

## Warm up

Solve the equation.

1.  $\frac{10x}{10} = \frac{100}{10}$   
 $x = 10$

3.  ~~$\frac{z}{2} = -5$~~   $\cdot 2$   
 $z = -10$

2.  $\frac{18}{-2} = \frac{-2a}{-2}$   
 $-9 = a$

4.  $-\frac{1}{5}y = -6$   
 $-\frac{1}{5}y = -6$   
 $y = -6 \cdot \frac{5}{-1}$   
 $y = 30$

## Homework Questions?

On the top of your paper (by your name) rate yourself for this section:

4 - I can summarize the concepts and explain it to others

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2 - I can apply the concepts but with some mistakes

1 - I need help and know how to apply the concept

0 - I can't apply the concept, even with help

\*Rating of 0-2 is a warning signal to me that you need help\*

### **Example 1: Solve a Linear Equation**

Solve  $2x - 4 = -18$

$$\begin{array}{r} 14 \quad +4 \\ \hline 2x = -14 \\ \frac{2x}{2} = \frac{-14}{2} \end{array}$$

$$x = -7$$

\* Get rid of  
# by itself first  
+ -

**Example 2: Combine Like Terms First**

Solve  $8x - 5x + 16 = -29$

$$\begin{array}{r}
 3x + 16 = -29 \\
 \underline{-16} \quad \underline{-16} \\
 3x = -45 \\
 \underline{\quad} \quad \underline{\quad} \\
 x = -15
 \end{array}$$

**Try It**

Solve the equation. Check your solution in the original equation.

$$\begin{array}{r}
 1. \quad 2x - 5 = 9 \\
 \quad \quad \underline{+5} \quad \underline{+5} \\
 \quad \quad 2x \quad \underline{14} \\
 \quad \quad \underline{\quad} \quad \underline{\quad} \\
 \quad \quad x = 7
 \end{array}$$

$$\begin{array}{r}
 2. \quad 3 + 4a = 19 \\
 \quad \quad \underline{-3} \quad \underline{-3} \\
 \quad \quad -4a = 16 \\
 \quad \quad \underline{-4} \quad \underline{-4} \\
 \quad \quad a = -4
 \end{array}$$

$$\begin{array}{r}
 3. \quad 12m - 4m + 3 = -29 \\
 \quad \quad \underline{-3} \quad \underline{-3} \\
 \quad \quad 8m + 3 = -29 \\
 \quad \quad \underline{-3} \quad \underline{-3} \\
 \quad \quad 8m = -32 \\
 \quad \quad \underline{8} \quad \underline{8} \\
 \quad \quad m = -4
 \end{array}$$

$$\begin{array}{r}
 4. \quad 35 = 7y + 13y + 5 \\
 \quad \quad \underline{-5} \quad \underline{-5} \\
 \quad \quad 30 = 20y \\
 \quad \quad \underline{20} \quad \underline{20} \\
 \quad \quad 3 = 2y \\
 \quad \quad \underline{2} \quad \underline{2} \\
 \quad \quad 1.5 = y
 \end{array}$$

# Summary

**EQ:** How do you decide which operation to undo first?

- ① Combine Like Terms (if possible)
- ② + or - the # w/out letter
- ③ ÷ by # in front x

## 3.3 Homework

Lesson 3-3 wkst #1-21

## Warm Ups

$$1) \quad \cancel{-8} \cdot \frac{x}{-8} = 2 \cdot -8$$

$$x = -16$$

$$2) \quad \frac{3}{2} \cdot \frac{2}{3} x = 6 \cdot \frac{3}{2}$$

$$6 \cdot \frac{3}{2}$$

$$x = 9$$

$$3) \quad x + (+10) = 35$$

$$\begin{array}{r} x + 10 = 35 \\ -10 \quad -10 \\ \hline \end{array}$$

$$x = 25$$

$$4) \quad 49 = 14 + x$$

$$\begin{array}{r} 49 = 14 + x \\ -14 \quad -14 \\ \hline \end{array}$$

$$35 = x$$

17) 
$$\underline{-3n + 12 + n = 22}$$

$$\begin{array}{r} -2n + 12 = 22 \\ \underline{-12 \quad -12} \\ -n = 10 \\ \underline{-n = 10} \\ -2 \quad -2 \end{array}$$

