

Warm up

Solve the equation. Round to the nearest hundredth.

$$6.1(3.1 + 2.5x) = 15.3x - 3.9$$

$$18.91 + 15.25x = 15.3x - 3.9$$
$$-15.25x \quad -15.25x$$

$$18.91 = .05x - 3.9$$
$$+3.9 \quad +3.9$$

$$\frac{22.81}{.05} = \frac{.05x}{.05}$$

$$x = 456.20$$

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

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

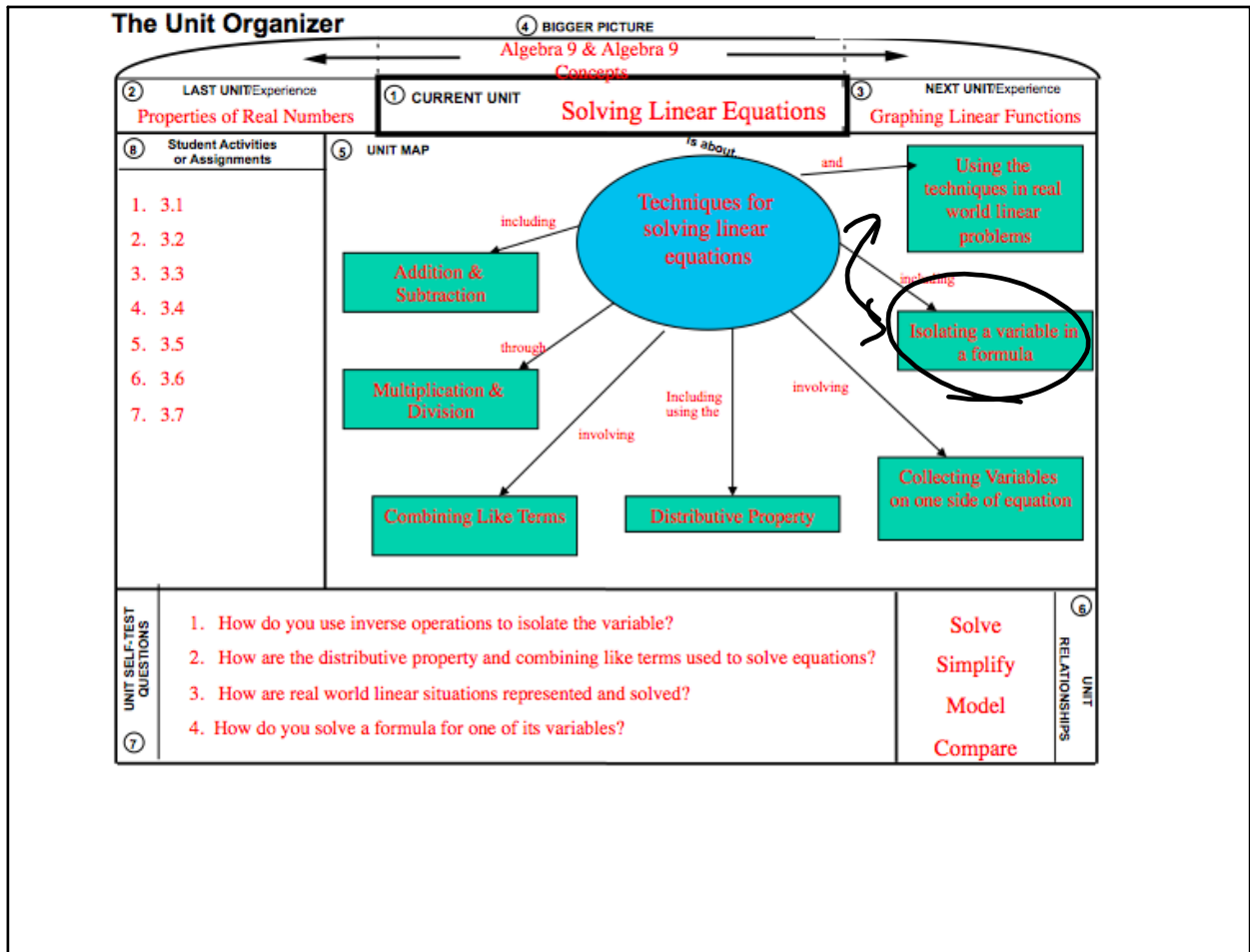
Rating of 0-2 is a warning signal to me that you need help

