 65**C.** 80**D.** 70**Solution**

$$\max = 70$$

Final Answer

70

MCQ 87

Use the table.

	Mon	Tue	Wed	Thu	Fri
Production	40	55	60	50	70

Find the lowest.

A. 35**B.** 50**C.** 40**D.** 45**Solution**

$$\min = 40$$

Final Answer

40

MCQ 88

Use the table.

	Mon	Tue	Wed	Thu	Fri
Production	40	55	60	50	70

Find the range.

A. 40**B.** 30**C.** 35**D.** 25**Solution**

$$70 - 40 = 30$$

Final Answer

30

MCQ 89

Use the table.

	Mon	Tue	Wed	Thu	Fri
Production	40	55	60	50	70

Find the total.

A. 275**B.** 280**C.** 270**D.** 285**Solution**

$$40 + 55 + 60 + 50 + 70 = 275$$

Final Answer

275

MCQ 90

Use the table.

	Mon	Tue	Wed	Thu	Fri
Production	40	55	60	50	70

Find the mean.

A. 60**B.** 50**C.** 65**D.** 55**Solution**

$$\frac{275}{5} = 55$$

Final Answer

55

Random Sampling Basics**MCQ 91**

A subset selected from a population for study is called a?

A. Census**B.** Variable**C.** Sample**D.** Parameter**Solution**

Sample

Final Answer

Sample

MCQ 92

A numerical characteristic of a population is called a?

A. Class interval**B.** Parameter**C.** Statistic**D.** Sample**Solution**

Parameter

Final Answer

Parameter

MCQ 93Selecting every k th item after a random start is?**A.** Systematic sampling**B.**

Convenience sampling

C. Cluster only**D.** Judgment sampling**Solution**

Systematic sampling

Final Answer

Systematic sampling

MCQ 94

In simple random sampling, each member should have?

A. Zero chance**B.**

Different fixed chance

C. No defined chance**D.**

Equal selection chance

Solution

Equal selection chance

Final Answer

Equal selection chance

MCQ 95

Studying every member of a population is called a?

A. Mode**B.** Range**C.** Census**D.** Sample**Solution**

Census

Final Answer

Census

MCQ 96For systematic sampling from a population of 500, a sample of 50 is required. Find the sampling interval k .**A.** 50**B.** 10**C.** 12**D.** 8**Solution**

$$k = \frac{N}{n} = \frac{500}{50} = 10$$

Final Answer

10

MCQ 97

For systematic sampling from a population of 800, a sample of 80 is required. Find the sampling interval k .

- A. 10 B. 12
C. 8 D. 80

Solution

$$k = \frac{N}{n} = \frac{800}{80} = 10$$

Final Answer

10

MCQ 98

For systematic sampling from a population of 1000, a sample of 100 is required. Find the sampling interval k .

- A. 12 B. 8
C. 100 D. 10

Solution

$$k = \frac{N}{n} = \frac{1000}{100} = 10$$

Final Answer

10

MCQ 99

For systematic sampling from a population of 600, a sample of 75 is required. Find the sampling interval k .

- A. 6 B. 75
C. 8 D. 10

Solution

$$k = \frac{N}{n} = \frac{600}{75} = 8$$

Final Answer

8

MCQ 100

For systematic sampling from a population of 400, a sample of 40 is required. Find the sampling interval k .

- A. 40 B. 10
C. 12 D. 8

Solution

$$k = \frac{N}{n} = \frac{400}{40} = 10$$

Final Answer

10

RAPID REVISION GRID | STATISTICS / DATA**Combined mean**

$$\bar{x} = \frac{n_1\bar{x}_1 + n_2\bar{x}_2}{n_1 + n_2}$$

Weighted mean

$$\bar{x}_w = \frac{\sum wx}{\sum w}$$

Median check Sort before locating the middle.**Data tables** Read labels and units before calculating.**Random sample** Every unit should have a defined selection chance.**Fast check** Mean must lie between the minimum and maximum values.**THE MATH HUB**

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PROBABILITY, PERMUTATIONS & COMBINATIONS MCQs | 100 FULLY SOLVED MCQs**Fast Foundation for One-Paper Exams****Probability**

$$P(E) = \frac{\text{Favorable outcomes}}{\text{Total equally likely outcomes}}$$

Complement

$$P(E^c) = 1 - P(E)$$

Permutation

$${}^n P_r = \frac{n!}{(n-r)!}$$

Combination

$${}^n C_r = \frac{n!}{r!(n-r)!}$$

Two dice

$$6 \times 6 = 36 \text{ ordered outcomes}$$

Selection vs arrangement Order matters: permutation. Order does not matter: combination.

Basic Probability and Complements

MCQ 1

An experiment has 10 equally likely outcomes, of which 3 are favorable. Find the probability.

- A. $\frac{3}{10}$ B. $\frac{4}{10}$
C. $\frac{2}{10}$ D. $\frac{7}{10}$

Solution

$$P(E) = \frac{3}{10} = \frac{3}{10}$$

Final Answer

$\frac{3}{10}$

MCQ 2

An experiment has 9 equally likely outcomes, of which 4 are favorable. Find the probability.

- A. $\frac{5}{9}$ B. $\frac{3}{9}$
C. $\frac{4}{9}$ D. $\frac{5}{9}$

(
frac59
)

Solution

$$P(E) = \frac{4}{9} = \frac{4}{9}$$

Final Answer

$\frac{4}{9}$

MCQ 3

An experiment has 12 equally likely outcomes, of which 5 are favorable. Find the probability.

- A. $\frac{4}{12}$ B. $\frac{7}{12}$
C. $\frac{5}{12}$ D. $\frac{6}{12}$

Solution

$$P(E) = \frac{5}{12} = \frac{5}{12}$$

Final Answer

$\frac{5}{12}$

MCQ 4

An experiment has 20 equally likely outcomes, of which 7 are favorable. Find the probability.

- A. $\frac{13}{20}$ B. $\frac{7}{20}$
C. $\frac{8}{20}$ D. $\frac{6}{20}$

Solution

$$P(E) = \frac{7}{20} = \frac{7}{20}$$

Final Answer

$\frac{7}{20}$

MCQ 5

An experiment has 25 equally likely outcomes, of which 9 are favorable. Find the probability.

- A. $\frac{9}{25}$ B. $\frac{10}{25}$
C. $\frac{8}{25}$ D. $\frac{16}{25}$

Solution

$$P(E) = \frac{9}{25} = \frac{9}{25}$$

Final Answer

$\frac{9}{25}$

MCQ 6

An experiment has 7 equally likely outcomes, of which 2 are favorable. Find the probability.

- A. $\frac{3}{7}$ B. $\frac{1}{7}$
C. $\frac{5}{7}$ D. $\frac{2}{7}$

Solution

$$P(E) = \frac{2}{7} = \frac{2}{7}$$

Final Answer

$\frac{2}{7}$

MCQ 7

An experiment has 15 equally likely outcomes, of which 6 are favorable. Find the probability.

- A. $\frac{5}{15}$ B. $\frac{9}{15}$
C. $\frac{2}{5}$ D. $\frac{7}{15}$

Solution

$$P(E) = \frac{6}{15} = \frac{2}{5}$$

Final Answer

$\frac{2}{5}$

MCQ 8

An experiment has 18 equally likely outcomes, of which 8 are favorable. Find the probability.

- A. $\frac{10}{18}$ B. $\frac{4}{9}$
C. $\frac{9}{18}$ D. $\frac{7}{18}$

Solution

$$P(E) = \frac{8}{18} = \frac{4}{9}$$

Final Answer $\frac{4}{9}$ **MCQ 9**

An experiment has 5 equally likely outcomes, of which 1 are favorable. Find the probability.

- A. $\frac{1}{5}$ B. $\frac{2}{5}$
C. $\frac{4}{5}$ D.

(
frac25
)

Solution

$$P(E) = \frac{1}{5} = \frac{1}{5}$$

Final Answer $\frac{1}{5}$ **MCQ 10**

An experiment has 30 equally likely outcomes, of which 11 are favorable. Find the probability.

- A. $\frac{12}{30}$ B. $\frac{10}{30}$
C. $\frac{19}{30}$ D. $\frac{11}{30}$

Solution

$$P(E) = \frac{11}{30} = \frac{11}{30}$$

Final Answer $\frac{11}{30}$ **MCQ 11**

If $P(E) = \frac{1}{4}$, find $P(E^c)$.

- A. 1 B. 0
C. $\frac{3}{4}$ D. $\frac{1}{4}$

Solution

$$P(E^c) = 1 - \frac{1}{4} = \frac{3}{4}$$

Final Answer $\frac{3}{4}$ **MCQ 12**

If $P(E) = \frac{2}{5}$, find $P(E^c)$.

- A. 0 B. $\frac{3}{5}$
C. $\frac{2}{5}$ D. 1

Solution

$$P(E^c) = 1 - \frac{2}{5} = \frac{3}{5}$$

Final Answer $\frac{3}{5}$ **MCQ 13**

If $P(E) = \frac{3}{8}$, find $P(E^c)$.

- A. $\frac{5}{8}$ B. $\frac{3}{8}$
C. 1 D. 0

Solution

$$P(E^c) = 1 - \frac{3}{8} = \frac{5}{8}$$

Final Answer $\frac{5}{8}$ **MCQ 14**

If $P(E) = \frac{1}{3}$, find $P(E^c)$.

- A. $\frac{1}{3}$ B. 1
C. 0 D. $\frac{2}{3}$

Solution

$$P(E^c) = 1 - \frac{1}{3} = \frac{2}{3}$$

Final Answer $\frac{2}{3}$ **MCQ 15**

If $P(E) = \frac{5}{12}$, find $P(E^c)$.

- A. 1 B. 0
C. $\frac{7}{12}$ D. $\frac{5}{12}$

Solution

$$P(E^c) = 1 - \frac{5}{12} = \frac{7}{12}$$

Final Answer $\frac{7}{12}$

MCQ 16If $P(E) = \frac{7}{10}$, find $P(E^c)$.

- A. 0
 B. $\frac{3}{10}$
 C. $\frac{7}{10}$
 D. 1

Solution

$$P(E^c) = 1 - \frac{7}{10} = \frac{3}{10}$$

Final Answer

$$\frac{3}{10}$$

MCQ 17If $P(E) = \frac{4}{9}$, find $P(E^c)$.

- A. $\frac{5}{9}$
 B. $\frac{4}{9}$
 C. 1
 D. 0

Solution

$$P(E^c) = 1 - \frac{4}{9} = \frac{5}{9}$$

Final Answer

$$\frac{5}{9}$$

MCQ 18If $P(E) = \frac{3}{5}$, find $P(E^c)$.

- A. $\frac{3}{5}$
 B. 1
 C. 0
 D. $\frac{2}{5}$

Solution

$$P(E^c) = 1 - \frac{3}{5} = \frac{2}{5}$$

Final Answer

$$\frac{2}{5}$$

MCQ 19If $P(E) = \frac{11}{20}$, find $P(E^c)$.

- A. 1
 B. 0
 C. $\frac{9}{20}$
 D. $\frac{11}{20}$

Solution

$$P(E^c) = 1 - \frac{11}{20} = \frac{9}{20}$$

Final Answer

$$\frac{9}{20}$$

MCQ 20If $P(E) = \frac{1}{2}$, find $P(E^c)$.

- A. $\frac{1}{2}$
 B. $\frac{1}{2}$
 C. 1
 D. 0

Solution

$$P(E^c) = 1 - \frac{1}{2} = \frac{1}{2}$$

Final Answer

$$\frac{1}{2}$$

Dice and Coin Problems**MCQ 21**

A fair die is rolled once. Find the probability of getting even.

- A. $\frac{1}{2}$
 B. $\frac{1}{6}$
 C. $\frac{1}{2}$
 D. $\frac{2}{3}$

Solution

$$P = \frac{3}{6} = \frac{1}{2}$$

Final Answer

$$\frac{1}{2}$$

MCQ 22

A fair die is rolled once. Find the probability of getting odd.

- A. $\frac{1}{6}$
 B. $\frac{1}{2}$
 C. $\frac{2}{3}$
 D. $\frac{1}{2}$

Solution

$$P = \frac{3}{6} = \frac{1}{2}$$

Final Answer

$$\frac{1}{2}$$

MCQ 23

A fair die is rolled once. Find the probability of getting greater than 4.

- A. $\frac{1}{2}$
 B. $\frac{2}{3}$
 C. $\frac{1}{3}$
 D. $\frac{1}{6}$

Solution

$$P = \frac{2}{6} = \frac{1}{3}$$

Final Answer

$$\frac{1}{3}$$

MCQ 24

A fair die is rolled once. Find the probability of getting less than 3.

- A. $\frac{2}{3}$ B. $\frac{1}{3}$
C. $\frac{1}{6}$ D. $\frac{1}{2}$

Solution

$$P = \frac{2}{6} = \frac{1}{3}$$

Final Answer

$$\frac{1}{3}$$

MCQ 25

A fair die is rolled once. Find the probability of getting prime.

- A. $\frac{1}{2}$ B. $\frac{1}{6}$
C. $\frac{1}{2}$ D. $\frac{2}{3}$

Solution

$$P = \frac{3}{6} = \frac{1}{2}$$

Final Answer

$$\frac{1}{2}$$

MCQ 26

A fair die is rolled once. Find the probability of getting multiple of 3.

- A. $\frac{1}{6}$ B. $\frac{1}{2}$
C. $\frac{2}{3}$ D. $\frac{1}{3}$

Solution

$$P = \frac{2}{6} = \frac{1}{3}$$

Final Answer

$$\frac{1}{3}$$

MCQ 27

A fair die is rolled once. Find the probability of getting at least 5.

- A. $\frac{1}{2}$ B. $\frac{2}{3}$
C. $\frac{1}{3}$ D. $\frac{1}{6}$

Solution

$$P = \frac{2}{6} = \frac{1}{3}$$

Final Answer

$$\frac{1}{3}$$

MCQ 28

A fair die is rolled once. Find the probability of getting not 6.

- A. $\frac{2}{3}$ B. $\frac{5}{6}$
C. $\frac{1}{6}$ D. $\frac{1}{2}$

Solution

$$P = \frac{5}{6} = \frac{5}{6}$$

Final Answer

$$\frac{5}{6}$$

MCQ 29

Two fair dice are rolled. Find the probability that the sum is 7.

- A. $\frac{1}{6}$ B. $\frac{1}{6}$
C. $\frac{1}{12}$ D. $\frac{5}{36}$

Solution

$$\text{Favorable pairs} = 6, \quad P = \frac{6}{36} = \frac{1}{6}$$

Final Answer

$$\frac{1}{6}$$

MCQ 30

Two fair dice are rolled. Find the probability that the sum is 8.

- A. $\frac{1}{6}$ B. $\frac{1}{12}$
C. $\frac{5}{36}$ D. $\frac{5}{36}$

Solution

$$\text{Favorable pairs} = 5, \quad P = \frac{5}{36} = \frac{5}{36}$$

Final Answer

$$\frac{5}{36}$$

MCQ 31

Two fair dice are rolled. Find the probability that the sum is 9.

- A. $\frac{1}{12}$ B. $\frac{5}{36}$
C. $\frac{1}{9}$ D. $\frac{1}{6}$

Solution

$$\text{Favorable pairs} = 4, \quad P = \frac{4}{36} = \frac{1}{9}$$

Final Answer

$$\frac{1}{9}$$

MCQ 32

Two fair dice are rolled. Find the probability that the sum is 10.

- A. $\frac{5}{36}$ B. $\frac{1}{12}$
C. $\frac{1}{6}$ D. $\frac{1}{12}$

Solution

$$\text{Favorable pairs} = 3, \quad P = \frac{3}{36} = \frac{1}{12}$$

Final Answer

$$\frac{1}{12}$$

MCQ 33

Two fair dice are rolled. Find the probability that the sum is 11.

- A. $\frac{1}{18}$ B. $\frac{1}{6}$
C. $\frac{1}{12}$ D. $\frac{5}{36}$

Solution

$$\text{Favorable pairs} = 2, \quad P = \frac{2}{36} = \frac{1}{18}$$

Final Answer

$$\frac{1}{18}$$

MCQ 34

Two fair dice are rolled. Find the probability that the sum is 12.

- A. $\frac{1}{6}$ B. $\frac{1}{12}$
C. $\frac{5}{36}$ D. $\frac{1}{36}$

Solution

$$\text{Favorable pairs} = 1, \quad P = \frac{1}{36} = \frac{1}{36}$$

Final Answer

$$\frac{1}{36}$$

MCQ 35

Two fair dice are rolled. Find the probability that the sum is 6.

- A. $\frac{1}{12}$ B. $\frac{5}{36}$
C. $\frac{5}{36}$ D. $\frac{1}{6}$

Solution

$$\text{Favorable pairs} = 5, \quad P = \frac{5}{36} = \frac{5}{36}$$

Final Answer

$$\frac{5}{36}$$

MCQ 36

2 fair coins are tossed. Find the probability of exactly one head.

- A. $\frac{3}{4}$ B. $\frac{1}{2}$
C. $\frac{1}{4}$ D. $\frac{1}{2}$

Solution

$$P = \frac{2}{4} = \frac{1}{2}$$

Final Answer

$$\frac{1}{2}$$

MCQ 37

2 fair coins are tossed. Find the probability of two heads.

- A. $\frac{1}{4}$ B. $\frac{1}{4}$
C. $\frac{1}{2}$ D. $\frac{3}{4}$

Solution

$$P = \frac{1}{4} = \frac{1}{4}$$

Final Answer

$$\frac{1}{4}$$

MCQ 38

2 fair coins are tossed. Find the probability of at least one head.

- A. $\frac{1}{4}$ B. $\frac{1}{2}$
C. $\frac{3}{4}$ D. $\frac{3}{4}$

Solution

$$P = \frac{3}{4} = \frac{3}{4}$$

Final Answer

$$\frac{3}{4}$$

MCQ 39

2 fair coins are tossed. Find the probability of no head.

