



Unit 2:
Lesson 03

Solving linear equations by combining like terms
Solving multi-step linear equations

If an equation has several terms of the same type, **combine** those terms before proceeding to solve the equation.

Example 1: Solve $x - 5 + 4x = 10$

$$\begin{aligned} x - 5 + 4x &= 10 \\ \underbrace{x - 5 + 4x} & \\ 5x - 5 &= 10 \\ \underline{+5} \quad \underline{+5} & \\ 5x &= 15 \\ \frac{5x}{5} &= \frac{15}{5} \\ x &= \boxed{3} \end{aligned}$$

Example 2: Solve $-x + 8 - 9x = 11$

$$\begin{aligned} -x + 8 - 9x &= 11 \\ \underbrace{-x + 8 - 9x} & \\ -10x + 8 &= 11 \\ \underline{-8} \quad \underline{-8} & \\ -10x &= 3 \\ \frac{-10x}{-10} &= \frac{3}{-10} \\ x &= \boxed{-\frac{3}{10}} \end{aligned}$$

Example 3: Find the solution to this equation: $14p - 9 + 6p + 1 = 32$

$$\begin{aligned} 14p - 9 + 6p + 1 &= 32 \\ \underbrace{14p - 9 + 6p + 1} & \\ 20p - 8 &= 32 \\ \underline{+8} \quad \underline{+8} & \\ 20p &= 40 \\ \frac{20p}{20} &= \frac{40}{20} \\ p &= \boxed{2} \end{aligned}$$

Assignment: Solve the following equations.

1. $6x + 2x = -48$

2. $-11z + 9 - 4z = 2$

3. $3(x - 5) = 30$

4. $14 = 7r - 4 + 2r$

5. $2(v + 10) - 6 = 2$

6. $11 = 7(f - 3) + 21$

$$7. b + 9(b + 4) = -3$$

$$8. -22 + 2(4n + 10) = 10$$

$$9. -8 = 7[w - (-1)]$$

$$10. (6 - t) + (7 - t) - (4 - t) = 0$$

$$*11. 2a + 3[4(2 - a) - 6(1 + a)] = 5$$

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