$-n = 10$

$n = -10$

### Homework Questions?

16) 
$$\frac{4}{11}y + 28 = 60$$

$$\begin{array}{r} \frac{4}{11}y + 28 = 60 \\ \underline{-28 \quad -28} \\ \frac{4}{11}y = 32 \end{array}$$

$$\frac{11}{4} \cdot \frac{4}{11}y = 32 \cdot \frac{11}{4}$$

$y = 88$

91

$$\frac{2}{17}y + 35 = 0$$

$$\begin{array}{r|l} -35 & -35 \\ \hline \end{array}$$

$$\frac{17}{17} \cdot \frac{2}{17}y = \frac{-35 \cdot 17}{1}$$

$$y = -85$$

$\frac{17}{85}$

On the top of your paper (by your name) rate yourself for this section:

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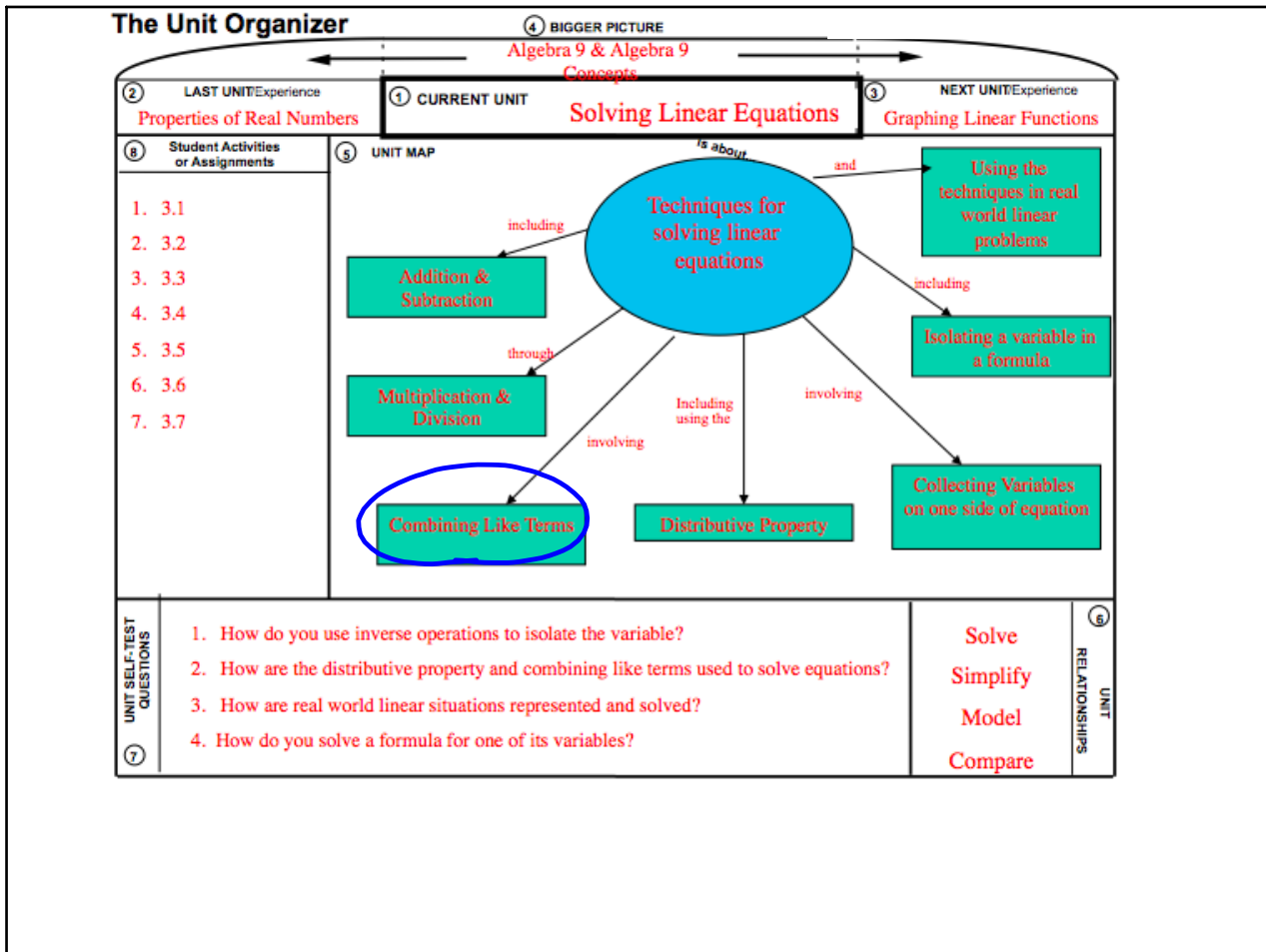
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**Quiz 3.1-3.2 was out of 20pts**