- A. $\frac{1}{2}$ B. $\frac{3}{4}$
C. $\frac{1}{4}$ D. $\frac{1}{4}$

Solution

$$P = \frac{1}{4} = \frac{1}{4}$$

Final Answer

$$\frac{1}{4}$$

MCQ 40

3 fair coins are tossed. Find the probability of exactly two heads.

- A. $\frac{3}{4}$ B. $\frac{3}{8}$
C. $\frac{1}{4}$ D. $\frac{1}{2}$

Solution

$$P = \frac{3}{8} = \frac{3}{8}$$

Final Answer

$$\frac{3}{8}$$

MCQ 41

3 fair coins are tossed. Find the probability of three heads.

- A. $\frac{1}{8}$ B. $\frac{1}{4}$
C. $\frac{1}{2}$ D. $\frac{3}{4}$

Solution

$$P = \frac{1}{8} = \frac{1}{8}$$

Final Answer

$$\frac{1}{8}$$

MCQ 42

3 fair coins are tossed. Find the probability of at least one tail.

- A. $\frac{1}{4}$ B. $\frac{1}{2}$
C. $\frac{3}{4}$ D. $\frac{7}{8}$

Solution

$$P = \frac{7}{8} = \frac{7}{8}$$

Final Answer

$$\frac{7}{8}$$

MCQ 43

3 fair coins are tossed. Find the probability of exactly one tail.

- A. $\frac{1}{2}$ B. $\frac{3}{4}$
C. $\frac{3}{8}$ D. $\frac{1}{4}$

Solution

$$P = \frac{3}{8} = \frac{3}{8}$$

Final Answer

$$\frac{3}{8}$$

MCQ 44

3 fair coins are tossed. Find the probability of all same.

- A. $\frac{3}{4}$ B. $\frac{1}{4}$
C. $\frac{1}{4}$ D. $\frac{1}{2}$

Solution

$$P = \frac{2}{8} = \frac{1}{4}$$

Final Answer

$$\frac{1}{4}$$

MCQ 45

3 fair coins are tossed. Find the probability of at least two heads.

- A. $\frac{1}{2}$ B. $\frac{1}{4}$
C. $\frac{1}{2}$ D. $\frac{3}{4}$

Solution

$$P = \frac{4}{8} = \frac{1}{2}$$

Final Answer

$$\frac{1}{2}$$

Balls and Cards**MCQ 46**

A bag contains 5 red and 3 blue balls. One ball is drawn. Find the probability of drawing a red ball.

- A. $\frac{1}{2}$ B. $\frac{1}{3}$
C. $\frac{2}{3}$ D. $\frac{5}{8}$

Solution

$$P = \frac{5}{8} = \frac{5}{8}$$

Final Answer

$$\frac{5}{8}$$

MCQ 47

A bag contains 6 red and 4 blue balls. One ball is drawn. Find the probability of drawing a red ball.

- A. $\frac{1}{3}$ B. $\frac{2}{3}$
C. $\frac{3}{5}$ D. $\frac{1}{2}$

Solution

$$P = \frac{6}{10} = \frac{3}{5}$$

Final Answer

$$\frac{3}{5}$$

MCQ 48

A bag contains 7 red and 5 blue balls. One ball is drawn. Find the probability of drawing a blue ball.

- A. $\frac{2}{3}$ B. $\frac{5}{12}$
C. $\frac{1}{2}$ D. $\frac{1}{3}$

Solution

$$P = \frac{5}{12} = \frac{5}{12}$$

Final Answer

$$\frac{5}{12}$$

MCQ 49

A bag contains 8 red and 2 blue balls. One ball is drawn. Find the probability of drawing a blue ball.

- A. $\frac{1}{5}$ B. $\frac{1}{2}$
C. $\frac{1}{3}$ D. $\frac{2}{3}$

Solution

$$P = \frac{2}{10} = \frac{1}{5}$$

Final Answer

$$\frac{1}{5}$$

MCQ 50

A bag contains 9 red and 6 blue balls. One ball is drawn. Find the probability of drawing a red ball.

- A. $\frac{1}{2}$ B. $\frac{1}{3}$
C. $\frac{2}{3}$ D. $\frac{3}{5}$

Solution

$$P = \frac{9}{15} = \frac{3}{5}$$

Final Answer

$$\frac{3}{5}$$

MCQ 51

A bag contains 4 red and 6 blue balls. One ball is drawn. Find the probability of drawing a blue ball.

- A. $\frac{1}{3}$ B. $\frac{2}{3}$
C. $\frac{3}{5}$ D. $\frac{1}{2}$

Solution

$$P = \frac{6}{10} = \frac{3}{5}$$

Final Answer

$$\frac{3}{5}$$

MCQ 52

A bag contains 3 red and 7 blue balls. One ball is drawn. Find the probability of drawing a red ball.

- A. $\frac{2}{3}$ B. $\frac{3}{10}$
C. $\frac{1}{2}$ D. $\frac{1}{3}$

Solution

$$P = \frac{3}{10} = \frac{3}{10}$$

Final Answer

$$\frac{3}{10}$$

MCQ 53

A bag contains 10 red and 5 blue balls. One ball is drawn. Find the probability of drawing a blue ball.

- A. $\frac{1}{3}$ B. $\frac{1}{2}$
C. $\frac{1}{3}$ D. $\frac{2}{3}$

Solution

$$P = \frac{5}{15} = \frac{1}{3}$$

Final Answer

$$\frac{1}{3}$$

MCQ 54

One card is drawn from a standard deck of 52 cards. Find the probability of drawing an ace.

- A. $\frac{1}{13}$ B. $\frac{1}{4}$
C. $\frac{1}{2}$ D. $\frac{1}{13}$

Solution

$$P = \frac{4}{52} = \frac{1}{13}$$

Final Answer

$$\frac{1}{13}$$

MCQ 55

One card is drawn from a standard deck of 52 cards. Find the probability of drawing a king.

- A. $\frac{1}{4}$ B. $\frac{1}{2}$
C. $\frac{1}{13}$ D. $\frac{1}{13}$

Solution

$$P = \frac{4}{52} = \frac{1}{13}$$

Final Answer

$$\frac{1}{13}$$

MCQ 56

One card is drawn from a standard deck of 52 cards. Find the probability of drawing a heart.

- A. $\frac{1}{2}$ B. $\frac{1}{4}$
C. $\frac{1}{13}$ D. $\frac{1}{4}$

Solution

$$P = \frac{13}{52} = \frac{1}{4}$$

Final Answer

$$\frac{1}{4}$$

MCQ 57

One card is drawn from a standard deck of 52 cards. Find the probability of drawing a red card.

- A. $\frac{1}{2}$ B. $\frac{1}{13}$
C. $\frac{1}{4}$ D. $\frac{1}{2}$

Solution

$$P = \frac{26}{52} = \frac{1}{2}$$

Final Answer

$$\frac{1}{2}$$

MCQ 58

One card is drawn from a standard deck of 52 cards. Find the probability of drawing a face card.

- A. $\frac{1}{13}$ B. $\frac{1}{4}$
C. $\frac{1}{2}$ D. $\frac{3}{13}$

Solution

$$P = \frac{12}{52} = \frac{3}{13}$$

Final Answer

$$\frac{3}{13}$$

MCQ 59

One card is drawn from a standard deck of 52 cards. Find the probability of drawing a black queen.

- A. $\frac{1}{4}$ B. $\frac{1}{2}$
C. $\frac{1}{26}$ D. $\frac{1}{13}$

Solution

$$P = \frac{2}{52} = \frac{1}{26}$$

Final Answer

$$\frac{1}{26}$$

MCQ 60

One card is drawn from a standard deck of 52 cards. Find the probability of drawing a diamond.

- A. $\frac{1}{2}$ B. $\frac{1}{4}$
C. $\frac{1}{13}$ D. $\frac{1}{4}$

Solution

$$P = \frac{13}{52} = \frac{1}{4}$$

Final Answer

$$\frac{1}{4}$$

Permutations and Arrangements**MCQ 61**

Evaluate $5P_2$.

- A. 20 B. 10
C. 25 D. 22

Solution

$$5P_2 = \frac{5!}{(3)!} = 20$$

Final Answer

20

MCQ 62

Evaluate $6P_2$.

- A. 15 B. 12
C. 36 D. 30

Solution

$$6P_2 = \frac{6!}{(4)!} = 30$$

Final Answer

30

MCQ 63

Evaluate $6P_3$.

- A. 18 B. 126
C. 120 D. 20

Solution

$$6P_3 = \frac{6!}{(3)!} = 120$$

Final Answer

120

MCQ 64Evaluate $7P_2$.

- A. 49 B. 42
C. 21 D. 14

Solution

$$7P_2 = \frac{7!}{(5)!} = 42$$

Final Answer

42

MCQ 65Evaluate $7P_3$.

- A. 210 B. 35
C. 21 D. 217

Solution

$$7P_3 = \frac{7!}{(4)!} = 210$$

Final Answer

210

MCQ 66Evaluate $8P_2$.

- A. 28 B. 16
C. 64 D. 56

Solution

$$8P_2 = \frac{8!}{(6)!} = 56$$

Final Answer

56

MCQ 67Evaluate $8P_3$.

- A. 24 B. 344
C. 336 D. 56

Solution

$$8P_3 = \frac{8!}{(5)!} = 336$$

Final Answer

336

MCQ 68Evaluate $5P_3$.

- A. 65 B. 60
C. 10 D. 15

Solution

$$5P_3 = \frac{5!}{(2)!} = 60$$

Final Answer

60

MCQ 69Evaluate $9P_2$.

- A. 72 B. 36
C. 18 D. 81

Solution

$$9P_2 = \frac{9!}{(7)!} = 72$$

Final Answer

72

MCQ 70Evaluate $9P_3$.

- A. 84 B. 27
C. 513 D. 504

Solution

$$9P_3 = \frac{9!}{(6)!} = 504$$

Final Answer

504

MCQ 71

How many ways can 4 distinct books be arranged in a row?

- A. 6 B. 26
C. 24 D. 16

Solution

$$4! = 24$$

Final Answer

24

MCQ 72

How many ways can 5 distinct books be arranged in a row?

- A. 24 B. 120
C. 25 D. 10

Solution

$$5! = 120$$

Final Answer

120

MCQ 73

How many ways can 6 distinct books be arranged in a row?

- A. 720 B. 36
C. 15 D. 120

Solution

$$6! = 720$$

Final Answer

720

MCQ 74

How many ways can 7 distinct books be arranged in a row?

- A. 49 B. 21
C. 720 D. 5040

Solution

$$7! = 5040$$

Final Answer

5040

MCQ 75

How many ways can 8 distinct books be arranged in a row?

- A. 28 B. 5040
C. 40320 D. 64

Solution

$$8! = 40320$$

Final Answer

40320

MCQ 76

How many distinct arrangements are possible for the letters of LEVEL?

- A. 35 B. 30
C. 120 D. 15

Solution

$$\frac{5!}{2!2!} = 30$$

Final Answer

30

MCQ 77

How many distinct arrangements are possible for the letters of MOM?

- A. 3 B. 6
C. 1 D. 4

Solution

$$\frac{3!}{2!} = 3$$

Final Answer

3

MCQ 78

How many distinct arrangements are possible for the letters of BOOK?

- A. 24 B. 6
C. 16 D. 12

Solution

$$\frac{4!}{2!} = 12$$

Final Answer

12

MCQ 79

How many distinct arrangements are possible for the letters of NOON?

- A. 3 B. 10
C. 6 D. 24

Solution

$$\frac{4!}{2!2!} = 6$$

Final Answer

6

MCQ 80

How many distinct arrangements are possible for the letters of APPLE?

- A. 65 B. 60
C. 120 D. 30

Solution

$$\frac{5!}{2!} = 60$$

Final Answer

60

Combinations and Selection Problems**MCQ 81**

Evaluate $5C_2$.

- A. 10 B. 20
C. 12 D. 11

Solution

$$5C_2 = \frac{5!}{2!(3)!} = 10$$

Final Answer

10

MCQ 82

Evaluate $6C_2$.

- A. 30 B. 12
C. 17 D. 15

Solution

$$6C_2 = \frac{6!}{2!(4)!} = 15$$

Final Answer

15

MCQ 83

Evaluate $6C_3$.

- A. 18 B. 23
C. 20 D. 120

Solution

$$6C_3 = \frac{6!}{3!(3)!} = 20$$

Final Answer

20

MCQ 84

Evaluate $7C_2$.

- A. 23 B. 21
C. 42 D. 14

Solution

$$7C_2 = \frac{7!}{2!(5)!} = 21$$

Final Answer

21

MCQ 85

Evaluate $7C_3$.

- A. 35 B. 210
C. 21 D. 38

Solution

$$7C_3 = \frac{7!}{3!(4)!} = 35$$

Final Answer

35

MCQ 86

Evaluate $8C_2$.

- A. 56 B. 16
C. 30 D. 28

Solution

$$8C_2 = \frac{8!}{2!(6)!} = 28$$

Final Answer

28

MCQ 87

Evaluate $8C_3$.

- A. 24 B. 59
C. 56 D. 336

Solution

$$8C_3 = \frac{8!}{3!(5)!} = 56$$

Final Answer

56

MCQ 88Evaluate $8C_4$.

- A. 74 B. 70
C. 1680 D. 32

Solution

$$8C_4 = \frac{8!}{4!(4)!} = 70$$

Final Answer

70

MCQ 89Evaluate $9C_2$.

- A. 36 B. 72
C. 18 D. 38

Solution

$$9C_2 = \frac{9!}{2!(7)!} = 36$$

Final Answer

36

MCQ 90Evaluate $9C_3$.

- A. 504 B. 27
C. 87 D. 84

Solution

$$9C_3 = \frac{9!}{3!(6)!} = 84$$

Final Answer

84

MCQ 91Evaluate $10C_2$.

- A. 20 B. 47
C. 45 D. 90

Solution

$$10C_2 = \frac{10!}{2!(8)!} = 45$$

Final Answer

45

MCQ 92Evaluate $10C_3$.

- A. 123 B. 120
C. 720 D. 30

Solution

$$10C_3 = \frac{10!}{3!(7)!} = 120$$

Final Answer

120

MCQ 93Evaluate $10C_4$.

- A. 210 B. 5040
C. 40 D. 214

Solution

$$10C_4 = \frac{10!}{4!(6)!} = 210$$

Final Answer

210

MCQ 94Evaluate $11C_2$.

- A. 110 B. 22
C. 57 D. 55

Solution

$$11C_2 = \frac{11!}{2!(9)!} = 55$$

Final Answer

55

MCQ 95Evaluate $12C_2$.

- A. 24 B. 68
C. 66 D. 132

Solution

$$12C_2 = \frac{12!}{2!(10)!} = 66$$

Final Answer

66

Mixed High-Yield P&C

MCQ 96

Choose a committee of 3 from 8 people.

- A. 112 B. 56
C. 61 D. 51

Solution

$${}^8C_3 = 56$$

Final Answer

56

MCQ 97

Arrange 3 of 7 people in 3 distinct chairs.

- A. 210 B. 215
C. 205 D. 420

Solution

$${}^7P_3 = 210$$

Final Answer

210

MCQ 98

Choose 2 questions from 10.

- A. 50 B. 40
C. 90 D. 45

Solution

$${}^{10}C_2 = 45$$

Final Answer

45

MCQ 99

Arrange 5 distinct flags in a row.

- A. 115 B. 240
C. 120 D. 125

Solution

$$5! = 120$$

Final Answer

120

MCQ 100

Choose a captain and vice-captain from 6 players.

- A. 60 B. 30
C. 35 D. 25

Solution

$${}^6P_2 = 30$$

Final Answer

30

RAPID REVISION GRID | PROBABILITY / P&C

Fair die

$$P = \frac{\text{favorable faces}}{6}$$

Standard deck 52 cards, 4 suits, 13 cards per suit.**Coin outcomes** 2^n outcomes for n fair coin tosses.**Repeated letters**

$$\frac{n!}{a!b! \dots}$$

Identity

$${}^nC_r = {}^nC_{n-r}$$

Exam check A probability must lie between 0 and 1.

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Analogy Identify the operation that maps the first number to the second.

Ranking

$$N = L + R - 1$$

Clock at exact hour

$$\theta = 30^\circ \times \text{hour gap}$$

Day shift

Offset mod 7

Direction distance

$$d = \sqrt{x^2 + y^2}$$

Order logic Chain inequalities before choosing an option.

Numerical Analogies**MCQ 1**Complete the numerical analogy: $2 : 6 :: 4 : ?$.**A.** 20**B.** 24**C.** 16**D.** 22**Solution**

$$f(x) = x(x + 1), \quad f(4) = 20$$

Final Answer

20

MCQ 2Complete the numerical analogy: $3 : 12 :: 5 : ?$.**A.** 35**B.** 25**C.** 33**D.** 30**Solution**

$$f(x) = x(x + 1), \quad f(5) = 30$$

Final Answer

30

MCQ 3Complete the numerical analogy: $4 : 20 :: 6 : ?$.**A.** 36**B.** 46**C.** 42**D.** 48**Solution**

$$f(x) = x(x + 1), \quad f(6) = 42$$

Final Answer

42

MCQ 4Complete the numerical analogy: $5 : 30 :: 7 : ?$.**A.** 62**B.** 56**C.** 63**D.** 49**Solution**

$$f(x) = x(x + 1), \quad f(7) = 56$$

Final Answer

56

MCQ 5Complete the numerical analogy: $6 : 42 :: 8 : ?$.**A.** 72**B.** 80**C.** 64**D.** 79**Solution**

$$f(x) = x(x + 1), \quad f(8) = 72$$

Final Answer

72

MCQ 6Complete the numerical analogy: $7 : 56 :: 9 : ?$.**A.** 99**B.** 81**C.** 108**D.** 90**Solution**

$$f(x) = x(x + 1), \quad f(9) = 90$$

Final Answer

90

MCQ 7Complete the numerical analogy: $8 : 72 :: 10 : ?$.**A.** 100**B.** 121**C.** 110**D.** 120**Solution**

$$f(x) = x(x + 1), \quad f(10) = 110$$

Final Answer

110

MCQ 8Complete the numerical analogy: $9 : 90 :: 11 : ?$.**A.** 145**B.** 132**C.** 143**D.** 121**Solution**

$$f(x) = x(x + 1), \quad f(11) = 132$$

Final Answer

132

MCQ 9Complete the numerical analogy: $3 : 9 :: 7 : ?$.**A.** 49**B.** 56**C.** 42**D.** 54**Solution**

$$f(x) = x^2, \quad f(7) = 49$$

Final Answer

49

MCQ 10Complete the numerical analogy: $4 : 16 :: 9 : ?$.**A.** 90**B.** 72**C.** 89**D.** 81**Solution**

$$f(x) = x^2, \quad f(9) = 81$$

Final Answer

81

MCQ 11Complete: $4 : 7 :: 8 : ?$ using the same relation.

