

LINEAR EQUATIONS WORKSHEET (C)

1. $15 + x = 5x + 3$

2. $3(b - 4) = 2(4 - b)$

3. $5(8x + 3) = 9(4x + 7)$

4. $3(x + 1) = 12 + 4(x - 1)$

5. $3a - \frac{1}{5} = \frac{a}{5} + 5\frac{2}{5}$

6. $6(6x - 5) - 5(7x - 8) = 12(4 - x) + 1$

7. $(x - 1)(x + 6) - (x - 2)(x - 3) = 3$

8. $(x - 5)(x + 3) = (x - 7)(x + 4)$

9. $(x - 5)^2 - (x + 2)^2 = -2$

10. $\frac{1}{x-1} + \frac{2}{x-2} = \frac{3}{x-3}$

ANSWERS

$$\begin{aligned}1. \quad 15 - 3 &= 5x - x \\12 &= 4x \\3 &= x \\x &= 3\end{aligned}$$

$$\begin{aligned}2. \quad 3b - 12 &= 8 - 2b \\3b + 2b &= 8 + 12 \\5b &= 20 \\b &= \frac{20}{5} \\b &= 4\end{aligned}$$

$$\begin{aligned}3. \quad 40x + 15 &= 36x + 63 \\40x - 36x &= 63 - 15 \\4x &= 48 \\x &= \frac{48}{4} \\x &= 12\end{aligned}$$

$$\begin{aligned}4. \quad 3(x + 1) &= 12 + 4(x - 1) \\3x + 3 &= 12 + 4x - 4 \\3x - 4x &= 12 - 4 - 3 \\-x &= 5 \\x &= -5\end{aligned}$$

$$\begin{aligned}5. \quad 3a - \frac{a}{5} &= 5\frac{2}{5} + \frac{1}{5} \\3a - \frac{a}{5} &= \frac{27}{5} + \frac{1}{5} \\3a \times 5 - \frac{a}{5} \times 5 &= \frac{27}{5} \times 5 + \frac{1}{5} \times 5 \\(Multiplied each term by 5) \\15a - a &= 27 + 1 \\14a &= 28 \\a &= \frac{28}{14} \\a &= 2\end{aligned}$$

$$\begin{aligned}6. \quad 6(6x - 5) - 5(7x - 8) &= 12(4 - x) + 1 \\36x - 30 - 35x + 40 &= 48 - 12x + 1 \\x + 12x &= 49 - 10 \\13x &= 39 \\x &= \frac{39}{13} \\x &= 3\end{aligned}$$

$$\begin{aligned}7. \quad (x - 1)(x + 6) - (x - 2)(x - 3) &= 3 \\x^2 - x + 6x - 6 - (x^2 - 3x - 2x + 6) &= 3 \\x^2 - x + 6x - 6 - x^2 + 3x + 2x - 6 &= 3 \\-x + 6x + 3x + 2x - 6 - 6 &= 3 \\-x + 11x - 6 - 6 &= 3 \\10x &= 15\end{aligned}$$

$$x = \frac{15}{10} = \frac{3}{2} = 1\frac{1}{2}$$

$$\begin{aligned} 8. \quad & (x-5)(x+3) = (x-7)(x+4) \\ \Rightarrow & x^2 + 3x - 5x - 15 = x^2 + 4x - 7x - 28 \\ \Rightarrow & -2x - 15 = -3x - 28 \\ \Rightarrow & 3x - 2x = 15 - 28 \\ \Rightarrow & x = -13 \end{aligned}$$

$$\begin{aligned} 9. \quad & (x-5)^2 - (x+2)^2 = -2 \\ \Rightarrow & (x^2 - 10x + 25) - (x^2 + 4x + 4) = -2 \\ \Rightarrow & x^2 - 10x + 25 - x^2 - 4x - 4 = -2 \\ \Rightarrow & -10x - 4x + 25 - 4 = -2 \\ \Rightarrow & -14x = 4 - 2 - 25 = -23 \\ \Rightarrow & x = \frac{-23}{-14} = \frac{23}{14} = 1\frac{9}{14} \end{aligned}$$

$$\begin{aligned} 10. \quad & \frac{1}{x-1} + \frac{2}{x-2} = \frac{3}{x-3} \\ \Rightarrow & \frac{1(x-2) + 2(x-1)}{(x-1)(x-2)} = \frac{3}{x-3} \\ \Rightarrow & \frac{x-2+2x-2}{x^2-3x+2} = \frac{3}{x-3} \\ \Rightarrow & \frac{3x-4}{x^2-3x+2} = \frac{3}{x-3} \\ \Rightarrow & (x-3)(3x-4) = 3(x^2-3x+2) \\ \Rightarrow & 3x^2 - 4x - 9x + 12 = 3x^2 - 9x + 6 \\ \Rightarrow & 3x^2 - 13x - 3x^2 + 9x = 6 - 12 \\ \Rightarrow & -4x = -6 \\ x = & \frac{-6}{-4} = \frac{3}{2} = 1\frac{1}{2} \end{aligned}$$