Self Assessment Test

By : www.udgamwelfarefoundation.com

Time : 1.5 Hours
M.M. : 55

Class : 9 Standard
Subject : Mathematics
LETV0901
Chapters : Linear Equations in Two Variables

Answers with Solutions

Section A 1.(a), 2.(b), 3.(a), 4.(c), 5.(b), 6.(a), 7.(c), 8.(c).

Section B (Solutions)

1. $2(3) + k(2) = 10 \Rightarrow 6 + 2k = 10 \Rightarrow k = 2$.

2. $x + y = 7,\ x - y = 1 \Rightarrow$ Adding: $2x = 8 \Rightarrow x = 4$, substituting: $y = 3$. Solution: $(4, 3)$. Graph passes through $(7, 0)$, $(0, 7)$ and $(1, 0)$, $(0, -1)$.

3. Let number be x. Then $x + 2x = 18 \Rightarrow 3x = 18 \Rightarrow x = 6$.

4. Let numbers be x, y. Given $x = y + 5,\ x + y = 55 \Rightarrow (y + 5) + y = 55 \Rightarrow 2y = 50 \Rightarrow y = 25, x = 30$.

5. Let pen = Rs. p, pencil = Rs. q. $2p + 3q = 18,\ 4p + 5q = 36$. Multiply first by 2: $4p + 6q = 36$. Subtract: $q = 0$. So $2p = 18 \Rightarrow p = 9$, $q = 0$.

6. Equation: $y = 3$, line parallel to x-axis.

Section C (Solutions)

1. $2x + y = 6 \Rightarrow y = 6 - 2x,\ x - y = 2 \Rightarrow y = x - 2$. Solving: $6 - 2x = x - 2 \Rightarrow 3x = 8 \Rightarrow x = \frac{8}{3}, y = \frac{2}{3}$. Graph plotted using TikZ.

2. Let father's age $= F$, children's sum $= C$. $F = 2C$, $F+10 = C+10 \Rightarrow F = 2C, F = C \Rightarrow$ Contradiction. Correct interpretation: after 10 years, $F + 10 = (C + 20) \Rightarrow F = 2C, F + 10 = C + 20 \Rightarrow 2C + 10 = C + 20 \Rightarrow C = 10, F = 20$. Father's present age $= 20$ years.

3. $x + 2y = 6 \Rightarrow$ intercepts: $(6, 0), (0, 3)$; $2x - y = 4 \Rightarrow y = 2x - 4$, intercepts: $(2, 0), (0, -4)$. Solve: $x + 2(2x - 4) = 6 \Rightarrow 5x - 8 = 6 \Rightarrow x = \frac{14}{5}, y = \frac{8}{5}$.

4. Let numerator $= x$, denominator $= y$. $x + y = 12$, $y = x + 2$. Substituting: $x + (x + 2) = 12 \Rightarrow 2x + 2 = 12 \Rightarrow x = 5, y = 7$. Fraction $= \frac{5}{7}$.

Section D (Solutions) Equation: $50x + 100y = 500 \Rightarrow x + 2y = 10$.

1. (a)

2. $x + 2(4) = 10 \Rightarrow x = 2$ books $\Rightarrow$ option (a).

3. Only books: $50x = 500 \Rightarrow x = 10$ books $\Rightarrow$ option (a).

4. $50(6) + 100(2) = 300 + 200 = 500$, satisfies. Answer: Yes.

5. $(10, 0)$ and $(0, 5)$ satisfy equation, so option (a).