- A. 8 B. 24
C. 11 D. 14

Solution

$$4 + 3 = 7, \quad 8 + 3 = 11$$

Final Answer

11

MCQ 12Complete: $6 : 10 :: 9 : ?$ using the same relation.

- A. 36 B. 13
C. 17 D. 9

Solution

$$6 + 4 = 10, \quad 9 + 4 = 13$$

Final Answer

13

MCQ 13Complete: $5 : 10 :: 7 : ?$ using the same relation.

- A. 12 B. 17
C. 7 D. 35

Solution

$$5 + 5 = 10, \quad 7 + 5 = 12$$

Final Answer

12

MCQ 14Complete: $10 : 12 :: 12 : ?$ using the same relation.

- A. 16 B. 12
C. 24 D. 14

Solution

$$10 + 2 = 12, \quad 12 + 2 = 14$$

Final Answer

14

MCQ 15Complete: $7 : 13 :: 11 : ?$ using the same relation.

- A. 11 B. 66
C. 17 D. 23

Solution

$$7 + 6 = 13, \quad 11 + 6 = 17$$

Final Answer

17

MCQ 16Complete: $8 : 13 :: 13 : ?$ using the same relation.

- A. 65 B. 18
C. 23 D. 13

Solution

$$8 + 5 = 13, \quad 13 + 5 = 18$$

Final Answer

18

MCQ 17Complete: $9 : 16 :: 14 : ?$ using the same relation.

- A. 21 B. 28
C. 14 D. 98

Solution

$$9 + 7 = 16, \quad 14 + 7 = 21$$

Final Answer

21

MCQ 18Complete: $3 : 11 :: 6 : ?$ using the same relation.

- A. 22 B. 6
C. 48 D. 14

Solution

$$3 + 8 = 11, \quad 6 + 8 = 14$$

Final Answer

14

MCQ 19Complete: $11 : 15 :: 15 : ?$ using the same relation.

- A. 15 B. 60
C. 19 D. 23

Solution

$$11 + 4 = 15, \quad 15 + 4 = 19$$

Final Answer

19

MCQ 20Complete: $12 : 15 :: 16 : ?$ using the same relation.

- A. 48 B. 19
C. 22 D. 16

Solution

$$12 + 3 = 15, \quad 16 + 3 = 19$$

Final Answer

19

Number Matrices and Missing Entries

MCQ 21

Find the missing entry if each row follows the same rule:

(2, 3
to 6; 4, 5
to ?
).

- A. 20 B. 26
C. 14 D. 9

Solution

$$2 \times 3 = 6, \quad 4 \times 5 = 20$$

Final Answer

20

MCQ 22

Find the missing entry if each row follows the same rule:

(3, 4
to 12; 5, 6
to ?
).

- A. 36 B. 24
C. 11 D. 30

Solution

$$3 \times 4 = 12, \quad 5 \times 6 = 30$$

Final Answer

30

MCQ 23

Find the missing entry if each row follows the same rule:

(4, 5
to 20; 6, 7
to ?
).

- A. 36 B. 13
C. 42 D. 48

Solution

$$4 \times 5 = 20, \quad 6 \times 7 = 42$$

Final Answer

42

MCQ 24

Find the missing entry if each row follows the same rule:

(5, 2
to 10; 7, 3
to ?
).

- A. 10 B. 21
C. 27 D. 15

Solution

$$5 \times 2 = 10, \quad 7 \times 3 = 21$$

Final Answer

21

MCQ 25

Find the missing entry if each row follows the same rule:

(6, 4
to 24; 8, 5
to ?
).

- A. 40 B. 46
C. 34 D. 13

Solution

$$6 \times 4 = 24, \quad 8 \times 5 = 40$$

Final Answer

40

MCQ 26

Find the missing entry if each row follows the same rule:

(2, 7
to 14; 3, 9
to ?
).

- A. 33 B. 21
C. 12 D. 27

Solution

$$2 \times 7 = 14, \quad 3 \times 9 = 27$$

Final Answer

27

MCQ 27

Find the missing entry if each row follows the same rule:

(3, 8
to 24; 4, 9
to ?
).

- A. 30 B. 13
C. 36 D. 42

Solution

$$3 \times 8 = 24, \quad 4 \times 9 = 36$$

Final Answer

36

MCQ 28

Find the missing entry if each row follows the same rule:

(5, 6
to 30; 7, 8
to ?
).

- A. 15 B. 56
C. 62 D. 50

Solution

$$5 \times 6 = 30, \quad 7 \times 8 = 56$$

Final Answer

56

MCQ 29

Find the missing entry if each row follows the same rule:

(4, 7
to 28; 6, 9
to ?
).

- A. 54 B. 60
C. 48 D. 15

Solution

$$4 \times 7 = 28, \quad 6 \times 9 = 54$$

Final Answer

54

MCQ 30

Find the missing entry if each row follows the same rule:

(8, 3
to 24; 9, 4
to ?
).

- A. 42 B. 30
C. 13 D. 36

Solution

$$8 \times 3 = 24, \quad 9 \times 4 = 36$$

Final Answer

36

MCQ 31

Find the missing number: $2 + 3 = 5$; therefore $4 + 7 = ?$.

- A. 9 B. 28
C. 11 D. 13

Solution

$$4 + 7 = 11$$

Final Answer

11

MCQ 32

Find the missing number: $5 + 6 = 11$; therefore $8 + 9 = ?$.

- A. 72 B. 17
C. 19 D. 15

Solution

$$8 + 9 = 17$$

Final Answer

17

MCQ 33

Find the missing number: $10 + 3 = 7$; therefore $15 + 4 = ?$.

- A. 11 B. 13
C. 9 D. 60

Solution

$$15 + 4 = 11$$

Final Answer

11

MCQ 34

Find the missing number: $9 + 2 = 7$; therefore $14 + 5 = ?$.

- A. 11 B. 7
C. 70 D. 9

Solution

$$14 + 5 = 9$$

Final Answer

9

MCQ 35

Find the missing number: $6 + 6 = 12$; therefore $7 + 8 = ?$.

- A. 13 B. 56
C. 15 D. 17

Solution

$$7 + 8 = 15$$

Final Answer

15

MCQ 36

Find the missing number: $4 + 9 = 13$; therefore $6 + 11 = ?$.

- A. 66 B. 17
C. 19 D. 15

Solution

$$6 + 11 = 17$$

Final Answer

17

MCQ 37

Find the missing number: $12 + 5 = 17$; therefore $20 + 3 = ?$.

- A. 23 B. 25
C. 21 D. 60

Solution

$$20 + 3 = 23$$

Final Answer

23

MCQ 38

Find the missing number: $8 + 7 = 15$; therefore $9 + 10 = ?$.

- A. 21 B. 17
C. 90 D. 19

Solution

$$9 + 10 = 19$$

Final Answer

19

MCQ 39

Find the missing number: $3 + 4 = 7$; therefore $5 + 9 = ?$.

- A. 12 B. 45
C. 14 D. 16

Solution

$$5 + 9 = 14$$

Final Answer

14

MCQ 40

Find the missing number: $11 + 8 = 19$; therefore $13 + 7 = ?$.

- A. 91 B. 20
C. 22 D. 18

Solution

$$13 + 7 = 20$$

Final Answer

20

Comparisons and Ranking**MCQ 41**

Choose the correct symbol: $0.75 _ 0.7$.

- A. $>$ B. $<$
C. $=$ D. Cannot say

Solution

$$0.75 > 0.7$$

Final Answer $>$

MCQ 42Choose the correct symbol: 0.6666666667 _ 0.66 .

- A. < B. =
C. Cannot say D. >

Solution

$$0.6666666667 > 0.66$$

Final Answer

>

MCQ 43Choose the correct symbol: 0.625 _ 0.6 .

- A. = B. Cannot say
C. > D. <

Solution

$$0.625 > 0.6$$

Final Answer

>

MCQ 44Choose the correct symbol: 0.7 _ 0.75 .

- A. Cannot say B. <
C. > D. =

Solution

$$0.7 < 0.75$$

Final Answer

<

MCQ 45Choose the correct symbol: 0.8 _ 0.79 .

- A. > B. <
C. = D. Cannot say

Solution

$$0.8 > 0.79$$

Final Answer

>

MCQ 46Choose the correct symbol: 0.45 _ 0.45 .

- A. > B. <
C. Cannot say D. =

Solution

$$0.45 = 0.45$$

Final Answer

=

MCQ 47Choose the correct symbol: 0.8333333333 _ 0.8 .

- A. = B. Cannot say
C. > D. <

Solution

$$0.8333333333 > 0.8$$

Final Answer

>

MCQ 48Choose the correct symbol: 0.6 _ 0.62 .

- A. Cannot say B. <
C. > D. =

Solution

$$0.6 < 0.62$$

Final Answer

<

MCQ 49Choose the correct symbol: 0.9 _ 0.89 .

- A. > B. <
C. = D. Cannot say

Solution

$$0.9 > 0.89$$

Final Answer

>

MCQ 50Choose the correct symbol: 0.875 _ 0.87 .

- A. < B. =
C. Cannot say D. >

Solution

$$0.875 > 0.87$$

Final Answer

>

MCQ 51

A person is 7th from the left and 12th from the right in a row. How many persons are there?

- A. 17 B. 20
C. 18 D. 19

Solution

$$N = 7 + 12 - 1 = 18$$

Final Answer

18

MCQ 52

A person is 5th from the left and 18th from the right in a row. How many persons are there?

- A. 24 B. 22
C. 23 D. 21

Solution

$$N = 5 + 18 - 1 = 22$$

Final Answer

22

MCQ 53

A person is 9th from the left and 10th from the right in a row. How many persons are there?

- A. 18 B. 19
C. 17 D. 20

Solution

$$N = 9 + 10 - 1 = 18$$

Final Answer

18

MCQ 54

A person is 11th from the left and 15th from the right in a row. How many persons are there?

- A. 26 B. 24
C. 27 D. 25

Solution

$$N = 11 + 15 - 1 = 25$$

Final Answer

25

MCQ 55

A person is 4th from the left and 20th from the right in a row. How many persons are there?

- A. 22 B. 25
C. 23 D. 24

Solution

$$N = 4 + 20 - 1 = 23$$

Final Answer

23

MCQ 56

A person is 13th from the left and 9th from the right in a row. How many persons are there?

- A. 23 B. 21
C. 22 D. 20

Solution

$$N = 13 + 9 - 1 = 21$$

Final Answer

21

MCQ 57

A person is 6th from the left and 14th from the right in a row. How many persons are there?

- A. 19 B. 20
C. 18 D. 21

Solution

$$N = 6 + 14 - 1 = 19$$

Final Answer

19

MCQ 58

A person is 8th from the left and 17th from the right in a row. How many persons are there?

- A. 25 B. 23
C. 26 D. 24

Solution

$$N = 8 + 17 - 1 = 24$$

Final Answer

24

MCQ 59

A person is 10th from the left and 11th from the right in a row. How many persons are there?

- A. 19 B. 22
C. 20 D. 21

Solution

$$N = 10 + 11 - 1 = 20$$

Final Answer

20

MCQ 60

A person is 12th from the left and 8th from the right in a row. How many persons are there?

- A. 21 B. 19
C. 20 D. 18

Solution

$$N = 12 + 8 - 1 = 19$$

Final Answer

19

Clocks and Calendars**MCQ 61**

Find the smaller angle between the hands of a clock at 3:00.

- A. 90° B. 60°
C. 120° D. 150°

Solution

$$\theta = 30^\circ \times 3 = 90^\circ$$

Final Answer 90° **MCQ 62**

Find the smaller angle between the hands of a clock at 6:00.

- A. 150° B. 0°
C. 210° D. 180°

Solution

$$\theta = 30^\circ \times 6 = 180^\circ$$

Final Answer 180° **MCQ 63**

Find the smaller angle between the hands of a clock at 9:00.

- A. 120° B. 150°
C. 90° D. 60°

Solution

$$\theta = 30^\circ \times 3 = 90^\circ$$

Final Answer 90° **MCQ 64**

Find the smaller angle between the hands of a clock at 12:00.

- A. -30° B. 0°
C. 30° D. 180°

Solution

$$\theta = 30^\circ \times 0 = 0^\circ$$

Final Answer 0° **MCQ 65**

Find the smaller angle between the hands of a clock at 2:00.

- A. 60° B. 30°
C. 90° D. 120°

Solution

$$\theta = 30^\circ \times 2 = 60^\circ$$

Final Answer 60° **MCQ 66**

Find the smaller angle between the hands of a clock at 4:00.

- A. 90° B. 150°
C. 60° D. 120°

Solution

$$\theta = 30^\circ \times 4 = 120^\circ$$

Final Answer 120° **MCQ 67**

Find the smaller angle between the hands of a clock at 5:00.

- A. 180° B. 30°
C. 150° D. 120°

Solution

$$\theta = 30^\circ \times 5 = 150^\circ$$

Final Answer 150°

MCQ 68

Find the smaller angle between the hands of a clock at 1:00.

- A. 150° B. 30°
C. 0° D. 60°

Solution

$$\theta = 30^\circ \times 1 = 30^\circ$$

Final Answer

30°

MCQ 69

Find the smaller angle between the hands of a clock at 10:00.

- A. 60° B. 30°
C. 90° D. 120°

Solution

$$\theta = 30^\circ \times 2 = 60^\circ$$

Final Answer

60°

MCQ 70

Find the smaller angle between the hands of a clock at 11:00.

- A. 0° B. 60°
C. 150° D. 30°

Solution

$$\theta = 30^\circ \times 1 = 30^\circ$$

Final Answer

30°

MCQ 71

If today is Monday, what day will it be after 10 days?

- A. Saturday B. Sunday
C. Thursday D. Friday

Solution

$$10 \equiv 3 \pmod{7}$$

Final Answer

Thursday

MCQ 72

If today is Tuesday, what day will it be after 15 days?

- A. Saturday B. Wednesday
C. Thursday D. Friday

Solution

$$15 \equiv 1 \pmod{7}$$

Final Answer

Wednesday

MCQ 73

If today is Wednesday, what day will it be after 20 days?

- A. Tuesday B. Wednesday
C. Thursday D. Friday

Solution

$$20 \equiv 6 \pmod{7}$$

Final Answer

Tuesday

MCQ 74

If today is Thursday, what day will it be after 30 days?

- A. Sunday B. Monday
C. Tuesday D. Saturday

Solution

$$30 \equiv 2 \pmod{7}$$

Final Answer

Saturday

MCQ 75

If today is Friday, what day will it be after 9 days?

- A. Tuesday B. Wednesday
C. Sunday D. Monday

Solution

$$9 \equiv 2 \pmod{7}$$

Final Answer

Sunday

MCQ 76

If today is Saturday, what day will it be after 16 days?

- A. Thursday B. Monday
C. Tuesday D. Wednesday

Solution

$$16 \equiv 2 \pmod{7}$$

Final Answer

Monday

MCQ 77

If today is Sunday, what day will it be after 22 days?

- A. Monday B. Tuesday
C. Wednesday D. Thursday

Solution

$$22 \equiv 1 \pmod{7}$$

Final Answer

Monday

MCQ 78

If today is Monday, what day will it be after 100 days?

- A. Thursday B. Friday
C. Saturday D. Wednesday

Solution

$$100 \equiv 2 \pmod{7}$$

Final Answer

Wednesday

MCQ 79

If today is Wednesday, what day will it be after 50 days?

- A. Saturday B. Sunday
C. Thursday D. Friday

Solution

$$50 \equiv 1 \pmod{7}$$

Final Answer

Thursday

MCQ 80

If today is Friday, what day will it be after 365 days?

- A. Tuesday B. Saturday
C. Sunday D. Monday

Solution

$$365 \equiv 1 \pmod{7}$$

Final Answer

Saturday

Directions and Analytical Order**MCQ 81**

A person moves 3 km east and then 4 km north. How far is the person from the starting point?

- A. 5 B. 7
C. 1 D. 6

Solution

$$d = \sqrt{3^2 + 4^2} = 5$$

Final Answer

5

MCQ 82

A person moves 5 km east and then 12 km north. How far is the person from the starting point?

- A. 17 B. 7
C. 14 D. 13

Solution

$$d = \sqrt{5^2 + 12^2} = 13$$

Final Answer

13

MCQ 83

A person moves 8 km east and then 6 km north. How far is the person from the starting point?

- A. 2 B. 11
C. 10 D. 14

Solution

$$d = \sqrt{8^2 + 6^2} = 10$$

Final Answer

10

MCQ 84

A person moves 7 km east and then 24 km north.
How far is the person from the starting point?

- A. 26 B. 25
C. 31 D. 17

Solution

$$d = \sqrt{7^2 + 24^2} = 25$$

Final Answer

25

MCQ 85

A person moves 9 km east and then 12 km north.
How far is the person from the starting point?

- A. 15 B. 21
C. 3 D. 16

Solution

$$d = \sqrt{9^2 + 12^2} = 15$$

Final Answer

15

MCQ 86

A person moves 6 km east and then 8 km north.
How far is the person from the starting point?

