

Unit 1 Day 1 Lesson Solving Equations

Vocabulary

Variable – a letter that takes the place of a number

Constant – a number that doesn't change

Coefficient – the number in front of the variable

$2x$

Distribution –

$$a(b+c) = ab+ac$$

$$x + 7 = 10$$
$$\begin{array}{r} -7 \quad -7 \\ \hline \end{array}$$
$$x = 3$$

$$x - 5 = 3$$
$$\begin{array}{r} +5 \quad +5 \\ \hline \end{array}$$
$$x = 8$$

$$2x = 8$$
$$\begin{array}{r} \frac{2}{2} \quad \frac{8}{2} \\ \hline \end{array}$$
$$x = 4$$

$$4 \cdot \frac{x}{4} = 3 \cdot 4$$
$$x = 12$$


$$\begin{array}{r}
 3x + 7 = 16 \\
 \underline{-7 \quad -7} \\
 3x = 9 \\
 \underline{\quad \quad 3} \\
 x = 3
 \end{array}$$

$$\begin{array}{r}
 2x - 9 = 13 \\
 \underline{+9 \quad +9} \\
 2x = 22 \\
 \underline{\quad \quad 2} \\
 x = 11
 \end{array}$$

$$\begin{array}{r}
 2x + 10 = 7x \\
 \underline{-10 \quad -10} \\
 2x = 7x - 10 \\
 \underline{-7x \quad -7x} \\
 -5x = -10 \\
 \underline{\quad \quad -5} \\
 x = 2
 \end{array}$$

$$\begin{array}{r}
 -4x + 24 = 2x \quad x = +4? \\
 \underline{-24 \quad -24} \\
 -4x = 2x - 24 \\
 \underline{-2x \quad -2x} \\
 -6x = -24 \\
 \underline{-6 \quad -6} \\
 x = 4
 \end{array}$$

$$\begin{array}{r}
 2(x+3) = 30 \\
 \underline{-6 \quad -6} \\
 2x = 24 \\
 \underline{\quad \quad 2 \quad 2} \\
 x = 12
 \end{array}$$

$x = 12$? 

$$\begin{array}{r}
 \frac{1}{3}(6x - 15) = 3 \quad 4? \\
 \frac{1}{3} \cdot 6x - \frac{1}{3} \cdot 15 = 3 \\
 2x - 5 = 3 \\
 \underline{\quad \quad +5 \quad +5} \\
 2x = 8 \\
 \underline{\quad \quad 2 \quad 2} \\
 x = 4
 \end{array}$$

$$5 - x - 2 = 3 + 4x + 5$$

$$\begin{array}{r} -x + 3 = 4x + 8 \\ +x \qquad \qquad +x \\ \hline \end{array}$$

$$\begin{array}{r} 3 = 5x + 8 \\ -8 \qquad \qquad -8 \\ \hline \end{array}$$

$$\begin{array}{r} -5 = 5x \\ \frac{-5}{5} = \frac{5x}{5} \end{array}$$

$$-1 = x \rightarrow \boxed{x = -1}$$

$$3m - 10 = 2(4m - 5)$$

$$\begin{array}{r} 3m - 10 = 8m - 10 \\ -3m \qquad \qquad -3m \\ \hline \end{array}$$

$$\begin{array}{r} -10 = 5m - 10 \\ +10 \qquad \qquad +10 \\ \hline \end{array}$$

$$\begin{array}{r} 0 = 5m \\ \frac{0}{5} = \frac{5m}{5} \end{array}$$

$$0 = m$$

$$\boxed{m = 0}$$

Guided Practice

1. $n + \frac{1}{4} = \frac{3}{4}$

2. $y = x + z$ Solve for x

3. $x + 2.5 = 7$

4. $4b - b - 8b = 12$

5. $\frac{m}{8} - 2 = 5$

6. $-6(3x - 8) = -6$

7. Three-fifths of the students on a school trip are boys. There are 33 boys on the trip. How many students are on the trip?