

Name: \_\_\_\_\_

Date: \_\_\_\_\_

AIM: How can we solve algebraic equations?

Do Now

1. 
$$\begin{array}{r} h + 2 = -17 \\ -2 \quad -2 \\ \hline h = -19 \end{array}$$

2. 
$$\begin{array}{r} 14 = 7p \\ \frac{14}{7} = \frac{7p}{7} \\ \hline 2 = p \end{array}$$

3. 
$$\begin{array}{r} -12 + x = 9 \\ +12 \quad +12 \\ \hline x = 21 \end{array}$$

4. What is the difference between the three equations above and the following equation:

$$2x + 4 = 12$$

Two-Step Equations:

\_\_\_\_\_ an equation that contains two operations \_\_\_\_\_



Last thing done to the variable is the first thing undone

In two-step equations:

First: \_\_\_\_\_ Do inverse of  $\oplus$  or  $\ominus$  (undo constants) \_\_\_\_\_

Second: \_\_\_\_\_ Do inverse of  $\otimes$  or  $\oslash$  (undo coefficients) \_\_\_\_\_

$\begin{array}{r} 5y + 3 = -12 \\ -3 \quad -3 \\ \hline 5y = -15 \\ \frac{5y}{5} = \frac{-15}{5} \end{array}$ $\boxed{y = -3}$	<p>Check</p> $5y + 3 = -12$ $5(-3) + 3 = -12$ $-15 + 3 = -12$ $-12 = -12 \checkmark$
$\begin{array}{r} \frac{m}{-2} - 4 = 10 \\ +4 \quad +4 \\ \hline (-2) \frac{m}{-2} = 14(-2) \end{array}$ $\boxed{m = -28}$	<p>Check</p> $\frac{m}{-2} - 4 = 10$ $\frac{-28}{-2} - 4 = 10$ $14 - 4 = 10$ $10 = 10 \checkmark$

Practice

$\begin{array}{r} 2x + 1 = 11 \\ -1 \quad -1 \\ \hline 2x = 10 \\ \frac{2x}{2} = \frac{10}{2} \end{array}$ $\boxed{x = 5}$	<p>Check</p> $2x + 1 = 11$ $2(5) + 1 = 11$ $10 + 1 = 11$ $11 = 11 \checkmark$	$\begin{array}{r} 2 = 14 + 3x \\ -14 \quad -14 \\ \hline -12 = \frac{3x}{3} \end{array}$ $\boxed{-4 = x}$	<p>Check</p> $2 = 14 + 3x$ $2 = 14 + 3(-4)$ $2 = 14 + -12$ $2 = 2 \checkmark$
$\begin{array}{r} \frac{x}{-2} + 5 = 10 \\ -5 \quad -5 \\ \hline (-2) \frac{x}{-2} = 5(-2) \end{array}$ $\boxed{x = -10}$	<p>Check</p> $\frac{x}{-2} + 5 = 10$ $\frac{-10}{-2} + 5 = 10$ $5 + 5 = 10 \checkmark$	$\begin{array}{r} 2 + 9x = 20 \\ -2 \quad -2 \\ \hline 9x = 18 \\ \frac{9x}{9} = \frac{18}{9} \end{array}$ $\boxed{x = 2}$	<p>Check</p> $2 + 9x = 20$ $2 + 9(2) = 20$ $2 + 18 = 20$ $20 = 20 \checkmark$

$$\frac{-x + 1 = 9}{-1 \quad -1}$$

$$\frac{x = 8}{-1 \quad -1}$$

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

Check

$$\begin{aligned} -x + 1 &= 9 \\ -(-8) + 1 &= 9 \\ 8 + 1 &= 9 \\ 9 &= 9 \checkmark \end{aligned}$$

$$\frac{2 - 9x = 20}{-2 \quad -2}$$

$$\frac{-9x = 18}{-9 \quad -9}$$

$$\boxed{x = -2}$$

Check

$$\begin{aligned} 2 - 9x &= 20 \\ 2 - 9(-2) &= 20 \\ 2 + 18 &= 20 \\ 20 &= 20 \checkmark \end{aligned}$$

## The TAKEAWAY

1. What does solve mean?

Use inverse operations to isolate variable

2. What is a solution?

The value of the variable

3. How do you check the solution?

1. Rewrite equation

2. Substitute

3. Evaluate until  $\# = \#$  ✓