- A. 14 B. 2
C. 11 D. 10

Solution

$$d = \sqrt{6^2 + 8^2} = 10$$

Final Answer

10

MCQ 87

A person moves 12 km east and then 5 km north.
How far is the person from the starting point?

- A. 7 B. 14
C. 13 D. 17

Solution

$$d = \sqrt{12^2 + 5^2} = 13$$

Final Answer

13

MCQ 88

A person moves 15 km east and then 8 km north.
How far is the person from the starting point?

- A. 18 B. 17
C. 23 D. 7

Solution

$$d = \sqrt{15^2 + 8^2} = 17$$

Final Answer

17

MCQ 89

A person moves 20 km east and then 21 km north.
How far is the person from the starting point?

- A. 29 B. 41
C. 1 D. 30

Solution

$$d = \sqrt{20^2 + 21^2} = 29$$

Final Answer

29

MCQ 90

A person moves 9 km east and then 40 km north.
How far is the person from the starting point?

- A. 49 B. 31
C. 42 D. 41

Solution

$$d = \sqrt{9^2 + 40^2} = 41$$

Final Answer

41

MCQ 91

Given $A > B, B > C$, is $A > C$ true?

- A. Both B. Cannot say
C. True D. False

Solution

$$A > B, B > C \Rightarrow A > C$$

Final Answer

True

MCQ 92

Given $P < Q, Q < R$, is $P < R$ true?

- A. Cannot say B. True
C. False D. Both

Solution

$$P < Q, Q < R \Rightarrow P < R$$

Final Answer

True

MCQ 93Given $X = Y, Y > Z$, is $X > Z$ true?

- A. True B. False
C. Both D. Cannot say

Solution

$$X = Y, Y > Z \Rightarrow X > Z$$

Final Answer

True

MCQ 94Given $M < N, N = K$, is $M < K$ true?

- A. False B. Both
C. Cannot say D. True

Solution

$$M < N, N = K \Rightarrow M < K$$

Final Answer

True

MCQ 95Given $a > b, b = c$, is $a > c$ true?

- A. Both B. Cannot say
C. True D. False

Solution

$$a > b, b = c \Rightarrow a > c$$

Final Answer

True

MCQ 96Given $r < s, s < t$, is $t < r$ true?

- A. Cannot say B. False
C. True D. Both

Solution

$$r < s, s < t \Rightarrow \text{the claim does not follow}$$

Final Answer

False

MCQ 97Given $u = v, v = w$, is $u = w$ true?

- A. True B. False
C. Both D. Cannot say

Solution

$$u = v, v = w \Rightarrow u = w$$

Final Answer

True

MCQ 98Given $p > q, q > r$, is $r > p$ true?

- A. True B. Both
C. Cannot say D. False

Solution

$$p > q, q > r \Rightarrow \text{the claim does not follow}$$

Final Answer

False

MCQ 99Given $x < y, y = z$, is $x < z$ true?

- A. Both B. Cannot say
C. True D. False

Solution

$$x < y, y = z \Rightarrow x < z$$

Final Answer

True

MCQ 100Given $A < B, B < C$, is $C > A$ true?

- A. Cannot say B. True
C. False D. Both

Solution

$$A < B, B < C \Rightarrow C > A$$

Final Answer

True

RAPID REVISION GRID | LOGICAL / ANALYTICAL

Matrix questions Test simple row/column operations first: $+$, $-$, $\times$, $\div$.

Ranking shortcut

Total = left rank + right rank $-$ 1

Calendar shortcut Remove complete weeks before counting.

Direction shortcut Use coordinates: East ($+x$), North ($+y$).

Comparison Convert fractions/percentages to a common form.

Exam method Prefer the smallest consistent rule that fits all given numbers.

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Coverage

Percentages, ratios, averages, fractions, number system, commercial arithmetic, work/rate, algebra, equations, series, geometry, statistics, probability and reasoning.

Exam method

Prefer the shortest mathematically valid route; avoid unnecessary long calculations.

MOCK TEST 1 | 50 MIXED BASIC MATH MCQs

MCQ 1

A sum of 80 is divided in the ratio 3 : 5. Find the smaller first share.

- A. 30 B. 50
C. 10 D. 40

Solution

$$3 : 5 \Rightarrow 3 + 5 = 8 \text{ parts}$$

$$1 \text{ part} = \frac{80}{8} = 10$$

$$\text{Required share} = 3 \times 10 = 30$$

Final Answer

30

MCQ 2

Evaluate $2^3 \times 2^2$.

- A. 12 B. 32
C. 64 D. 2

Solution

$$2^3 \times 2^2 = 2^{3+2} = 2^5 \\ = 32$$

Final Answer

32

MCQ 3

Find 10% of 240.

- A. 14 B. 12
C. 34 D. 24

Solution

$$10\% \text{ of } 240 = \frac{10}{100} \times 240 \\ = 24$$

Final Answer

24

MCQ 4

Find the area of a rectangle of length 10 cm and width 6 cm.

- A. 60 cm^2 B. 70 cm^2
C. 32 cm^2 D. 16 cm^2

Solution

$$A = l \times w \\ = 10 \times 6 = 60 \text{ cm}^2$$

Final Answer

60 cm^2

MCQ 5

Find the mean of 3, 5, 7, 9, 11.

- A. 6 B. 8
C. 11 D. 7

Solution

$$\bar{x} = \frac{3 + 5 + 7 + 9 + 11}{5} \\ = \frac{35}{5} = 7$$

Final Answer

7

MCQ 6

A bag contains 4 red and 3 blue balls. One ball is drawn at random. Find the probability that it is red.

- A. $\frac{1}{2}$ B. $\frac{4}{7}$
C. $\frac{3}{7}$ D. $\frac{1}{7}$

Solution

$$P(\text{red}) = \frac{\text{red outcomes}}{\text{total outcomes}} \\ = \frac{4}{7} = \frac{4}{7}$$

Final Answer

$\frac{4}{7}$

MCQ 7

A vehicle travels at 40 km/h for 2 hours. Find the distance covered.

- A. 80 km B. 78 km
C. 42 km D. 120 km

Solution

$$D = S \times T \\ = 40 \times 2 = 80 \text{ km}$$

Final Answer

80 km

MCQ 8

Find the simple interest on Rs. 1000 at 5% per annum for 2 years.

- A. Rs. 1100 B. Rs. 100
C. Rs. 1 D. Rs. 200

Solution

$$SI = \frac{PRT}{100}$$

$$= \frac{1000 \times 5 \times 2}{100} = 100$$

Final Answer

Rs. 100

MCQ 9

Two angles of a triangle are 40° and 60° . Find the third angle.

- A. 100° B. 80°
C. 11° D. 10°

Solution

$$\angle A + \angle B + \angle C = 180^\circ$$

$$\angle C = 180^\circ - 40^\circ - 60^\circ = 80^\circ$$

Final Answer 80° **MCQ 10**

Find the area of a rectangle of length 8 cm and width 5 cm.

- A. 26 cm^2 B. 40 cm^2
C. 13 cm^2 D. 48 cm^2

Solution

$$A = l \times w$$

$$= 8 \times 5 = 40 \text{ cm}^2$$

Final Answer 40 cm^2 **MCQ 11**

A candidate is 10th from the left and 15th from the right in a row. How many candidates are in the row?

- A. 5 B. 24
C. 25 D. 26

Solution

$$N = L + R - 1$$

$$= 10 + 15 - 1 = 24$$

Final Answer

24

MCQ 12

Calculate $\frac{2}{3} + \frac{1}{6}$.

- A. $\frac{1}{2}$ B. 1
C. $\frac{1}{3}$ D. $\frac{5}{6}$

Solution

$$\frac{2}{3} + \frac{1}{6} = \frac{4}{6} + \frac{1}{6}$$

$$= \frac{5}{6} = \frac{5}{6}$$

Final Answer $\frac{5}{6}$ **MCQ 13**

Calculate $\frac{3}{4} + \frac{1}{8}$.

- A. 1 B. $\frac{5}{8}$
C. $\frac{1}{3}$ D. $\frac{7}{8}$

Solution

$$\frac{3}{4} + \frac{1}{8} = \frac{6}{8} + \frac{1}{8}$$

$$= \frac{7}{8} = \frac{7}{8}$$

Final Answer $\frac{7}{8}$ **MCQ 14**

A can finish a job in 12 days and B in 18 days. How long will they take together?

- A. $\frac{41}{5}$ days B. 6 days
C. $\frac{36}{5}$ days D. 15 days

Solution

$$\text{Combined rate} = \frac{1}{12} + \frac{1}{18} = \frac{30}{216}$$

$$T = \frac{216}{30} = \frac{36}{5} \text{ days}$$

Final Answer $\frac{36}{5}$ days

MCQ 15Solve $x^2 - 5x + 4 = 0$.**A.** 1, 4**B.** 4, 5**C.** -1, -4**D.** 1, -4**Solution**

$$x^2 - 5x + 4 = 0$$

$$(x - 1)(x - 4) = 0$$

$$x = 1 \quad \text{or} \quad x = 4$$

Final Answer $x = 1, 4$ **MCQ 16**Evaluate $18 \div 6 + 3 \times 2$.**A.** 6**B.** 9**C.** 12**D.** 4**Solution**

$$18 \div 6 + 3 \times 2$$

$$= 3 + 6 = 9$$

Final Answer

9

MCQ 17

An article costs Rs. 500. It is sold at a profit of 10%. Find the selling price.

A. Rs. 550**B.** Rs. 650**C.** Rs. 510**D.** Rs. 450**Solution**

$$SP = CP \left(1 + \frac{10}{100} \right)$$

$$= 500 \times \frac{110}{100} = 550$$

Final Answer

Rs. 550

MCQ 18Solve $x^2 - 7x + 10 = 0$.**A.** 2, -5**B.** -2, -5**C.** 2, 5**D.** 5, 6**Solution**

$$x^2 - 7x + 10 = 0$$

$$(x - 2)(x - 5) = 0$$

$$x = 2 \quad \text{or} \quad x = 5$$

Final Answer $x = 2, 5$ **MCQ 19**

Two varieties costing Rs. 25 and Rs. 45 per unit are mixed to obtain a mean price of Rs. 33. Find the ratio of lower-priced to higher-priced variety.

A. 5 : 1**B.** 3 : 2**C.** 1 : 1**D.** 2 : 3**Solution**

$$\text{Lower : Higher} = (45 - 33) : (33 - 25)$$

$$= 12 : 8 = 3 : 2$$

Final Answer

3 : 2

MCQ 20

A vehicle travels at 45 km/h for 3 hours. Find the distance covered.

A. 135 km**B.** 48 km**C.** 132 km**D.** 180 km**Solution**

$$D = S \times T$$

$$= 45 \times 3 = 135 \text{ km}$$

Final Answer

135 km

MCQ 21Solve $3x + 5 = 29$.**A.** 9**B.** 8**C.** 7**D.** 29**Solution**

$$3x + 5 = 29$$

$$3x = 29 - 5 = 24$$

$$x = \frac{24}{3} = 8$$

Final Answer $x = 8$ **MCQ 22**

An article costs Rs. 800. It is sold at a profit of 15%. Find the selling price.

A. Rs. 1020**B.** Rs. 680**C.** Rs. 815**D.** Rs. 920**Solution**

$$SP = CP \left(1 + \frac{15}{100} \right)$$

$$= 800 \times \frac{115}{100} = 920$$

Final Answer

Rs. 920

MCQ 23

A sum of 60 is divided in the ratio 2 : 3. Find the smaller first share.

- A. 13 B. 12
C. 36 D. 24

Solution

$$2 : 3 \Rightarrow 2 + 3 = 5 \text{ parts}$$

$$1 \text{ part} = \frac{60}{5} = 12$$

$$\text{Required share} = 2 \times 12 = 24$$

Final Answer

24

MCQ 24

Find 12% of 250.

- A. 20 B. 30
C. 40 D. 15

Solution

$$\begin{aligned} 12\% \text{ of } 250 &= \frac{12}{100} \times 250 \\ &= 30 \end{aligned}$$

Final Answer

30

MCQ 25

Evaluate $24 \div 8 + 4 \times 2$.

- A. 4 B. 14
C. 11 D. 7

Solution

$$\begin{aligned} 24 \div 8 + 4 \times 2 \\ = 3 + 8 = 11 \end{aligned}$$

Final Answer

11

MCQ 26

If $n(A) = 25$, $n(B) = 20$, and $n(A \cap B) = 8$, find $n(A \cup B)$.

- A. 8 B. 37
C. 45 D. 53

Solution

$$\begin{aligned} n(A \cup B) &= n(A) + n(B) - n(A \cap B) \\ &= 25 + 20 - 8 = 37 \end{aligned}$$

Final Answer

37

MCQ 27

If $n(A) = 20$, $n(B) = 15$, and $n(A \cap B) = 5$, find $n(A \cup B)$.

- A. 30 B. 40
C. 5 D. 35

Solution

$$\begin{aligned} n(A \cup B) &= n(A) + n(B) - n(A \cap B) \\ &= 20 + 15 - 5 = 30 \end{aligned}$$

Final Answer

30

MCQ 28

Solve $2x + 3 = 17$.

- A. 6 B. 17
C. 8 D. 7

Solution

$$2x + 3 = 17$$

$$2x = 17 - 3 = 14$$

$$x = \frac{14}{2} = 7$$

Final Answer $x = 7$ **MCQ 29**

A can finish a job in 10 days and B in 15 days. How long will they take together?

- A. $\frac{25}{2}$ days B. 6 days
C. 5 days D. 7 days

Solution

$$\text{Combined rate} = \frac{1}{10} + \frac{1}{15} = \frac{25}{150}$$

$$T = \frac{150}{25} = 6 \text{ days}$$

Final Answer

6 days

MCQ 30

Find the next term: 2, 5, 8, 11, 14, ?

- A. 20 B. 17
C. 28 D. 14

Solution

$$5 - 2 = 3, \quad 8 - 5 = 3$$

$$14 + 3 = 17$$

Final Answer

17

MCQ 31

A invests Rs. 20000 and B invests Rs. 30000 for the same period. If the profit is Rs. 5000, find A's share.

- A. Rs. 3000 B. Rs. 1000
C. Rs. 1001 D. Rs. 2000

Solution

$$A : B = 20000 : 30000 = 2 : 3$$

$$\text{A's share} = 5000 \times \frac{2}{5} = 2000$$

Final Answer

Rs. 2000

MCQ 32

Two varieties costing Rs. 20 and Rs. 40 per unit are mixed to obtain a mean price of Rs. 28. Find the ratio of lower-priced to higher-priced variety.

- A. 2 : 3 B. 3 : 2
C. 5 : 1 D. 1 : 1

Solution

$$\text{Lower : Higher} = (40 - 28) : (28 - 20)$$

$$= 12 : 8 = 3 : 2$$

Final Answer

3 : 2

MCQ 33

Evaluate $3x + 5$ for $x = 2$.

- A. 9 B. 11
C. 8 D. 7

Solution

$$3x + 5 \text{ at } x = 2$$

$$= 3(2) + 5 = 6 + 5 = 11$$

Final Answer

11

MCQ 34

A invests Rs. 25000 and B invests Rs. 35000 for the same period. If the profit is Rs. 13200, find A's share.

- A. Rs. 1100 B. Rs. 7700
C. Rs. 6600 D. Rs. 5500

Solution

$$A : B = 25000 : 35000 = 5 : 7$$

$$\text{A's share} = 13200 \times \frac{5}{12} = 5500$$

Final Answer

Rs. 5500

MCQ 35

Evaluate $3^2 \times 3^3$.

- A. 36 B. 243
C. 729 D. 0.3333333333333333

Solution

$$3^2 \times 3^3 = 3^{2+3} = 3^5$$

$$= 243$$

Final Answer

243

MCQ 36

If 5 items cost Rs. 350, what is the cost of 9 items at the same rate?

- A. Rs. 700 B. Rs. 350
C. Rs. 630 D. Rs. 560

Solution

$$1 \text{ unit cost} = \frac{350}{5} = 70$$

$$9 \text{ units cost} = 70 \times 9 = 630$$

Final Answer

Rs. 630

MCQ 37

Find the HCF of 24 and 36.

- A. 60 B. 12
C. 6 D. 24

Solution

$$24 = 12 \times 2, \quad 36 = 12 \times 3$$

$$\text{HCF}(24, 36) = 12$$

Final Answer

12

MCQ 38

Two angles of a triangle are 50° and 70° . Find the third angle.

- A. 60° B. 30°
C. 31° D. 120°

Solution

$$\angle A + \angle B + \angle C = 180^\circ$$

$$\angle C = 180^\circ - 50^\circ - 70^\circ = 60^\circ$$

Final Answer 60°

MCQ 39

Find the simple interest on Rs. 1500 at 6% per annum for 3 years.

- A. Rs. 120 B. Rs. 1770
C. Rs. 420 D. Rs. 270

Solution

$$SI = \frac{PRT}{100}$$

$$= \frac{1500 \times 6 \times 3}{100} = 270$$

Final Answer

Rs. 270

MCQ 40

A candidate is 8th from the left and 12th from the right in a row. How many candidates are in the row?

- A. 21 B. 19
C. 4 D. 20

Solution

$$N = L + R - 1$$

$$= 8 + 12 - 1 = 19$$

Final Answer

19

MCQ 41

Find the next term: 5, 9, 13, 17, 21, ?.

- A. 25 B. 42
C. 29 D. 21

Solution

$$9 - 5 = 4, \quad 13 - 9 = 4$$

$$21 + 4 = 25$$

Final Answer

25

MCQ 42

If 4 items cost Rs. 240, what is the cost of 7 items at the same rate?

- A. Rs. 420 B. Rs. 240
C. Rs. 360 D. Rs. 480

Solution

$$1 \text{ unit cost} = \frac{240}{4} = 60$$

$$7 \text{ units cost} = 60 \times 7 = 420$$

Final Answer

Rs. 420

MCQ 43

Find the HCF of 18 and 30.

