Warm up

Solve the equation.

1. $t - 2 = 6$

$+2 \quad +2$

$t = 8$

2. $-3 + x = -7$

$+3 \quad +3$

$x = -4$

3. $|-6| + y = 11$

$6 + y = 11$

$-6 \quad -6$

$y = 5$

4. $4 = -b - 12$

$+12 \quad +12$

$16 = -b$

$\frac{16}{-1} = \frac{-b}{-1}$

$-16 = b$

Homework Questions?

4) $\frac{2}{5} = a - \frac{1}{5}$

$+\frac{1}{5} \quad +\frac{1}{5}$

$\frac{2}{5} + \frac{1}{5}$

$\frac{3}{5} = a$

20) $-762.46 = h - 32.061$

$+32.061 \quad +32.061$

$-730.399 = h$

14) $-8 = x + 14$

19) $21.21 + p = -101.6$

$-21.21 \quad -21.21$

$p = -122.81$

13] $-10+(\tau x)=6.4$

$-10+x=6.4$
$+10 \quad +10$
$x=16.4$

-3
$+1.3$

$2+(+b)=-7$

$2+b=-7$
$-2 \quad -2$
$b=-9$

$a+\frac{+1}{5}=\frac{3}{20}$
$-\frac{1}{4} \quad -\frac{1}{5}$

13) $-\frac{3}{4} + z = \frac{7}{18}$

$+\frac{3}{4} \qquad +\frac{3}{4}$

$z = \frac{7}{18} + \frac{3}{4}$

$f + \frac{3}{5} = \frac{3}{4}$

$-\frac{3}{5} \quad -\frac{3}{5}$

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

3 - I can apply the concept to answer questions correctly

2 - I can apply the concepts but with some mistakes

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

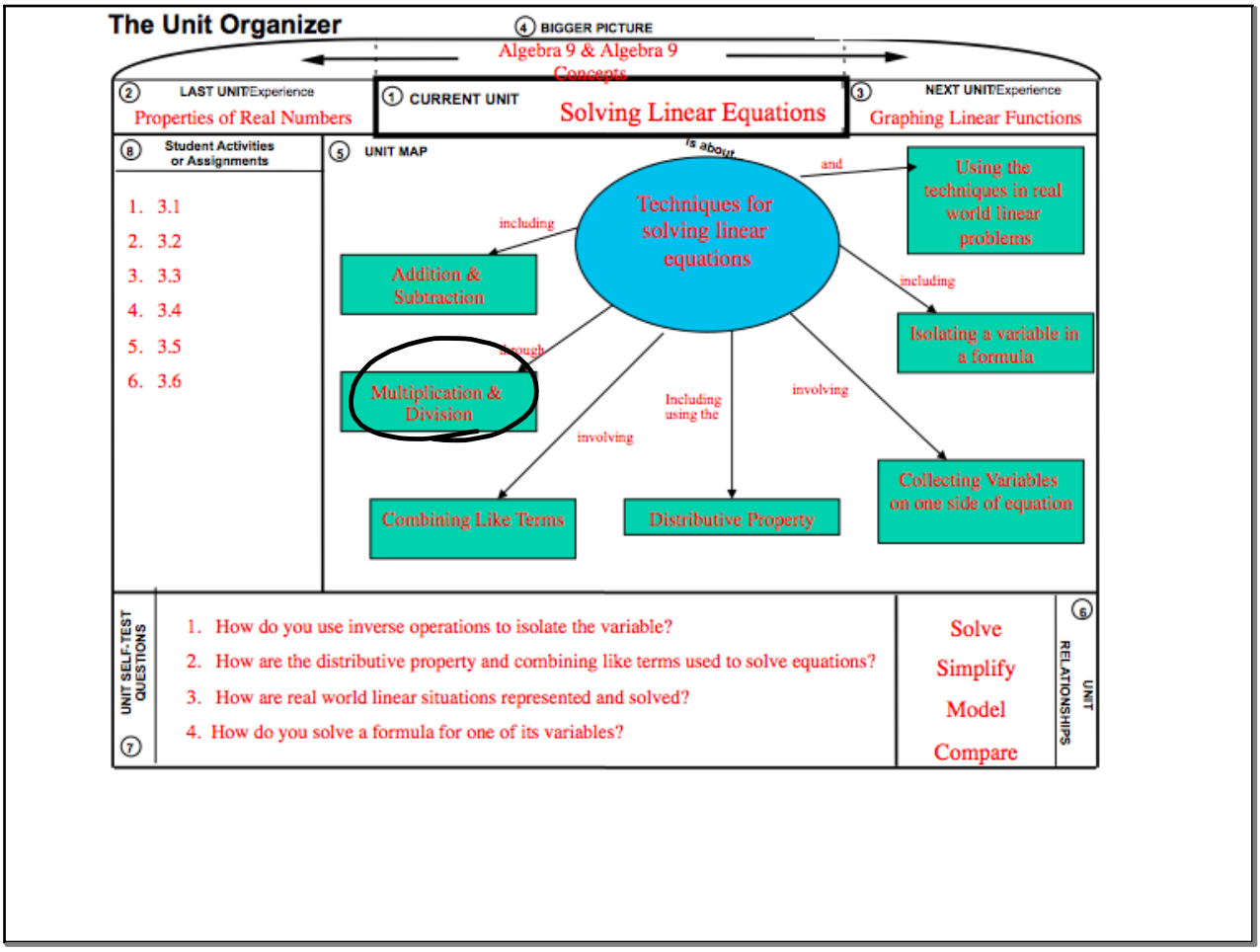
0 - I can't apply the concept, even with help

