



**THE MATH HUB**

themathhub.pk

# LINEAR & SIMULTANEOUS EQUATIONS MCQs

**100 FULLY SOLVED MCQs**

PPSC, FPSC & ONE PAPER EXAMS

NTS • CSS MPT • PMS • Government Job Tests

**Linear Equations • Fractions • Word Problems • Simultaneous Equations • Elimination**

Prepared by

**MEHREEN KANWAL**

MPhil Mathematics

**RANA ALI HASAN**

MPhil Mathematics

The Math Hub - themathhub.pk | 0301-4058484

The Science Academy - Chak No. 84 NB



## LINEAR & SIMULTANEOUS EQUATIONS MCQs | 100 FULLY SOLVED MCQs

### Fast Foundation for One-Paper Exams

#### 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**

$$3x + 5 = 26$$

$$3x = 26 - 5 = 21$$

$$x = \frac{21}{3} = 7$$

**Final Answer**

$x = 7$

**MCQ 2**Solve  $4x - 3 = 21$ .

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

**Solution**

$$4x - 3 = 21$$

$$4x = 21 - -3 = 24$$

$$x = \frac{24}{4} = 6$$

**Final Answer**

$x = 6$

**MCQ 3**Solve  $5x + 9 = -1$ .

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

**Solution**

$$5x + 9 = -1$$

$$5x = -1 - 9 = -10$$

$$x = \frac{-10}{5} = -2$$

**Final Answer**

$x = -2$

**MCQ 4**Solve  $7x + 2 = 30$ .

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

**Solution**

$$7x + 2 = 30$$

$$7x = 30 - 2 = 28$$

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

**Final Answer**

$x = 4$

**MCQ 5**Solve  $6x - 8 = 22$ .

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

**Solution**

$$6x - 8 = 22$$

$$6x = 22 - -8 = 30$$

$$x = \frac{30}{6} = 5$$

**Final Answer**

$x = 5$

**MCQ 6**Solve  $8x + 7 = 31$ .

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

**Solution**

$$8x + 7 = 31$$

$$8x = 31 - 7 = 24$$

$$x = \frac{24}{8} = 3$$

**Final Answer**

$x = 3$

**MCQ 7**Solve  $9x + 4 = -5$ .

- 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 8**Solve  $2x - 5 = 17$ .

- 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 9**Solve  $10x + 13 = 33$ .

- 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 10**Solve  $11x - 7 = 26$ .

- 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 11**Solve  $4x + 6 = -14$ .

- 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 12**Solve  $12x - 10 = 14$ .

- 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 13**Solve  $5x + 1 = 41$ .

- 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 14**Solve  $7x + 5 = -16$ .

- 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 15**Solve  $3x - 4 = 32$ .

- 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 16**Solve  $6x + 9 = -15$ .

- 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 17**Solve  $8x - 6 = 50$ .

- 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 18**Solve  $9x + 3 = 48$ .

- 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 19**Solve  $2x + 7 = -11$ .**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 20**Solve  $13x - 5 = 21$ .**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 21**Solve  $5x - 11 = 19$ .**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 22**Solve  $4x + 8 = 44$ .**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 23**Solve  $7x - 9 = 26$ .**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 24**Solve  $3x + 10 = -11$ .**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 25**Solve  $12x + 1 = 49$ .

- 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 27**Solve  $4(x - 2) + 7 = 23$ .

- 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 28**Solve  $5(x + 3) - 4 = 21$ .

- 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 29**Solve  $2(x + 7) + 5 = 35$ .

- 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 30**Solve  $6(x - 1) + 3 = 21$ .

- 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 31**Solve  $3(x + 5) - 7 = 35$ .

- 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 32**Solve  $7(x + 2) + 1 = 36$ .

- 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 33**Solve  $4(x + 6) - 5 = 47$ .

- 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 34**Solve  $5(x - 4) + 8 = 18$ .

- 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 35**Solve  $2(x + 3) + 9 = 11$ .

- 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 36**Solve  $\frac{x + 3}{4} = 3$ .

- A. 10                      B. 8  
C. -9                      D. 9

**Solution**

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

$$x + 3 = 12$$

$$x = 9$$

**Final Answer**

$$x = 9$$

**MCQ 37**Solve  $\frac{x-5}{3} = 1$ .

- A. 8                                      B. 9  
C. 7                                      D. -8

**Solution**

$$\frac{x-5}{3} = 1$$

$$x-5=3$$

$$x=8$$

**Final Answer**

$$x=8$$

**MCQ 38**Solve  $\frac{x+7}{5} = 4$ .

- A. 14                                      B. 13  
C. 12                                      D. -13

**Solution**

$$\frac{x+7}{5} = 4$$

$$x+7=20$$

$$x=13$$

**Final Answer**

$$x=13$$

**MCQ 39**Solve  $\frac{x+2}{6} = 2$ .

- A. 11                                      B. 9  
C. 10                                      D. -10

**Solution**

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

$$x+2=12$$

$$x=10$$

**Final Answer**

$$x=10$$

**MCQ 40**Solve  $\frac{x-4}{7} = 1$ .

- A. 12                                      B. 10  
C. -11                                      D. 11

**Solution**

$$\frac{x-4}{7} = 1$$

$$x-4=7$$

$$x=11$$

**Final Answer**

$$x=11$$

**MCQ 41**Solve  $\frac{x+6}{8} = \frac{5}{2}$ .

- 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 42**Solve  $\frac{x+1}{3} = -1$ .

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

**Solution**

$$\frac{x+1}{3} = -1$$

$$x+1=-3$$

$$x=-4$$

**Final Answer**

$$x=-4$$

**MCQ 43**Solve  $\frac{x-2}{5} = 2$ .

- A. 13                                      B. 11  
C. 12                                      D. -12

**Solution**

$$\frac{x-2}{5} = 2$$

$$x - 2 = 10$$

$$x = 12$$

**Final Answer**

$$x = 12$$

**MCQ 44**Solve  $\frac{x+9}{6} = 4$ .

- A. 16                                      B. 14  
C. -15                                      D. 15

**Solution**

$$\frac{x+9}{6} = 4$$

$$x + 9 = 24$$

$$x = 15$$

**Final Answer**

$$x = 15$$

**MCQ 45**Solve  $\frac{x-7}{4} = \frac{-1}{2}$ .

- 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 61**Solve 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 62**Solve 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 63**Solve 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 64**Solve 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 65**Solve 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 66**Solve 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 67**Solve 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 68**Solve 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 69**Solve 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 70**Solve 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 71**Solve 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 72**Solve 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 73**Solve 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 74**Solve 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 75**Solve 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 76**Solve 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 77**Solve 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 78**Solve 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 79**Solve 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 80**Solve 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 81**Solve 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 82**Solve 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 83**Solve 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 84**Solve 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.

**THE MATH HUB**

Linear Equations MCQs • PPSC • FPSC • One Paper Exams

themathhub.pk | 0301-4058484