- A. 12 B. 6
C. 3 D. 48

Solution

$$18 = 6 \times 3, \quad 30 = 6 \times 5$$

$$\text{HCF}(18, 30) = 6$$

Final Answer

6

MCQ 44

The average of 7, 10, 13 and x is 11. Find x .

- A. 13 B. 11
C. 16 D. 19

Solution

$$\text{Total} = 11 \times 4 = 44$$

$$x = 44 - (7 + 10 + 13)$$

$$x = 16$$

Final Answer

16

MCQ 45

The ages of two persons are in the ratio 2 : 3 and their total age is 40 years. Find the younger age.

- A. 21 years B. 8 years
C. 24 years D. 16 years

Solution

$$\text{Age ratio} = 2 : 3, \quad \text{Total} = 40$$

$$1 \text{ part} = \frac{40}{5} = 8$$

$$\text{Younger age} = 2 \times 8 = 16$$

Final Answer

16 years

MCQ 46

The ages of two persons are in the ratio 3 : 5 and their total age is 56 years. Find the younger age.

- A. 35 years B. 21 years
C. 7 years D. 26 years

Solution

$$\text{Age ratio} = 3 : 5, \quad \text{Total} = 56$$

$$1 \text{ part} = \frac{56}{8} = 7$$

$$\text{Younger age} = 3 \times 7 = 21$$

Final Answer

21 years

MCQ 47

The average of 6, 9, 12 and x is 10. Find x .

- A. 15 B. 18
C. 12 D. 10

Solution

$$\text{Total} = 10 \times 4 = 40$$

$$x = 40 - (6 + 9 + 12)$$

$$x = 15$$

Final Answer

15

MCQ 48

Evaluate $4x + 2$ for $x = 3$.

- A. 5 B. 14
C. 6 D. 10

Solution

$$4x + 2 \quad \text{at} \quad x = 3$$

$$= 4(3) + 2 = 12 + 2 = 14$$

Final Answer

14

MCQ 49

Find the mean of 2, 4, 6, 8, 10.

- A. 5 B. 6
C. 10 D. 7

Solution

$$\begin{aligned} \bar{x} &= \frac{2 + 4 + 6 + 8 + 10}{5} \\ &= \frac{30}{5} = 6 \end{aligned}$$

Final Answer

6

MCQ 50

A bag contains 3 red and 2 blue balls. One ball is drawn at random. Find the probability that it is red.

- A. $\frac{1}{2}$ B. $\frac{2}{5}$
C. $\frac{1}{5}$ D. $\frac{3}{5}$

Solution

$$\begin{aligned} P(\text{red}) &= \frac{\text{red outcomes}}{\text{total outcomes}} \\ &= \frac{3}{5} = \frac{3}{5} \end{aligned}$$

Final Answer $\frac{3}{5}$

MOCK TEST 2 | 50 MIXED BASIC MATH MCQs

MCQ 51

Evaluate $2x + 7$ for $x = 4$.

- A. 13 B. 9
C. 15 D. 11

Solution

$$\begin{aligned} 2x + 7 & \text{ at } x = 4 \\ &= 2(4) + 7 = 8 + 7 = 15 \end{aligned}$$

Final Answer

15

MCQ 52

If 6 items cost Rs. 480, what is the cost of 10 items at the same rate?

- A. Rs. 880 B. Rs. 800
C. Rs. 720 D. Rs. 480

Solution

$$\begin{aligned} 1 \text{ unit cost} &= \frac{480}{6} = 80 \\ 10 \text{ units cost} &= 80 \times 10 = 800 \end{aligned}$$

Final Answer

Rs. 800

MCQ 53

A invests Rs. 30000 and B invests Rs. 45000 for the same period. If the profit is Rs. 6000, find A's share.

- A. Rs. 1200 B. Rs. 3600
C. Rs. 1201 D. Rs. 2400

Solution

$$\begin{aligned} A : B &= 30000 : 45000 = 2 : 3 \\ A's \text{ share} &= 6000 \times \frac{2}{5} = 2400 \end{aligned}$$

Final Answer

Rs. 2400

MCQ 54

A invests Rs. 40000 and B invests Rs. 50000 for the same period. If the profit is Rs. 11700, find A's share.

- A. Rs. 1300 B. Rs. 5200
C. Rs. 6500 D. Rs. 1301

Solution

$$\begin{aligned} A : B &= 40000 : 50000 = 4 : 5 \\ A's \text{ share} &= 11700 \times \frac{4}{9} = 5200 \end{aligned}$$

Final Answer

Rs. 5200

MCQ 55

Solve $5x + 2 = 32$.

- A. 32 B. 6
C. 5 D. 7

Solution

$$\begin{aligned} 5x + 2 &= 32 \\ 5x &= 32 - 2 = 30 \\ x &= \frac{30}{5} = 6 \end{aligned}$$

Final Answer

$x = 6$

MCQ 56

Find the mean of 4, 6, 8, 10, 12.

- A. 7 B. 12
C. 8 D. 9

Solution

$$\begin{aligned} \bar{x} &= \frac{4 + 6 + 8 + 10 + 12}{5} \\ &= \frac{40}{5} = 8 \end{aligned}$$

Final Answer

8

MCQ 57

A candidate is 15th from the left and 20th from the right in a row. How many candidates are in the row?

- A. 34 B. 5
C. 36 D. 35

Solution

$$\begin{aligned} N &= L + R - 1 \\ &= 15 + 20 - 1 = 34 \end{aligned}$$

Final Answer

34

MCQ 58Solve $x^2 - 11x + 28 = 0$.**A.** -4, -7**B.** 4, 7**C.** 4, -7**D.** 7, 8**Solution**

$$x^2 - 11x + 28 = 0$$

$$(x - 4)(x - 7) = 0$$

$$x = 4 \quad \text{or} \quad x = 7$$

Final Answer $x = 4, 7$ **MCQ 59**

Find 15% of 320.

A. 24**B.** 58**C.** 48**D.** 38**Solution**

$$\begin{aligned} 15\% \text{ of } 320 &= \frac{15}{100} \times 320 \\ &= 48 \end{aligned}$$

Final Answer

48

MCQ 60

An article costs Rs. 1500. It is sold at a profit of 12%. Find the selling price.

A. Rs. 1512**B.** Rs. 1320**C.** Rs. 1780**D.** Rs. 1680**Solution**

$$\begin{aligned} SP &= CP \left(1 + \frac{12}{100} \right) \\ &= 1500 \times \frac{112}{100} = 1680 \end{aligned}$$

Final Answer

Rs. 1680

MCQ 61

Find the simple interest on Rs. 2000 at 8% per annum for 2 years.

A. Rs. 120**B.** Rs. 320**C.** Rs. 520**D.** Rs. 2320**Solution**

$$\begin{aligned} SI &= \frac{PRT}{100} \\ &= \frac{2000 \times 8 \times 2}{100} = 320 \end{aligned}$$

Final Answer

Rs. 320

MCQ 62

A sum of 88 is divided in the ratio 4 : 7. Find the smaller first share.

A. 56**B.** 40**C.** 32**D.** 8**Solution**

$$4 : 7 \Rightarrow 4 + 7 = 11 \text{ parts}$$

$$1 \text{ part} = \frac{88}{11} = 8$$

$$\text{Required share} = 4 \times 8 = 32$$

Final Answer

32

MCQ 63If $n(A) = 30$, $n(B) = 18$, and $n(A \cap B) = 6$, find $n(A \cup B)$.**A.** 48**B.** 6**C.** 42**D.** 54**Solution**

$$\begin{aligned} n(A \cup B) &= n(A) + n(B) - n(A \cap B) \\ &= 30 + 18 - 6 = 42 \end{aligned}$$

Final Answer

42

MCQ 64

Two varieties costing Rs. 35 and Rs. 55 per unit are mixed to obtain a mean price of Rs. 43. Find the ratio of lower-priced to higher-priced variety.

A. 3 : 2**B.** 1 : 1**C.** 5 : 1**D.** 2 : 3**Solution**

$$\begin{aligned} \text{Lower : Higher} &= (55 - 43) : (43 - 35) \\ &= 12 : 8 = 3 : 2 \end{aligned}$$

Final Answer

3 : 2

MCQ 65Evaluate $36 \div 9 + 5 \times 2$.**A.** 4**B.** 14**C.** 9**D.** 18**Solution**

$$\begin{aligned} 36 \div 9 + 5 \times 2 \\ = 4 + 10 = 14 \end{aligned}$$

Final Answer

14

MCQ 66

A vehicle travels at 50 km/h for 4 hours. Find the distance covered.

- A. 200 km B. 54 km
C. 196 km D. 250 km

Solution

$$D = S \times T$$

$$= 50 \times 4 = 200 \text{ km}$$

Final Answer

200 km

MCQ 67

Find the area of a rectangle of length 15 cm and width 8 cm.

- A. 46 cm² B. 135 cm²
C. 120 cm² D. 23 cm²

Solution

$$A = l \times w$$

$$= 15 \times 8 = 120 \text{ cm}^2$$

Final Answer120 cm²**MCQ 68**

Two angles of a triangle are 35° and 85°. Find the third angle.

- A. 120° B. 31°
C. 30° D. 60°

Solution

$$\angle A + \angle B + \angle C = 180^\circ$$

$$\angle C = 180^\circ - 35^\circ - 85^\circ = 60^\circ$$

Final Answer

60°

MCQ 69

Find the simple interest on Rs. 2500 at 10% per annum for 4 years.

- A. Rs. 1250 B. Rs. 1000
C. Rs. 3500 D. Rs. 750

Solution

$$SI = \frac{PRT}{100}$$

$$= \frac{2500 \times 10 \times 4}{100} = 1000$$

Final Answer

Rs. 1000

MCQ 70

An article costs Rs. 1200. It is sold at a profit of 20%. Find the selling price.

- A. Rs. 1440 B. Rs. 960
C. Rs. 1220 D. Rs. 1540

Solution

$$SP = CP \left(1 + \frac{20}{100} \right)$$

$$= 1200 \times \frac{120}{100} = 1440$$

Final Answer

Rs. 1440

MCQ 71

Evaluate $30 \div 5 + 2 \times 2$.

- A. 10 B. 16
C. 17 D. 8

Solution

$$30 \div 5 + 2 \times 2$$

$$= 6 + 4 = 10$$

Final Answer

10

MCQ 72

The ages of two persons are in the ratio 4 : 7 and their total age is 66 years. Find the younger age.

- A. 42 years B. 6 years
C. 29 years D. 24 years

Solution

$$\text{Age ratio} = 4 : 7, \quad \text{Total} = 66$$

$$1 \text{ part} = \frac{66}{11} = 6$$

$$\text{Younger age} = 4 \times 6 = 24$$

Final Answer

24 years

MCQ 73

Find the next term: 10, 16, 22, 28, 34, ?.

- A. 34 B. 46
C. 68 D. 40

Solution

$$16 - 10 = 6, \quad 22 - 16 = 6$$

$$34 + 6 = 40$$

Final Answer

40

MCQ 74Solve $x^2 - 9x + 18 = 0$.**A.** 6, 7**B.** 3, 6**C.** 3, -6**D.** -3, -6**Solution**

$$x^2 - 9x + 18 = 0$$

$$(x - 3)(x - 6) = 0$$

$$x = 3 \quad \text{or} \quad x = 6$$

Final Answer $x = 3, 6$ **MCQ 75**

A sum of 91 is divided in the ratio 5 : 8. Find the smaller first share.

A. 42**B.** 56**C.** 7**D.** 35**Solution**

$$5 : 8 \Rightarrow 5 + 8 = 13 \text{ parts}$$

$$1 \text{ part} = \frac{91}{13} = 7$$

$$\text{Required share} = 5 \times 7 = 35$$

Final Answer

35

MCQ 76

A can finish a job in 8 days and B in 24 days. How long will they take together?

A. 4 days**B.** 16 days**C.** 7 days**D.** 6 days**Solution**

$$\text{Combined rate} = \frac{1}{8} + \frac{1}{24} = \frac{32}{192}$$

$$T = \frac{192}{32} = 6 \text{ days}$$

Final Answer

6 days

MCQ 77

Find 20% of 450.

A. 80**B.** 100**C.** 45**D.** 90**Solution**

$$\begin{aligned} 20\% \text{ of } 450 &= \frac{20}{100} \times 450 \\ &= 90 \end{aligned}$$

Final Answer

90

MCQ 78The average of 9, 12, 15 and x is 13. Find x .**A.** 18**B.** 21**C.** 13**D.** 15**Solution**

$$\text{Total} = 13 \times 4 = 52$$

$$x = 52 - (9 + 12 + 15)$$

$$x = 18$$

Final Answer

18

MCQ 79

Two varieties costing Rs. 30 and Rs. 50 per unit are mixed to obtain a mean price of Rs. 38. Find the ratio of lower-priced to higher-priced variety.

A. 2 : 3**B.** 5 : 1**C.** 3 : 2**D.** 1 : 1**Solution**

$$\begin{aligned} \text{Lower : Higher} &= (50 - 38) : (38 - 30) \\ &= 12 : 8 = 3 : 2 \end{aligned}$$

Final Answer

3 : 2

MCQ 80

A vehicle travels at 60 km/h for 2 hours. Find the distance covered.

A. 120 km**B.** 62 km**C.** 180 km**D.** 118 km**Solution**

$$D = S \times T$$

$$= 60 \times 2 = 120 \text{ km}$$

Final Answer

120 km

MCQ 81

A candidate is 12th from the left and 18th from the right in a row. How many candidates are in the row?

A. 29**B.** 6**C.** 30**D.** 31**Solution**

$$N = L + R - 1$$

$$= 12 + 18 - 1 = 29$$

Final Answer

29

MCQ 82

Find the HCF of 48 and 72.

- A. 12 B. 24
C. 48 D. 120

Solution

$$48 = 24 \times 2, \quad 72 = 24 \times 3$$

$$\text{HCF}(48, 72) = 24$$

Final Answer

24

MCQ 83Solve $4x + 7 = 43$.

- A. 43 B. 9
C. 10 D. 8

Solution

$$4x + 7 = 43$$

$$4x = 43 - 7 = 36$$

$$x = \frac{36}{4} = 9$$

Final Answer $x = 9$ **MCQ 84**Calculate $\frac{7}{10} + \frac{1}{5}$.

- A. $\frac{1}{2}$ B. $\frac{9}{10}$
C. $\frac{1}{15}$ D. 1

Solution

$$\begin{aligned} \frac{7}{10} + \frac{1}{5} &= \frac{7}{10} + \frac{2}{10} \\ &= \frac{9}{10} = \frac{9}{10} \end{aligned}$$

Final Answer $\frac{9}{10}$ **MCQ 85**

Find the mean of 5, 7, 9, 11, 13.

- A. 10 B. 8
C. 9 D. 13

Solution

$$\begin{aligned} \bar{x} &= \frac{5 + 7 + 9 + 11 + 13}{5} \\ &= \frac{45}{5} = 9 \end{aligned}$$

Final Answer

9

MCQ 86Evaluate $5^3 \times 5^2$.

- A. 3125 B. 150
C. 5 D. 15625

Solution

$$5^3 \times 5^2 = 5^{3+2} = 5^5$$

$$= 3125$$

Final Answer

3125

MCQ 87Two angles of a triangle are 60° and 50° . Find the third angle.

- A. 20° B. 110°
C. 70° D. 21°

Solution

$$\angle A + \angle B + \angle C = 180^\circ$$

$$\angle C = 180^\circ - 60^\circ - 50^\circ = 70^\circ$$

Final Answer 70° **MCQ 88**

A bag contains 5 red and 5 blue balls. One ball is drawn at random. Find the probability that it is red.

- A. $\frac{11}{10}$ B. $\frac{1}{10}$
C. $\frac{5}{11}$ D. $\frac{1}{2}$

Solution

$$\begin{aligned} P(\text{red}) &= \frac{\text{red outcomes}}{\text{total outcomes}} \\ &= \frac{5}{10} = \frac{1}{2} \end{aligned}$$

Final Answer $\frac{1}{2}$ **MCQ 89**

The ages of two persons are in the ratio 5 : 8 and their total age is 65 years. Find the younger age.

- A. 25 years B. 5 years
C. 40 years D. 30 years

Solution

$$\text{Age ratio} = 5 : 8, \quad \text{Total} = 65$$

$$1 \text{ part} = \frac{65}{13} = 5$$

$$\text{Younger age} = 5 \times 5 = 25$$

Final Answer

25 years

MCQ 90

Find the next term: 7, 12, 17, 22, 27, ?.

- A. 27 B. 37
C. 54 D. 32

Solution

$$12 - 7 = 5, \quad 17 - 12 = 5$$

$$27 + 5 = 32$$

Final Answer

32

MCQ 91Calculate $\frac{5}{6} + \frac{1}{3}$.

- A. $\frac{4}{3}$ B. $\frac{2}{3}$
C. $\frac{7}{6}$ D. $\frac{1}{2}$

Solution

$$\begin{aligned} \frac{5}{6} + \frac{1}{3} &= \frac{5}{6} + \frac{2}{6} \\ &= \frac{7}{6} = \frac{7}{6} \end{aligned}$$

Final Answer $\frac{7}{6}$ **MCQ 92**

A can finish a job in 20 days and B in 30 days. How long will they take together?

- A. 25 days B. 12 days
C. 13 days D. 10 days

Solution

$$\text{Combined rate} = \frac{1}{20} + \frac{1}{30} = \frac{50}{600}$$

$$T = \frac{600}{50} = 12 \text{ days}$$

Final Answer

12 days

MCQ 93Evaluate $5x + 3$ for $x = 5$.

- A. 8 B. 23
C. 28 D. 24

Solution

$$5x + 3 \quad \text{at} \quad x = 5$$

$$= 5(5) + 3 = 25 + 3 = 28$$

Final Answer

28

MCQ 94If $n(A) = 35$, $n(B) = 25$, and $n(A \cap B) = 10$, find $n(A \cup B)$.