## 3.3 Solving Multi-Step Equations

**Goals:** • Use two or more steps to solve a linear equation

**EQ:** How do you decide which operation to undo first?



## Steps to Solving an Equation

① Distribute ( )

② Combine Like Terms  
(Both Sides of Eqn)

③ + or -

④ ÷ or ×

\* If fraction you can mult. by reciprocal



**Example 3: Use the Distributive Property**

Solve  $9x - 5(x + 6) = -14$

$$9x - 5(x + 6) = -14$$

$$9x - 5x - 30 = -14$$

$$\begin{array}{r|l} 4x - 30 & = -14 \\ +30 & +30 \end{array}$$

$$\frac{4x}{4} = \frac{16}{4}$$

$$x = 4$$

**Example 4: Multiply by a Reciprocal First**

Solve  $24 = \frac{3}{4}(x + 7)$

$$24 = \frac{3}{4}x + \frac{21}{4}$$

$$- \frac{21}{4} \qquad - \frac{21}{4}$$

$$\frac{4}{3} \cdot \frac{75}{4} = \frac{3}{4}x \cdot \frac{4}{3}$$

$$25 = x$$

**Try It**

Solve the equation. Check your solution in the original equation.

5.  $-2(3 - k) = 30$

$$\begin{array}{r} -6 + 2k = 30 \\ +6 \quad +6 \\ \hline 2k = 36 \\ \frac{2k}{2} = \frac{36}{2} \\ k = 18 \end{array}$$

6.  $-38 = 4(n - 2) + 2n$

$$\begin{array}{r} -38 = 4n - 8 + 2n \\ -38 = 4n - 8 + 2n \\ -38 = 6n - 8 \\ +8 \quad +8 \\ \hline -30 = 6n \\ \frac{-30}{6} = \frac{6n}{6} \quad n = -5 \end{array}$$

7.  $\frac{2}{5}(j + 23) = 8$

$$\begin{array}{r} \frac{2}{5}j + \frac{46}{5} = 8 \\ -\frac{46}{5} \quad -\frac{46}{5} \\ \hline \frac{2}{5}j = -\frac{6}{5} \\ \frac{5}{2} \cdot \frac{2}{5}j = -\frac{6}{5} \cdot \frac{5}{2} \\ j = -3 \end{array}$$

$$\frac{-30}{10} = -3$$

8.  $12 = \frac{1}{3}(g + 2)$

$$\begin{array}{r} 12 = \frac{1}{3}g + \frac{2}{3} \\ -\frac{2}{3} \quad -\frac{2}{3} \\ \hline 3 \cdot \frac{31}{3} = \frac{1}{3}g \cdot \frac{3}{1} \\ g = 31 \end{array}$$

## 3.3 Day 2 HW

p.147 #8-38 even