

Warm-up 8-21 and 8/22

Solve the following equations.

1. $3t = 24$

2. $-5p = -125$

3. $m + 9 = 87$

4. $4x = 96$

5. $\frac{m}{-4} = 47$

Today's Goals

- Solve 1 step equations
 - > using addition, subtraction, multiplication, and division
- Solve 2 step equations
 - > using addition, subtraction, multiplication, and division

Evaluation

Evaluate: find the equivalent value (solve)

- substitute or simplify an expression
- end up with a number

Evaluate the expressions below for

$$a = 6, m = 2, \text{ and } r = 5$$

1. $a - r$

$$6 - 5$$

$$= 1$$

2. mr

$$(2)(5)$$

$$= 10$$

3. $2r - am$

$$2(5) - (6)(2)$$

$$10 - 12$$

$$= -2$$

P
E
M
D
A
S

Solving Equations ~ to find the values of the variable in the equation, which makes the equation true. The set of values is called a solution set.

ALL SOLUTIONS WILL BE REAL NUMBERS!!!!

The goal is to isolate the variable (get it by itself)

In order to solve equations we have to use specific properties.

$$x + 5 = 8$$

Equality Properties

Addition Property

If $a = b$, then $a + c = b + c$

$$6 + 4 = 4 + 6$$
$$10 = 10$$

Subtraction Property

If $a = b$, then $a - c = b - c$

$$-7 + 25 = 25 - 7$$
$$18 = 18$$

Multiplication Property

If $a = b$, then $ac = bc$

$$(3)21 = 21(3)$$
$$63 = 63$$

Division Property

If $a = b$, then $\frac{a}{c} = \frac{b}{c}$

$$\frac{14}{2} = \frac{14}{2}$$

$$7 = 7$$

Solving Equations

Equations are solved by doing the order of operations in **reverse** after **simplifying**.

1. Add or subtract
2. Multiply or divide

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To move a number to the other side of the equal sign, you perform the opposite operation.

Examples:

1. $x - 5 = 22$

$$\begin{array}{r} +5 \quad +5 \\ \hline x = 27 \end{array}$$

(4.) $\frac{m}{10} = 40$ (10)

$$m = 400$$

2. $4x = 24$

$$\begin{array}{r} \cancel{4} \quad \cancel{4} \\ \hline 1x = 6 \end{array}$$

5. $p - 15 = -31$

$$\begin{array}{r} +15 \quad +15 \\ \hline p = -16 \end{array}$$

3. $x + 9 = 21$

$$\begin{array}{r} -9 \quad -9 \\ \hline x = 12 \end{array}$$

More Examples

1. $-4x = 10$

2. $-x = 25$

3. $x + \frac{13}{2} = \frac{26}{4}$

4. $-6 + x = 36$

5. $\frac{x}{3} = -51$

More Examples

$$1. \frac{-4x}{-4} = \frac{10}{-4}$$

$$x = -2.5 / -\frac{5}{2}$$

$$2. \frac{-x}{-1} = \frac{25}{-1}$$

$$x = -25$$

$$3. x + \frac{13}{2} = \frac{26}{2} \quad x = 0$$

$$4. \frac{-6 + x}{+6} = \frac{36}{+6}$$

$$x = 42$$

$$5. \frac{x}{3} = -51 \quad (3)$$

$$x = -153$$

$$4x + 26 = 26$$

$$\frac{-26}{-26} \quad \frac{-26}{-26}$$

$$4x = 0$$

$$\frac{4}{4} \quad \frac{0}{4}$$

$$x = 0$$

Connect 4

Today's Goals

I can Solve 2-Step Equations

Section 2.3 ~ Multi-Step Equations

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Operations Happening in the Problem

① Addition
② Multiplication

$$\begin{array}{r} 3m + 15 = 21 \\ -15 \quad -15 \\ \hline 3m = 6 \\ \underline{\quad} \\ m = 2 \end{array}$$

To Solve the Equation

① Subtraction
② Division

Examples:

1. $4 + 7x = 3$

$$\begin{array}{r} 4 + 7x = 3 \\ -4 \quad -4 \\ \hline 7x = -7 \\ \underline{\quad} \\ x = -1 \end{array}$$

2. $\frac{n}{7} + 2 = 2$

$$\begin{array}{r} \frac{n}{7} + 2 = 2 \\ -2 \quad -2 \\ \hline \frac{n}{7} = 0 \end{array}$$

$(\cdot 7) \frac{n}{7} = 0(\cdot 7)$

$$n = 0$$

3. $18 = 4a + 10$

$$\begin{array}{r} 18 = 4a + 10 \\ -10 \quad -10 \\ \hline 8 = 4a \\ \underline{\quad} \\ 2 = a \\ a = 2 \end{array}$$

Try These!!!!

4. $5t - 2 = -32$

5. $-3m + 24 = 57$

Try These!!!!

4. $5t - 2 = -32$

$$\begin{array}{r} +2 \quad +2 \\ \hline 5t = -30 \\ \hline 5 \quad 5 \end{array}$$

$$t = -6$$

5. $-3m + 24 = 57$

$$\begin{array}{r} -24 \quad -24 \\ \hline -3m = 33 \\ \hline -3 \quad -3 \end{array}$$

$$m = -11$$

Homework

pg. 15-16 #2, 5-8, 11, 16-17