- A. 10 B. 60
C. 50 D. 70

Solution

$$\begin{aligned} n(A \cup B) &= n(A) + n(B) - n(A \cap B) \\ &= 35 + 25 - 10 = 50 \end{aligned}$$

Final Answer

50

MCQ 95

A bag contains 6 red and 4 blue balls. One ball is drawn at random. Find the probability that it is red.

- A. $\frac{1}{10}$ B. $\frac{3}{5}$
C. $\frac{2}{5}$ D. $\frac{6}{11}$

Solution

$$\begin{aligned} P(\text{red}) &= \frac{\text{red outcomes}}{\text{total outcomes}} \\ &= \frac{6}{10} = \frac{3}{5} \end{aligned}$$

Final Answer $\frac{3}{5}$ **MCQ 96**

If 8 items cost Rs. 600, what is the cost of 12 items at the same rate?

- A. Rs. 975 B. Rs. 825
C. Rs. 600 D. Rs. 900

Solution

$$1 \text{ unit cost} = \frac{600}{8} = 75$$

$$12 \text{ units cost} = 75 \times 12 = 900$$

Final Answer

Rs. 900

MCQ 97

Find the HCF of 42 and 56.

- A. 98 B. 28
C. 7 D. 14

Solution

$$42 = 14 \times 3, \quad 56 = 14 \times 4$$

$$\text{HCF}(42, 56) = 14$$

Final Answer

14

MCQ 98Evaluate $4^4 \times 4^1$.

- A. 1024 B. 260
C. 64 D. 256

Solution

$$4^4 \times 4^1 = 4^{4+1} = 4^5 \\ = 1024$$

Final Answer

1024

MCQ 99

Find the area of a rectangle of length 12 cm and width 7 cm.

- A. 38 cm^2 B. 96 cm^2
C. 19 cm^2 D. 84 cm^2

Solution

$$A = l \times w \\ = 12 \times 7 = 84 \text{ cm}^2$$

Final Answer 84 cm^2 **MCQ 100**The average of 8, 11, 14 and x is 12. Find x .

- A. 14 B. 17
C. 20 D. 12

Solution

$$\text{Total} = 12 \times 4 = 48$$

$$x = 48 - (8 + 11 + 14)$$

$$x = 17$$

Final Answer

17

MOCK TEST 3 | 50 MIXED BASIC MATH MCQs

MCQ 101

A sum of 96 is divided in the ratio 7 : 9. Find the smaller first share.

- A. 42 B. 54
C. 6 D. 48

Solution

$$7 : 9 \Rightarrow 7 + 9 = 16 \text{ parts}$$

$$1 \text{ part} = \frac{96}{16} = 6$$

$$\text{Required share} = 7 \times 6 = 42$$

Final Answer

42

MCQ 102

Find the area of a rectangle of length 18 cm and width 9 cm.

- A. 54 cm² B. 162 cm²
C. 180 cm² D. 27 cm²

Solution

$$A = l \times w$$

$$= 18 \times 9 = 162 \text{ cm}^2$$

Final Answer

162 cm²

MCQ 103

Evaluate $2^5 \times 2^2$.

- A. 36 B. 1024
C. 8 D. 128

Solution

$$2^5 \times 2^2 = 2^{5+2} = 2^7$$

$$= 128$$

Final Answer

128

MCQ 104

Two angles of a triangle are 45° and 65°. Find the third angle.

- A. 20° B. 110°
C. 21° D. 70°

Solution

$$\angle A + \angle B + \angle C = 180^\circ$$

$$\angle C = 180^\circ - 45^\circ - 65^\circ = 70^\circ$$

Final Answer

70°

MCQ 105

Find the mean of 7, 9, 11, 13, 15.

- A. 11 B. 15
C. 10 D. 12

Solution

$$\begin{aligned} \bar{x} &= \frac{7 + 9 + 11 + 13 + 15}{5} \\ &= \frac{55}{5} = 11 \end{aligned}$$

Final Answer

11

MCQ 106

A invests Rs. 50000 and B invests Rs. 60000 for the same period. If the profit is Rs. 15400, find A's share.

- A. Rs. 7000 B. Rs. 1401
C. Rs. 8400 D. Rs. 1400

Solution

$$A : B = 50000 : 60000 = 5 : 6$$

$$A's \text{ share} = 15400 \times \frac{5}{11} = 7000$$

Final Answer

Rs. 7000

MCQ 107

A invests Rs. 24000 and B invests Rs. 32000 for the same period. If the profit is Rs. 10500, find A's share.

- A. Rs. 1501 B. Rs. 6000
C. Rs. 4500 D. Rs. 1500

Solution

$$A : B = 24000 : 32000 = 3 : 4$$

$$A's \text{ share} = 10500 \times \frac{3}{7} = 4500$$

Final Answer

Rs. 4500

MCQ 108

Solve $7x + 6 = 34$.

- A. 3 B. 4
C. 5 D. 34

Solution

$$7x + 6 = 34$$

$$7x = 34 - 6 = 28$$

$$x = \frac{28}{7} = 4$$

Final Answer $x = 4$ **MCQ 109**

Find the HCF of 54 and 90.

- A. 144 B. 9
C. 18 D. 36

Solution

$$54 = 18 \times 3, \quad 90 = 18 \times 5$$

$$\text{HCF}(54, 90) = 18$$

Final Answer

18

MCQ 110

Find the area of a rectangle of length 20 cm and width 10 cm.

- A. 30 cm^2 B. 60 cm^2
C. 220 cm^2 D. 200 cm^2

Solution

$$A = l \times w$$

$$= 20 \times 10 = 200 \text{ cm}^2$$

Final Answer 200 cm^2 **MCQ 111**

Evaluate $6x + 4$ for $x = 6$.

- A. 34 B. 35
C. 40 D. 10

Solution

$$6x + 4 \text{ at } x = 6$$

$$= 6(6) + 4 = 36 + 4 = 40$$

Final Answer

40

MCQ 112

If $n(A) = 45$, $n(B) = 28$, and $n(A \cap B) = 9$, find $n(A \cup B)$.

- A. 73 B. 9
C. 64 D. 82

Solution

$$n(A \cup B) = n(A) + n(B) - n(A \cap B)$$

$$= 45 + 28 - 9 = 64$$

Final Answer

64

MCQ 113

A can finish a job in 6 days and B in 12 days. How long will they take together?

- A. 4 days B. 5 days
C. 9 days D. 3 days

Solution

$$\text{Combined rate} = \frac{1}{6} + \frac{1}{12} = \frac{18}{72}$$

$$T = \frac{72}{18} = 4 \text{ days}$$

Final Answer

4 days

MCQ 114

A vehicle travels at 72 km/h for 5 hours. Find the distance covered.

- A. 432 km B. 77 km
C. 360 km D. 355 km

Solution

$$D = S \times T$$

$$= 72 \times 5 = 360 \text{ km}$$

Final Answer

360 km

MCQ 115

A can finish a job in 15 days and B in 30 days. How long will they take together?

- A. 11 days B. 10 days
C. $\frac{15}{2}$ days D. $\frac{45}{2}$ days

Solution

$$\text{Combined rate} = \frac{1}{15} + \frac{1}{30} = \frac{45}{450}$$

$$T = \frac{450}{45} = 10 \text{ days}$$

Final Answer

10 days

MCQ 116

Calculate $\frac{3}{7} + \frac{2}{7}$.

- A. $\frac{1}{7}$ B. $\frac{5}{7}$
C. $\frac{6}{7}$ D. $\frac{5}{14}$

Solution

$$\begin{aligned} \frac{3}{7} + \frac{2}{7} &= \frac{3}{7} + \frac{2}{7} \\ &= \frac{5}{7} = \frac{5}{7} \end{aligned}$$

Final Answer $\frac{5}{7}$ **MCQ 117**

Two angles of a triangle are 55° and 45° . Find the third angle.

- A. 100° B. 80°
C. 10° D. 11°

Solution

$$\angle A + \angle B + \angle C = 180^\circ$$

$$\angle C = 180^\circ - 55^\circ - 45^\circ = 80^\circ$$

Final Answer 80° **MCQ 118**

A bag contains 8 red and 7 blue balls. One ball is drawn at random. Find the probability that it is red.

- A. $\frac{8}{15}$ B. $\frac{7}{15}$
C. $\frac{1}{15}$ D. $\frac{1}{2}$

Solution

$$\begin{aligned} P(\text{red}) &= \frac{\text{red outcomes}}{\text{total outcomes}} \\ &= \frac{8}{15} = \frac{8}{15} \end{aligned}$$

Final Answer $\frac{8}{15}$ **MCQ 119**

Find the simple interest on Rs. 4000 at 7% per annum for 3 years.

- A. Rs. 4840 B. Rs. 840
C. Rs. 1240 D. Rs. 440

Solution

$$\begin{aligned} SI &= \frac{PRT}{100} \\ &= \frac{4000 \times 7 \times 3}{100} = 840 \end{aligned}$$

Final Answer

Rs. 840

MCQ 120

Solve $6x + 4 = 34$.

- A. 6 B. 34
C. 5 D. 4

Solution

$$6x + 4 = 34$$

$$6x = 34 - 4 = 30$$

$$x = \frac{30}{6} = 5$$

Final Answer $x = 5$

MCQ 121

A candidate is 20th from the left and 25th from the right in a row. How many candidates are in the row?

- A. 46
B. 44
C. 45
D. 5

Solution

$$N = L + R - 1$$

$$= 20 + 25 - 1 = 44$$

Final Answer

44

MCQ 122

The average of 11, 14, 17 and x is 15. Find x .

- A. 15
B. 23
C. 20
D. 17

Solution

$$\text{Total} = 15 \times 4 = 60$$

$$x = 60 - (11 + 14 + 17)$$

$$x = 20$$

Final Answer

20

MCQ 123

Find the simple interest on Rs. 3000 at 12% per annum for 2 years.

- A. Rs. 3720
B. Rs. 720
C. Rs. 420
D. Rs. 1020

Solution

$$SI = \frac{PRT}{100}$$

$$= \frac{3000 \times 12 \times 2}{100} = 720$$

Final Answer

Rs. 720

MCQ 124

A vehicle travels at 80 km/h for 3 hours. Find the distance covered.

- A. 240 km
B. 320 km
C. 237 km
D. 83 km

Solution

$$D = S \times T$$

$$= 80 \times 3 = 240 \text{ km}$$

Final Answer

240 km

MCQ 125

Find 30% of 280.

- A. 74
B. 84
C. 94
D. 42

Solution

$$30\% \text{ of } 280 = \frac{30}{100} \times 280$$

$$= 84$$

Final Answer

84

MCQ 126

If $n(A) = 40$, $n(B) = 30$, and $n(A \cap B) = 12$, find $n(A \cup B)$.

- A. 58
B. 70
C. 82
D. 12

Solution

$$n(A \cup B) = n(A) + n(B) - n(A \cap B)$$

$$= 40 + 30 - 12 = 58$$

Final Answer

58

MCQ 127

A candidate is 17th from the left and 22th from the right in a row. How many candidates are in the row?

- A. 5
B. 38
C. 40
D. 39

Solution

$$N = L + R - 1$$

$$= 17 + 22 - 1 = 38$$

Final Answer

38

MCQ 128

If 10 items cost Rs. 900, what is the cost of 15 items at the same rate?

- A. Rs. 900
B. Rs. 1440
C. Rs. 1260
D. Rs. 1350

Solution

$$1 \text{ unit cost} = \frac{900}{10} = 90$$

$$15 \text{ units cost} = 90 \times 15 = 1350$$

Final Answer

Rs. 1350

MCQ 129

The ages of two persons are in the ratio 5 : 7 and their total age is 72 years. Find the younger age.

- A. 30 years B. 6 years
C. 42 years D. 35 years

Solution

$$\text{Age ratio} = 5 : 7, \quad \text{Total} = 72$$

$$1 \text{ part} = \frac{72}{12} = 6$$

$$\text{Younger age} = 5 \times 6 = 30$$

Final Answer

30 years

MCQ 130

Find 25% of 360.

- A. 45 B. 100
C. 90 D. 80

Solution

$$25\% \text{ of } 360 = \frac{25}{100} \times 360 \\ = 90$$

Final Answer

90

MCQ 131

Evaluate $48 \div 6 + 7 \times 2$.

- A. 22 B. 30
C. 6 D. 15

Solution

$$48 \div 6 + 7 \times 2$$

$$= 8 + 14 = 22$$

Final Answer

22

MCQ 132

A sum of 105 is divided in the ratio 3 : 4. Find the smaller first share.

- A. 15 B. 60
C. 16 D. 45

Solution

$$3 : 4 \Rightarrow 3 + 4 = 7 \text{ parts}$$

$$1 \text{ part} = \frac{105}{7} = 15$$

$$\text{Required share} = 3 \times 15 = 45$$

Final Answer

45

MCQ 133

An article costs Rs. 2000. It is sold at a profit of 25%. Find the selling price.

- A. Rs. 2025 B. Rs. 1500
C. Rs. 2500 D. Rs. 2600

Solution

$$SP = CP \left(1 + \frac{25}{100} \right) \\ = 2000 \times \frac{125}{100} = 2500$$

Final Answer

Rs. 2500

MCQ 134

Two varieties costing Rs. 40 and Rs. 60 per unit are mixed to obtain a mean price of Rs. 48. Find the ratio of lower-priced to higher-priced variety.

- A. 5 : 1 B. 2 : 3
C. 1 : 1 D. 3 : 2

Solution

$$\text{Lower : Higher} = (60 - 48) : (48 - 40)$$

$$= 12 : 8 = 3 : 2$$

Final Answer

3 : 2

MCQ 135

Evaluate $3x + 8$ for $x = 7$.

- A. 11 B. 29
C. 26 D. 15

Solution

$$3x + 8 \text{ at } x = 7$$

$$= 3(7) + 8 = 21 + 8 = 29$$

Final Answer

29

MCQ 136

Calculate $\frac{2}{5} + \frac{3}{10}$.

- A. $\frac{1}{3}$ B. $\frac{4}{5}$
C. $\frac{1}{10}$ D. $\frac{7}{10}$

Solution

$$\frac{2}{5} + \frac{3}{10} = \frac{4}{10} + \frac{3}{10} \\ = \frac{7}{10} = \frac{7}{10}$$

Final Answer $\frac{7}{10}$

MCQ 137

Find the next term: 3, 11, 19, 27, 35, ?.

- A. 43 B. 35
C. 51 D. 70

Solution

$$11 - 3 = 8, \quad 19 - 11 = 8$$

$$35 + 8 = 43$$

Final Answer

43

MCQ 138The average of 10, 13, 16 and x is 14. Find x .

- A. 16 B. 22
C. 14 D. 19

Solution

$$\text{Total} = 14 \times 4 = 56$$

$$x = 56 - (10 + 13 + 16)$$

$$x = 19$$

Final Answer

19

MCQ 139

An article costs Rs. 2500. It is sold at a profit of 8%. Find the selling price.

- A. Rs. 2300 B. Rs. 2508
C. Rs. 2800 D. Rs. 2700

Solution

$$SP = CP \left(1 + \frac{8}{100} \right)$$

$$= 2500 \times \frac{108}{100} = 2700$$

Final Answer

Rs. 2700

MCQ 140

Find the HCF of 63 and 84.

- A. 21 B. 147
C. 10 D. 42

Solution

$$63 = 21 \times 3, \quad 84 = 21 \times 4$$

$$\text{HCF}(63, 84) = 21$$

Final Answer

21

MCQ 141Solve $x^2 - 13x + 40 = 0$.

- A. 8, 9 B. 5, 8
C. -5, -8 D. 5, -8

Solution

$$x^2 - 13x + 40 = 0$$

$$(x - 5)(x - 8) = 0$$

$$x = 5 \quad \text{or} \quad x = 8$$

Final Answer $x = 5, 8$ **MCQ 142**

If 12 items cost Rs. 1080, what is the cost of 18 items at the same rate?

- A. Rs. 1530 B. Rs. 1080
C. Rs. 1620 D. Rs. 1710

Solution

$$1 \text{ unit cost} = \frac{1080}{12} = 90$$

$$18 \text{ units cost} = 90 \times 18 = 1620$$

Final Answer

Rs. 1620

MCQ 143

Two varieties costing Rs. 45 and Rs. 65 per unit are mixed to obtain a mean price of Rs. 53. Find the ratio of lower-priced to higher-priced variety.

- A. 5 : 1 B. 3 : 2
C. 2 : 3 D. 1 : 1

Solution

$$\text{Lower : Higher} = (65 - 53) : (53 - 45)$$

$$= 12 : 8 = 3 : 2$$

Final Answer

3 : 2

MCQ 144

Find the mean of 6, 8, 10, 12, 14.

- A. 9 B. 11
C. 10 D. 14

Solution

$$\bar{x} = \frac{6 + 8 + 10 + 12 + 14}{5}$$

$$= \frac{50}{5} = 10$$

Final Answer

10

MCQ 145Evaluate $42 \div 7 + 6 \times 2$.

- A. 6 B. 18
C. 12 D. 24

Solution

$$42 \div 7 + 6 \times 2$$

$$= 6 + 12 = 18$$

Final Answer

18

MCQ 146

The ages of two persons are in the ratio 3 : 4 and their total age is 63 years. Find the younger age.

- A. 36 years B. 27 years
C. 9 years D. 32 years

Solution

$$\text{Age ratio} = 3 : 4, \quad \text{Total} = 63$$

$$1 \text{ part} = \frac{63}{7} = 9$$

$$\text{Younger age} = 3 \times 9 = 27$$

Final Answer

27 years

MCQ 147Solve $x^2 - 15x + 54 = 0$.

- A. 6, 9 B. -6, -9
C. 9, 10 D. 6, -9

Solution

$$x^2 - 15x + 54 = 0$$

$$(x - 6)(x - 9) = 0$$

$$x = 6 \quad \text{or} \quad x = 9$$

Final Answer $x = 6, 9$ **MCQ 148**

A bag contains 7 red and 6 blue balls. One ball is drawn at random. Find the probability that it is red.

