

Do Now

Solve and Check the following equations.

$$1) \boxed{9x} - 3 = 60$$

$$\begin{array}{r} +3 \quad +3 \\ \hline 9x = 63 \\ \hline \frac{9x}{9} = \frac{63}{9} \\ x = 7 \end{array}$$

$$9x - 3 = 60$$

$$9(7) - 3 = 60$$

$$63 - 3 = 60$$

$$60 = 60 \checkmark$$

$$2) \boxed{\frac{x}{9}} - 17 = 21$$

$$\begin{array}{r} +17 \quad +17 \\ \hline \frac{x}{9} = 38 \\ \hline \frac{x}{9} = 38 \cdot 9 \\ x = 342 \end{array}$$

$$\frac{x}{9} - 17 = 21$$

$$\frac{342}{9} - 17 = 21$$

$$38 - 17 = 21$$

$$21 = 21 \checkmark$$

Lesson #51 - Solving Equations While Combining Like Terms

Warm Up: Simplify the following by combining like terms.

A)  $6x - 8 + 12x$

$$18x - 8$$

B)  $-12 + 4y + 10$

$$-2 + 4y$$

Example 1) Solve and Check  $4x + 3x = 560$

$$7x = 560$$

$$\frac{7x}{7} = \frac{560}{7}$$

$$x = 80$$

$$4x + 3x = 560$$

$$4(80) + 3(80) = 560$$

$$320 + 240 = 560$$

$$560 = 560 \checkmark$$

Example 2) Solve and Check  $3x - 8 + 5x = -32$

$$\boxed{8x} - 8 = -32$$

$$\begin{array}{r} +8 \quad +8 \\ \hline 8x = -24 \\ \hline \frac{8x}{8} = \frac{-24}{8} \\ x = -3 \end{array}$$

$$3x - 8 + 5x = -32$$

$$3(-3) - 8 + 5(-3) = -32$$

$$-9 - 8 + (-15) = -32$$

$$-17 + (-15) = -32$$

$$-32 = -32 \checkmark$$

Example 3)  $8 - 20x + 112 + 15x = -73$

$$\begin{array}{r}
 -5x + 120 = -73 \\
 \underline{-120 \quad -120} \\
 5x = -193 \\
 \underline{-5 \quad -5} \\
 x = 38.6
 \end{array}$$

Now, You Try!

Solve and check each equation.

4)  $6x + 3x = 18$

$$\begin{array}{r}
 6x + 3x = 18 \\
 \div 9 \quad \div 9 \\
 x = 2
 \end{array}$$

5)  $-10x - 5x = 45$

$$\begin{array}{r}
 -10x - 5x = 45 \\
 -15x = 45 \\
 \frac{45}{-15x} \\
 x = -3
 \end{array}$$

6)  $-15 - 3x - 7x = -43$

$$\begin{array}{r}
 -4x - 15 = -43 \\
 \underline{+15 \quad +15} \\
 -4x = -28 \\
 \underline{-4 \quad -4} \\
 x = 7
 \end{array}$$

7)  $2x - 11 + 19 = 32$

$$\begin{array}{r}
 2x + 8 = 32 \\
 \underline{-8 \quad -8} \\
 2x = 24 \\
 \frac{24}{2} \\
 x = 12
 \end{array}$$

8)  $-20 + 32 - 5x = -18$

$$\begin{array}{r}
 12 - 5x = -18 \\
 \underline{-12 \quad -12} \\
 -5x = -30 \\
 \underline{-5 \quad -5} \\
 x = 6
 \end{array}$$

9)  $5x - 7 - 2x + 1 = 12$

$$\begin{array}{r}
 3x + 8 = 12 \\
 \underline{-8 \quad -8} \\
 3x = 4 \\
 \frac{4}{3} \\
 x = 1.\bar{3}
 \end{array}$$

10) Find and fix the error:

$$\begin{array}{r}
 10a + 3 - 8 = 15 \\
 10a - 5 = 15 \\
 \underline{+8 \quad +8} \\
 10a = 20 \\
 \underline{10 \quad 10} \\
 a = 2
 \end{array}$$

$$10a + 3 - 8 = 15$$

$$13a - 8 = 15$$

$$13a = 23$$

$$a = 1.8$$

← Can't combine the 10a and 3.