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

3.2 Solving Equations Using Multiplication & Division

Goals:
- Solve linear equations using multiplication and division

EQ: How do you use the multiplication and division property?



Vocabulary

Properties of equality:

Rules of Algebra used to solve equations

Addition Property: If a = b, then a + c = b + c

Subtraction Property: If a = b, then a - c = b - c

Multiplication Property: If a = b, then ac = bc

Division Property: If a = b and c ≠ 0, then a/c = b/c.

$\frac{a}{c} = \frac{b}{c}$

TRANSFORMING EQUATIONS

OPERATION	ORIGINAL EQUATION		EQUIVALENT EQUATION
• Multiply *each* side of the equation by the same nonzero number.	$\frac{x}{2} = 3$	Multiply by 2.	$x = 6$
• Divide *each* side of the equation by the same nonzero number.	$4x = 12$	Divide by 4.	$x = 3$

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

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

Example 1: Divide Each Side of an Equation

Solve $8x = -3$. The operation is multiplication. Use the inverse operation of division to isolate the variable x.

$$\frac{8x}{8} = \frac{-3}{8}$$

$$x = \frac{-3}{8}$$

Example 2: Multiply Each Side of an Equation

Solve $\frac{x}{-3} = 60$

The operation is division. Use the inverse operation of multiplication to isolate the variable x.

$$-3 \cdot \frac{x}{-3} = 60 \cdot -3$$

$$x = -180$$

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

1. $\frac{n}{-4} = 7$ · -4

$n = -28$

2. $7 \cdot 6 = \frac{x}{7}$ · 7

$42 = x$

3. $63 = 9x$

$\frac{63}{9} = \frac{9x}{9}$

$7 = x$

4. $-9r = -54$

$\frac{-9r}{-9} = \frac{-54}{-9}$

$r = 6$

Example 3: Multiply Each Side by a Reciprocal

Solve $-\frac{3}{4}m = 15$. The fractional coefficient is $-\frac{3}{4}$. The reciprocal of $-\frac{3}{4}$ is $-\frac{4}{3}$.

Hint: When you solve an equation with a fractional coefficient, you can isolate the variable by multiplying by the reciprocal of the fraction.

$\frac{-\frac{3}{4}m}{-\frac{3}{4}} = \frac{15}{-\frac{3}{4}}$

$m = -20$

$\frac{4}{-3} \cdot \frac{-3}{4}m = 15 \cdot \frac{4}{-3}$

$m = \frac{60}{-3}$

$m = -20$

$\frac{9}{4} \cdot \frac{4}{9} x = 12^{3} \cdot \frac{9}{4_{1}}$

$x = 27$

$\frac{\frac{4}{9}x = 12}{\frac{4}{9} \quad \frac{4}{9}}$

Summary

EQ: How do you use the multiplication and division property?

mult & ÷ undo each other

* whatever you do to one side, you must do to the other

3.2 Homework

- Finish wkst #1-10 on the back
- 3.2 p.141 #22-44even

SHOW WORK