- A. $\frac{6}{13}$ B. $\frac{7}{13}$
C. $\frac{1}{2}$ D. $\frac{1}{13}$

Solution

$$P(\text{red}) = \frac{\text{red outcomes}}{\text{total outcomes}}$$

$$= \frac{7}{13} = \frac{7}{13}$$

Final Answer $\frac{7}{13}$ **MCQ 149**Evaluate $3^4 \times 3^1$.

- A. 243 B. 84
C. 27 D. 81

Solution

$$3^4 \times 3^1 = 3^{4+1} = 3^5$$

$$= 243$$

Final Answer

243

MCQ 150

Find the next term: 12, 19, 26, 33, 40, ?.

- A. 54 B. 80
C. 40 D. 47

Solution

$$19 - 12 = 7, \quad 26 - 19 = 7$$

$$40 + 7 = 47$$

Final Answer

47

MOCK TEST 4 | 50 MIXED BASIC MATH MCQs

MCQ 151

The ages of two persons are in the ratio 4 : 5 and their total age is 90 years. Find the younger age.

- A. 45 years B. 10 years
C. 50 years D. 40 years

Solution

$$\text{Age ratio} = 4 : 5, \quad \text{Total} = 90$$

$$1 \text{ part} = \frac{90}{9} = 10$$

$$\text{Younger age} = 4 \times 10 = 40$$

Final Answer

40 years

MCQ 152

Find the next term: 11, 20, 29, 38, 47, ?.

- A. 94 B. 65
C. 56 D. 47

Solution

$$20 - 11 = 9, \quad 29 - 20 = 9$$

$$47 + 9 = 56$$

Final Answer

56

MCQ 153

An article costs Rs. 3600. It is sold at a profit of 10%. Find the selling price.

- A. Rs. 3960 B. Rs. 3240
C. Rs. 4060 D. Rs. 3610

Solution

$$SP = CP \left(1 + \frac{10}{100} \right)$$

$$= 3600 \times \frac{110}{100} = 3960$$

Final Answer

Rs. 3960

MCQ 154

Evaluate $54 \div 9 + 4 \times 2$.

- A. 14 B. 10
C. 8 D. 20

Solution

$$54 \div 9 + 4 \times 2$$

$$= 6 + 8 = 14$$

Final Answer

14

MCQ 155

If $n(A) = 55$, $n(B) = 40$, and $n(A \cap B) = 14$, find $n(A \cup B)$.

- A. 14 B. 95
C. 81 D. 109

Solution

$$n(A \cup B) = n(A) + n(B) - n(A \cap B)$$

$$= 55 + 40 - 14 = 81$$

Final Answer

81

MCQ 156

The average of 13, 16, 19 and x is 17. Find x .

- A. 22 B. 25
C. 17 D. 19

Solution

$$\text{Total} = 17 \times 4 = 68$$

$$x = 68 - (13 + 16 + 19)$$

$$x = 22$$

Final Answer

22

MCQ 157

A vehicle travels at 90 km/h for 2 hours. Find the distance covered.

- A. 92 km B. 270 km
C. 178 km D. 180 km

Solution

$$D = S \times T$$

$$= 90 \times 2 = 180 \text{ km}$$

Final Answer

180 km

MCQ 158

Find the area of a rectangle of length 25 cm and width 14 cm.

- A. 78 cm^2 B. 375 cm^2
C. 350 cm^2 D. 39 cm^2

Solution

$$A = l \times w$$

$$= 25 \times 14 = 350 \text{ cm}^2$$

Final Answer350 cm²**MCQ 159**

Find the simple interest on Rs. 5000 at 9% per annum for 2 years.

- A. Rs. 1400 B. Rs. 5900
C. Rs. 900 D. Rs. 400

Solution

$$SI = \frac{PRT}{100}$$

$$= \frac{5000 \times 9 \times 2}{100} = 900$$

Final Answer

Rs. 900

MCQ 160

The ages of two persons are in the ratio 7 : 9 and their total age is 64 years. Find the younger age.

- A. 33 years B. 4 years
C. 28 years D. 36 years

Solution

$$\text{Age ratio} = 7 : 9, \quad \text{Total} = 64$$

$$1 \text{ part} = \frac{64}{16} = 4$$

$$\text{Younger age} = 7 \times 4 = 28$$

Final Answer

28 years

MCQ 161

A can finish a job in 16 days and B in 48 days. How long will they take together?

- A. 32 days B. 8 days
C. 12 days D. 13 days

Solution

$$\text{Combined rate} = \frac{1}{16} + \frac{1}{48} = \frac{64}{768}$$

$$T = \frac{768}{64} = 12 \text{ days}$$

Final Answer

12 days

MCQ 162

A sum of 95 is divided in the ratio 8 : 11. Find the smaller first share.

- A. 40 B. 55
C. 5 D. 45

Solution

$$8 : 11 \Rightarrow 8 + 11 = 19 \text{ parts}$$

$$1 \text{ part} = \frac{95}{19} = 5$$

$$\text{Required share} = 8 \times 5 = 40$$

Final Answer

40

MCQ 163

Calculate $\frac{4}{9} + \frac{1}{3}$.

- A. $\frac{1}{9}$ B. $\frac{8}{9}$
C. $\frac{5}{12}$ D. $\frac{7}{9}$

Solution

$$\frac{4}{9} + \frac{1}{3} = \frac{4}{9} + \frac{3}{9}$$

$$= \frac{7}{9} = \frac{7}{9}$$

Final Answer $\frac{7}{9}$

MCQ 164

Find the mean of 9, 11, 13, 15, 17.

- A. 17 B. 12
C. 13 D. 14

Solution

$$\begin{aligned}\bar{x} &= \frac{9 + 11 + 13 + 15 + 17}{5} \\ &= \frac{65}{5} = 13\end{aligned}$$

Final Answer

13

MCQ 165

A bag contains 10 red and 5 blue balls. One ball is drawn at random. Find the probability that it is red.

- A. $\frac{1}{15}$ B. $\frac{1}{3}$
C. $\frac{5}{8}$ D. $\frac{2}{3}$

Solution

$$\begin{aligned}P(\text{red}) &= \frac{\text{red outcomes}}{\text{total outcomes}} \\ &= \frac{10}{15} = \frac{2}{3}\end{aligned}$$

Final Answer $\frac{2}{3}$ **MCQ 166**

A can finish a job in 9 days and B in 18 days. How long will they take together?

- A. $\frac{27}{2}$ days B. $\frac{9}{2}$ days
C. 7 days D. 6 days

Solution

$$\begin{aligned}\text{Combined rate} &= \frac{1}{9} + \frac{1}{18} = \frac{27}{162} \\ T &= \frac{162}{27} = 6 \text{ days}\end{aligned}$$

Final Answer

6 days

MCQ 167The average of 12, 15, 18 and x is 16. Find x .

- A. 16 B. 24
C. 21 D. 18

Solution

$$\text{Total} = 16 \times 4 = 64$$

$$x = 64 - (12 + 15 + 18)$$

$$x = 21$$

Final Answer

21

MCQ 168Two angles of a triangle are 65° and 55° . Find the third angle.

- A. 30° B. 31°
C. 60° D. 120°

Solution

$$\angle A + \angle B + \angle C = 180^\circ$$

$$\angle C = 180^\circ - 65^\circ - 55^\circ = 60^\circ$$

Final Answer 60° **MCQ 169**

A candidate is 25th from the left and 30th from the right in a row. How many candidates are in the row?

- A. 54 B. 55
C. 56 D. 5

Solution

$$N = L + R - 1$$

$$= 25 + 30 - 1 = 54$$

Final Answer

54

MCQ 170Solve $8x + 8 = 32$.

- A. 3 B. 2
C. 4 D. 32

Solution

$$8x + 8 = 32$$

$$8x = 32 - 8 = 24$$

$$x = \frac{24}{8} = 3$$

Final Answer $x = 3$

MCQ 171

If $n(A) = 50$, $n(B) = 35$, and $n(A \cap B) = 15$, find $n(A \cup B)$.

- A. 85 B. 100
C. 15 D. 70

Solution

$$\begin{aligned} n(A \cup B) &= n(A) + n(B) - n(A \cap B) \\ &= 50 + 35 - 15 = 70 \end{aligned}$$

Final Answer

70

MCQ 172

Find the simple interest on Rs. 6000 at 5% per annum for 5 years.

- A. Rs. 2100 B. Rs. 900
C. Rs. 7500 D. Rs. 1500

Solution

$$\begin{aligned} SI &= \frac{PRT}{100} \\ &= \frac{6000 \times 5 \times 5}{100} = 1500 \end{aligned}$$

Final Answer

Rs. 1500

MCQ 173

Find the HCF of 32 and 48.

- A. 16 B. 80
C. 32 D. 8

Solution

$$\begin{aligned} 32 &= 16 \times 2, & 48 &= 16 \times 3 \\ \text{HCF}(32, 48) &= 16 \end{aligned}$$

Final Answer

16

MCQ 174

Find 35% of 400.

- A. 130 B. 70
C. 140 D. 150

Solution

$$\begin{aligned} 35\% \text{ of } 400 &= \frac{35}{100} \times 400 \\ &= 140 \end{aligned}$$

Final Answer

140

MCQ 175

Evaluate $4x + 6$ for $x = 9$.

- A. 38 B. 10
C. 15 D. 42

Solution

$$\begin{aligned} 4x + 6 &\text{ at } x = 9 \\ &= 4(9) + 6 = 36 + 6 = 42 \end{aligned}$$

Final Answer

42

MCQ 176

Evaluate $7^2 \times 7^2$.

- A. 1 B. 98
C. 2 D. 2401

Solution

$$\begin{aligned} 7^2 \times 7^2 &= 7^{2+2} = 7^4 \\ &= 2401 \end{aligned}$$

Final Answer

2401

MCQ 177

A invests Rs. 36000 and B invests Rs. 48000 for the same period. If the profit is Rs. 11200, find A's share.

- A. Rs. 4800 B. Rs. 1600
C. Rs. 1601 D. Rs. 6400

Solution

$$\begin{aligned} A : B &= 36000 : 48000 = 3 : 4 \\ \text{A's share} &= 11200 \times \frac{3}{7} = 4800 \end{aligned}$$

Final Answer

Rs. 4800

MCQ 178

An article costs Rs. 3000. It is sold at a profit of 18%. Find the selling price.

- A. Rs. 3640 B. Rs. 2460
C. Rs. 3018 D. Rs. 3540

Solution

$$\begin{aligned} SP &= CP \left(1 + \frac{18}{100} \right) \\ &= 3000 \times \frac{118}{100} = 3540 \end{aligned}$$

Final Answer

Rs. 3540

MCQ 179Evaluate $5^2 \times 5^3$.**A.** 150**B.** 3125**C.** 0.2**D.** 15625**Solution**

$$5^2 \times 5^3 = 5^{2+3} = 5^5$$

$$= 3125$$

Final Answer

3125

MCQ 180

Two varieties costing Rs. 50 and Rs. 70 per unit are mixed to obtain a mean price of Rs. 58. Find the ratio of lower-priced to higher-priced variety.

A. 2 : 3**B.** 3 : 2**C.** 5 : 1**D.** 1 : 1**Solution**

$$\text{Lower : Higher} = (70 - 58) : (58 - 50)$$

$$= 12 : 8 = 3 : 2$$

Final Answer

3 : 2

MCQ 181

A candidate is 22th from the left and 27th from the right in a row. How many candidates are in the row?

A. 49**B.** 50**C.** 5**D.** 48**Solution**

$$N = L + R - 1$$

$$= 22 + 27 - 1 = 48$$

Final Answer

48

MCQ 182

If 15 items cost Rs. 1500, what is the cost of 20 items at the same rate?

A. Rs. 1900**B.** Rs. 1500**C.** Rs. 2000**D.** Rs. 2100**Solution**

$$1 \text{ unit cost} = \frac{1500}{15} = 100$$

$$20 \text{ units cost} = 100 \times 20 = 2000$$

Final Answer

Rs. 2000

MCQ 183

A bag contains 9 red and 3 blue balls. One ball is drawn at random. Find the probability that it is red.

A. $\frac{9}{13}$ **B.** $\frac{1}{4}$ **C.** $\frac{1}{12}$ **D.** $\frac{3}{4}$ **Solution**

$$P(\text{red}) = \frac{\text{red outcomes}}{\text{total outcomes}}$$

$$= \frac{9}{12} = \frac{3}{4}$$

Final Answer $\frac{3}{4}$ **MCQ 184**

Find the HCF of 45 and 75.

A. 30**B.** 120**C.** 7**D.** 15**Solution**

$$45 = 15 \times 3, \quad 75 = 15 \times 5$$

$$\text{HCF}(45, 75) = 15$$

Final Answer

15

MCQ 185

Find the mean of 8, 10, 12, 14, 16.

A. 13**B.** 12**C.** 16**D.** 11**Solution**

$$\bar{x} = \frac{8 + 10 + 12 + 14 + 16}{5}$$

$$= \frac{60}{5} = 12$$

Final Answer

12

MCQ 186

Find 40% of 550.

A. 230**B.** 220**C.** 210**D.** 110**Solution**

$$40\% \text{ of } 550 = \frac{40}{100} \times 550$$

$$= 220$$

Final Answer

220

MCQ 187

Find the area of a rectangle of length 22 cm and width 12 cm.

- A. 68 cm^2 B. 34 cm^2
C. 264 cm^2 D. 286 cm^2

Solution

$$A = l \times w$$

$$= 22 \times 12 = 264 \text{ cm}^2$$

Final Answer264 cm²**MCQ 188**

Evaluate $7x + 1$ for $x = 8$.

- A. 57 B. 8
C. 50 D. 9

Solution

$$7x + 1 \quad \text{at} \quad x = 8$$

$$= 7(8) + 1 = 56 + 1 = 57$$

Final Answer

57

MCQ 189

A invests Rs. 45000 and B invests Rs. 55000 for the same period. If the profit is Rs. 34000, find A's share.

- A. Rs. 17000 B. Rs. 15300
C. Rs. 1700 D. Rs. 18700

Solution

$$A : B = 45000 : 55000 = 9 : 11$$

$$\text{A's share} = 34000 \times \frac{9}{20} = 15300$$

Final Answer

Rs. 15300

MCQ 190

Two varieties costing Rs. 55 and Rs. 75 per unit are mixed to obtain a mean price of Rs. 63. Find the ratio of lower-priced to higher-priced variety.

- A. 5 : 1 B. 2 : 3
C. 1 : 1 D. 3 : 2

Solution

$$\text{Lower : Higher} = (75 - 63) : (63 - 55)$$

$$= 12 : 8 = 3 : 2$$

Final Answer

3 : 2

MCQ 191

Solve $9x + 1 = 91$.

- A. 91 B. 10
C. 9 D. 11

Solution

$$9x + 1 = 91$$

$$9x = 91 - 1 = 90$$

$$x = \frac{90}{9} = 10$$

Final Answer $x = 10$ **MCQ 192**

Two angles of a triangle are 70° and 40° . Find the third angle.

- A. 70° B. 21°
C. 110° D. 20°

Solution

$$\angle A + \angle B + \angle C = 180^\circ$$

$$\angle C = 180^\circ - 70^\circ - 40^\circ = 70^\circ$$

Final Answer 70° **MCQ 193**

Solve $x^2 - 9x + 14 = 0$.

- A. -2, -7 B. 2, 7
C. 7, 8 D. 2, -7

Solution

$$x^2 - 9x + 14 = 0$$

$$(x - 2)(x - 7) = 0$$

$$x = 2 \quad \text{or} \quad x = 7$$

Final Answer $x = 2, 7$ **MCQ 194**

Evaluate $60 \div 10 + 3 \times 2$.

- A. 8 B. 12
C. 9 D. 18

Solution

$$60 \div 10 + 3 \times 2$$

$$= 6 + 6 = 12$$

Final Answer

12

MCQ 195

Find the next term: 8, 10, 12, 14, 16, ?.

A. 16 **B.** 20**C.** 18 **D.** 32**Solution**

$$10 - 8 = 2, \quad 12 - 10 = 2$$

$$16 + 2 = 18$$

Final Answer

18

MCQ 196

A vehicle travels at 100 km/h for 4 hours. Find the distance covered.

A. 400 km **B.** 396 km**C.** 104 km **D.** 500 km**Solution**

$$D = S \times T$$

$$= 100 \times 4 = 400 \text{ km}$$

Final Answer

400 km

MCQ 197Calculate $\frac{5}{8} + \frac{1}{4}$.**A.** $\frac{1}{2}$ **B.** $\frac{7}{8}$ **C.** $\frac{3}{8}$ **D.** 1**Solution**

$$\frac{5}{8} + \frac{1}{4} = \frac{5}{8} + \frac{2}{8}$$

$$= \frac{7}{8} = \frac{7}{8}$$

Final Answer $\frac{7}{8}$ **MCQ 198**

A sum of 99 is divided in the ratio 5 : 6. Find the smaller first share.

A. 9 **B.** 10**C.** 54 **D.** 45**Solution**

$$5 : 6 \Rightarrow 5 + 6 = 11 \text{ parts}$$

$$1 \text{ part} = \frac{99}{11} = 9$$

$$\text{Required share} = 5 \times 9 = 45$$

Final Answer

45

MCQ 199Solve $x^2 - 11x + 24 = 0$.**A.** -3, -8 **B.** 3, -8**C.** 8, 9 **D.** 3, 8**Solution**

$$x^2 - 11x + 24 = 0$$

$$(x - 3)(x - 8) = 0$$

$$x = 3 \quad \text{or} \quad x = 8$$

Final Answer $x = 3, 8$ **MCQ 200**

If 20 items cost Rs. 2200, what is the cost of 25 items at the same rate?

A. Rs. 2200 **B.** Rs. 2860**C.** Rs. 2640 **D.** Rs. 2750**Solution**

$$1 \text{ unit cost} = \frac{2200}{20} = 110$$

$$25 \text{ units cost} = 110 \times 25 = 2750$$

Final Answer

Rs. 2750

MOCK TEST 5 | 50 MIXED BASIC MATH MCQs

MCQ 201

Two varieties costing Rs. 65 and Rs. 85 per unit are mixed to obtain a mean price of Rs. 73. Find the ratio of lower-priced to higher-priced variety.

- A. 5 : 1 B. 1 : 1
C. 3 : 2 D. 2 : 3

Solution

$$\begin{aligned}\text{Lower : Higher} &= (85 - 73) : (73 - 65) \\ &= 12 : 8 = 3 : 2\end{aligned}$$

Final Answer

3 : 2

MCQ 202

A can finish a job in 24 days and B in 36 days. How long will they take together?

- A. 12 days B. 30 days
C. $\frac{72}{5}$ days D. $\frac{77}{5}$ days

Solution

$$\begin{aligned}\text{Combined rate} &= \frac{1}{24} + \frac{1}{36} = \frac{60}{864} \\ T &= \frac{864}{60} = \frac{72}{5} \text{ days}\end{aligned}$$

Final Answer

$\frac{72}{5}$ days

MCQ 203

A vehicle travels at 75 km/h for 2 hours. Find the distance covered.

- A. 148 km B. 77 km
C. 150 km D. 225 km

Solution

$$\begin{aligned}D &= S \times T \\ &= 75 \times 2 = 150 \text{ km}\end{aligned}$$

Final Answer

150 km

MCQ 204

The average of 15, 18, 21 and x is 19. Find x .

- A. 21 B. 24
C. 19 D. 27

Solution

$$\text{Total} = 19 \times 4 = 76$$

$$x = 76 - (15 + 18 + 21)$$

$$x = 24$$

Final Answer

24

MCQ 205

Calculate $\frac{5}{9} + \frac{2}{9}$.

- A. $\frac{7}{18}$ B. $\frac{7}{9}$
C. $\frac{1}{3}$ D. $\frac{8}{9}$

Solution

$$\begin{aligned}\frac{5}{9} + \frac{2}{9} &= \frac{5}{9} + \frac{2}{9} \\ &= \frac{7}{9} = \frac{7}{9}\end{aligned}$$

Final Answer

$\frac{7}{9}$

MCQ 206

A bag contains 15 red and 10 blue balls. One ball is drawn at random. Find the probability that it is red.

- A. $\frac{1}{25}$ B. $\frac{15}{26}$
C. $\frac{2}{5}$ D. $\frac{3}{5}$

Solution

$$\begin{aligned}P(\text{red}) &= \frac{\text{red outcomes}}{\text{total outcomes}} \\ &= \frac{15}{25} = \frac{3}{5}\end{aligned}$$

Final Answer

$\frac{3}{5}$

MCQ 207

A sum of 169 is divided in the ratio 6 : 7. Find the smaller first share.

- A. 13 B. 78
C. 14 D. 91

Solution

$$6 : 7 \Rightarrow 6 + 7 = 13 \text{ parts}$$

$$1 \text{ part} = \frac{169}{13} = 13$$

$$\text{Required share} = 6 \times 13 = 78$$

Final Answer

78

MCQ 208

A invests Rs. 60000 and B invests Rs. 80000 for the same period. If the profit is Rs. 12600, find A's share.

- A. Rs. 1800 B. Rs. 7200
C. Rs. 5400 D. Rs. 1801

Solution

$$A : B = 60000 : 80000 = 3 : 4$$

$$A's \text{ share} = 12600 \times \frac{3}{7} = 5400$$

Final Answer

Rs. 5400

MCQ 209

A candidate is 30th from the left and 35th from the right in a row. How many candidates are in the row?

- A. 66 B. 65
C. 64 D. 5

Solution

$$N = L + R - 1$$

$$= 30 + 35 - 1 = 64$$

Final Answer

64

MCQ 210

Two angles of a triangle are 25° and 95° . Find the third angle.

- A. 30° B. 60°
C. 31° D. 120°

Solution

$$\angle A + \angle B + \angle C = 180^\circ$$

$$\angle C = 180^\circ - 25^\circ - 95^\circ = 60^\circ$$

Final Answer 60° **MCQ 211**

A vehicle travels at 54 km/h for 5 hours. Find the distance covered.

- A. 59 km B. 324 km
C. 265 km D. 270 km

Solution

$$D = S \times T$$

$$= 54 \times 5 = 270 \text{ km}$$

Final Answer

270 km

MCQ 212

Two varieties costing Rs. 60 and Rs. 80 per unit are mixed to obtain a mean price of Rs. 68. Find the ratio of lower-priced to higher-priced variety.

- A. 2 : 3 B. 5 : 1
C. 3 : 2 D. 1 : 1

Solution

$$\begin{aligned} \text{Lower : Higher} &= (80 - 68) : (68 - 60) \\ &= 12 : 8 = 3 : 2 \end{aligned}$$

Final Answer

3 : 2

MCQ 213

Find the simple interest on Rs. 7500 at 4% per annum for 4 years.

- A. Rs. 450 B. Rs. 1950
C. Rs. 1200 D. Rs. 8700

Solution

$$\begin{aligned} SI &= \frac{PRT}{100} \\ &= \frac{7500 \times 4 \times 4}{100} = 1200 \end{aligned}$$

Final Answer

Rs. 1200

MCQ 214

Solve $10x + 9 = 119$.

- A. 119 B. 11
C. 12 D. 10

Solution

$$10x + 9 = 119$$

$$10x = 119 - 9 = 110$$

$$x = \frac{110}{10} = 11$$

Final Answer $x = 11$

MCQ 215

The ages of two persons are in the ratio 6 : 7 and their total age is 65 years. Find the younger age.

- A. 6 years B. 5 years
C. 35 years D. 30 years

Solution

$$\text{Age ratio} = 6 : 7, \quad \text{Total} = 65$$

$$1 \text{ part} = \frac{65}{13} = 5$$

$$\text{Younger age} = 6 \times 5 = 30$$

Final Answer

30 years

MCQ 216

Evaluate $4^3 \times 4^2$.

- A. 80 B. 4
C. 1024 D. 4096

Solution

$$4^3 \times 4^2 = 4^{3+2} = 4^5 \\ = 1024$$

Final Answer

1024

MCQ 217

The average of 14, 17, 20 and x is 18. Find x .

- A. 20 B. 23
C. 26 D. 18

Solution

$$\text{Total} = 18 \times 4 = 72$$

$$x = 72 - (14 + 17 + 20)$$

$$x = 23$$

Final Answer

23

MCQ 218

A bag contains 12 red and 8 blue balls. One ball is drawn at random. Find the probability that it is red.

- A. $\frac{1}{20}$ B. $\frac{2}{5}$
C. $\frac{4}{7}$ D. $\frac{3}{5}$

Solution

$$P(\text{red}) = \frac{\text{red outcomes}}{\text{total outcomes}} \\ = \frac{12}{20} = \frac{3}{5}$$

Final Answer $\frac{3}{5}$ **MCQ 219**

Solve $x^2 - 13x + 36 = 0$.

- A. -4, -9 B. 4, 9
C. 4, -9 D. 9, 10

Solution

$$x^2 - 13x + 36 = 0$$

$$(x - 4)(x - 9) = 0$$

$$x = 4 \quad \text{or} \quad x = 9$$

Final Answer $x = 4, 9$ **MCQ 220**

The ages of two persons are in the ratio 8 : 11 and their total age is 57 years. Find the younger age.

- A. 24 years B. 3 years
C. 29 years D. 33 years

Solution

$$\text{Age ratio} = 8 : 11, \quad \text{Total} = 57$$

$$1 \text{ part} = \frac{57}{19} = 3$$

$$\text{Younger age} = 8 \times 3 = 24$$

Final Answer

24 years

MCQ 221Evaluate $2x + 10$ for $x = 12$.

- A. 12 B. 22
C. 34 D. 32

Solution

$$2x + 10 \text{ at } x = 12$$

$$= 2(12) + 10 = 24 + 10 = 34$$

Final Answer

34

MCQ 222If $n(A) = 65$, $n(B) = 50$, and $n(A \cap B) = 20$, find $n(A \cup B)$.

- A. 135 B. 95
C. 20 D. 115

Solution

$$n(A \cup B) = n(A) + n(B) - n(A \cap B)$$

$$= 65 + 50 - 20 = 95$$

Final Answer

95

MCQ 223Evaluate $5x + 9$ for $x = 10$.

- A. 19 B. 14
C. 54 D. 59

Solution

$$5x + 9 \text{ at } x = 10$$

$$= 5(10) + 9 = 50 + 9 = 59$$

Final Answer

59

MCQ 224

A candidate is 35th from the left and 40th from the right in a row. How many candidates are in the row?

- A. 74 B. 5
C. 75 D. 76

Solution

$$N = L + R - 1$$

$$= 35 + 40 - 1 = 74$$

Final Answer

74

MCQ 225

If 30 items cost Rs. 3900, what is the cost of 40 items at the same rate?

- A. Rs. 5330 B. Rs. 5070
C. Rs. 3900 D. Rs. 5200

Solution

$$1 \text{ unit cost} = \frac{3900}{30} = 130$$

$$40 \text{ units cost} = 130 \times 40 = 5200$$

Final Answer

Rs. 5200

MCQ 226

Find the next term: 15, 25, 35, 45, 55, ?.

- A. 75 B. 65
C. 55 D. 110

Solution

$$25 - 15 = 10, \quad 35 - 25 = 10$$

$$55 + 10 = 65$$

Final Answer

65

MCQ 227Evaluate $2^6 \times 2^1$.

- A. 128 B. 64
C. 66 D. 32

Solution

$$2^6 \times 2^1 = 2^{6+1} = 2^7$$

$$= 128$$

Final Answer

128

MCQ 228Solve $x^2 - 15x + 50 = 0$.

- A. 10, 11 B. 5, 10
C. -5, -10 D. 5, -10

Solution

$$x^2 - 15x + 50 = 0$$

$$(x - 5)(x - 10) = 0$$

$$x = 5 \text{ or } x = 10$$

Final Answer $x = 5, 10$

MCQ 229

A invests Rs. 75000 and B invests Rs. 90000 for the same period. If the profit is Rs. 20900, find A's share.

- A. Rs. 1901 B. Rs. 9500
C. Rs. 1900 D. Rs. 11400

Solution

$$A : B = 75000 : 90000 = 5 : 6$$

$$A's \text{ share} = 20900 \times \frac{5}{11} = 9500$$

Final Answer

Rs. 9500

MCQ 230

Find 60% of 150.

- A. 45 B. 90
C. 100 D. 80

Solution

$$60\% \text{ of } 150 = \frac{60}{100} \times 150 \\ = 90$$

Final Answer

90

MCQ 231

Find the HCF of 56 and 98.

- A. 7 B. 14
C. 28 D. 154

Solution

$$56 = 14 \times 4, \quad 98 = 14 \times 7$$

$$\text{HCF}(56, 98) = 14$$

Final Answer

14

MCQ 232

Find the area of a rectangle of length 32 cm and width 16 cm.

- A. 96 cm² B. 48 cm²
C. 512 cm² D. 544 cm²

Solution

$$A = l \times w$$

$$= 32 \times 16 = 512 \text{ cm}^2$$

Final Answer512 cm²**MCQ 233**

Find the mean of 11, 13, 15, 17, 19.

- A. 15 B. 16
C. 19 D. 14

Solution

$$\bar{x} = \frac{11 + 13 + 15 + 17 + 19}{5} \\ = \frac{75}{5} = 15$$

Final Answer

15

MCQ 234

Solve $12x + 10 = 154$.

- A. 13 B. 12
C. 154 D. 11

Solution

$$12x + 10 = 154$$

$$12x = 154 - 10 = 144$$

$$x = \frac{144}{12} = 12$$

Final Answer $x = 12$ **MCQ 235**

Evaluate $72 \div 8 + 9 \times 2$.

- A. 27 B. 18
C. 36 D. 8

Solution

$$72 \div 8 + 9 \times 2$$

$$= 9 + 18 = 27$$

Final Answer

27

MCQ 236

If 25 items cost Rs. 3000, what is the cost of 30 items at the same rate?

- A. Rs. 3000 B. Rs. 3480
C. Rs. 3720 D. Rs. 3600

Solution

$$1 \text{ unit cost} = \frac{3000}{25} = 120$$

$$30 \text{ units cost} = 120 \times 30 = 3600$$

Final Answer

Rs. 3600

MCQ 237

If $n(A) = 60$, $n(B) = 45$, and $n(A \cap B) = 18$, find $n(A \cup B)$.

- A. 87 B. 123
C. 105 D. 18

Solution

$$\begin{aligned} n(A \cup B) &= n(A) + n(B) - n(A \cap B) \\ &= 60 + 45 - 18 = 87 \end{aligned}$$

Final Answer

87

MCQ 238

Find the mean of 10, 12, 14, 16, 18.

- A. 15 B. 13
C. 14 D. 18

Solution

$$\begin{aligned} \bar{x} &= \frac{10 + 12 + 14 + 16 + 18}{5} \\ &= \frac{70}{5} = 14 \end{aligned}$$

Final Answer

14

MCQ 239

Two angles of a triangle are 30° and 80° . Find the third angle.

- A. 21° B. 110°
C. 70° D. 20°

Solution

$$\begin{aligned} \angle A + \angle B + \angle C &= 180^\circ \\ \angle C &= 180^\circ - 30^\circ - 80^\circ = 70^\circ \end{aligned}$$

Final Answer 70° **MCQ 240**

A can finish a job in 14 days and B in 21 days. How long will they take together?

- A. $\frac{35}{2}$ days B. 7 days
C. $\frac{47}{5}$ days D. $\frac{42}{5}$ days

Solution

$$\begin{aligned} \text{Combined rate} &= \frac{1}{14} + \frac{1}{21} = \frac{35}{294} \\ T &= \frac{294}{35} = \frac{42}{5} \text{ days} \end{aligned}$$

Final Answer $\frac{42}{5}$ days**MCQ 241**

Find the next term: 20, 25, 30, 35, 40, ?.

- A. 50 B. 40
C. 45 D. 80

Solution

$$\begin{aligned} 25 - 20 &= 5, \quad 30 - 25 = 5 \\ 40 + 5 &= 45 \end{aligned}$$

Final Answer

45

MCQ 242

Calculate $\frac{7}{12} + \frac{1}{6}$.

- A. 1 B. $\frac{3}{4}$
C. $\frac{5}{12}$ D. $\frac{4}{9}$

Solution

$$\begin{aligned} \frac{7}{12} + \frac{1}{6} &= \frac{7}{12} + \frac{2}{12} \\ &= \frac{9}{12} = \frac{3}{4} \end{aligned}$$

Final Answer $\frac{3}{4}$ **MCQ 243**

A sum of 143 is divided in the ratio 4 : 9. Find the smaller first share.

- A. 55 B. 99
C. 44 D. 11

Solution

$$4 : 9 \Rightarrow 4 + 9 = 13 \text{ parts}$$

$$1 \text{ part} = \frac{143}{13} = 11$$

$$\text{Required share} = 4 \times 11 = 44$$

Final Answer

44

MCQ 244

An article costs Rs. 4000. It is sold at a profit of 5%. Find the selling price.

- A. Rs. 3800 B. Rs. 4300
C. Rs. 4200 D. Rs. 4005

Solution

$$SP = CP \left(1 + \frac{5}{100} \right)$$

$$= 4000 \times \frac{105}{100} = 4200$$

Final Answer

Rs. 4200

MCQ 245

Find the simple interest on Rs. 8000 at 11% per annum for 2 years.

- A. Rs. 960 B. Rs. 9760
C. Rs. 2560 D. Rs. 1760

Solution

$$SI = \frac{PRT}{100}$$

$$= \frac{8000 \times 11 \times 2}{100} = 1760$$

Final Answer

Rs. 1760

MCQ 246

Find the area of a rectangle of length 30 cm and width 15 cm.

- A. 45 cm² B. 90 cm²
C. 450 cm² D. 480 cm²

Solution

$$A = l \times w$$

$$= 30 \times 15 = 450 \text{ cm}^2$$

Final Answer450 cm²**MCQ 247**

Find 45% of 600.

- A. 280 B. 135
C. 260 D. 270

Solution

$$45\% \text{ of } 600 = \frac{45}{100} \times 600$$

$$= 270$$

Final Answer

270

MCQ 248

Evaluate $84 \div 12 + 5 \times 2$.

- A. 8 B. 24
C. 12 D. 17

Solution

$$84 \div 12 + 5 \times 2$$

$$= 7 + 10 = 17$$

Final Answer

17

MCQ 249

An article costs Rs. 4500. It is sold at a profit of 20%. Find the selling price.

- A. Rs. 5400 B. Rs. 4520
C. Rs. 5500 D. Rs. 3600

Solution

$$SP = CP \left(1 + \frac{20}{100} \right)$$

$$= 4500 \times \frac{120}{100} = 5400$$

Final Answer

Rs. 5400

MCQ 250

Find the HCF of 66 and 88.

- A. 22 B. 154
C. 11 D. 44

Solution

$$66 = 22 \times 3, \quad 88 = 22 \times 4$$

$$\text{HCF}(66, 88) = 22$$

Final Answer

22

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Percentage

$$p\% \text{ of } N = \frac{p}{100}N$$

Average

$$\bar{x} = \frac{\sum x}{n}$$

Profit

$$SP = CP \left(1 + \frac{p}{100} \right)$$

Simple Interest

$$SI = \frac{PRT}{100}$$

Work Rate

$$\frac{1}{T} = \frac{1}{A} + \frac{1}{B}$$

Speed

$$D = ST$$

Partnership

$$\text{Share} \propto C \times T$$

Alligation

$$\text{Low:High} = (H - M) : (M - L)$$

Linear Equation

$$ax + b = c \Rightarrow x = \frac{c - b}{a}$$

Indices

$$a^m a^n = a^{m+n}$$

Triangle

$$A + B + C = 180^\circ$$

Sets

$$n(A \cup B) = n(A) + n(B) - n(A \cap B)$$

Probability

$$P(E) = \frac{\text{favourable}}{\text{total}}$$

Ranking

$$N = L + R - 1$$



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