3.7 Formulas and Functions

Goals:

- Solve a formula for one of its variables.
- Rewrite an equation in function form.

EQ: What does "write y as a function of x " mean?



Vocabulary

Formula: an algebraic equation that relates two or more real-life quantities

Example 1: Solving an Area Formula

Use the formula for the area of a rectangle, $A = lw$.
Find a formula for w in terms of A and l .

Solve for w

$$\frac{A}{l} = \frac{lw}{l}$$

$$\frac{A}{l} = w$$

$$w = \frac{A}{l}$$

Now find the width of a rectangle with an area of 35 ft^2 and a length of 7 ft .

$$w = \frac{35}{7} = 5 \text{ ft}$$

Example 2: Solving a Temperature Conversion Formula

Solve the temperature formula $F = \frac{9}{5}C + 32$ for C .

$$F = \frac{9}{5}C + 32$$

$$-32 \quad -32$$

$$\frac{5}{9}(F - 32) = \frac{9}{5}C \cdot \frac{5}{9}$$

$$\frac{5}{9}(F - 32) = C$$

Try It

Solve for l :

$$P = 2l + 2w$$

$$\begin{array}{r} -2w \quad -2w \end{array}$$

$$\frac{P-2w}{2} = \frac{2l}{2}$$

$$\frac{P-2w}{2} = l$$

$$l = \frac{P}{2} - \frac{2w}{2}$$

$$l = \frac{P}{2} - w$$

Solve for w :

$$V = lwh$$

$$\frac{V}{lh} = \frac{lwh}{lh}$$

$$\frac{V}{lh} = w$$

Solve for r :

$$\frac{C}{2\pi} = \frac{2\pi r}{2\pi}$$

$$\frac{C}{2\pi} = r$$

Example 3: Rewriting an Equation in Function FormRewrite the equation so that y is a function of x .

a) $-4x + y = 7$

$$\begin{array}{r} +4x \quad +4x \end{array}$$

$$y = 7 + 4x$$

b) $10 = 3x - y$ $y =$

$$\begin{array}{r} -3x \quad -3x \end{array}$$

$$\frac{10-3x}{-1} = \frac{-y}{-1}$$

$$\frac{10-3x}{-1} = y$$

$$-10 + 3x = y$$

c) $4x - 3(y - 2) = 15 + y$

$$4x - 3y + 6 = 15 + y$$

$$\begin{array}{r} +3y \quad +3y \end{array}$$

$$4x + 6 = 15 + 4y$$

$$\begin{array}{r} -15 \quad -15 \end{array}$$

$$4x - 9 = 4y$$

$$\frac{4x-9}{4} = y$$

$$y = x - \frac{9}{4}$$

Try It

Rewrite each equation so that y is a function of x.

1) $16x + y = -11$

$-16x \quad -16x$
 $y = -11 - 16x$

2) $15 = 2x - y$

$-2x \quad -2x$
 $\frac{15 - 2x}{-1} = \frac{-y}{-1}$
 $-15 + 2x = y$

3) $9 - y = 3x$

$-9 \quad -9$
 $\frac{-y}{-1} = \frac{3x - 9}{-1}$
 $y = -3x + 9$

Summary

EQ: What does "write y as a function of x" mean?

Solve for y

32pts

$\frac{A}{h} = \frac{\frac{1}{2}bh}{h}$ $\frac{2}{1} \cdot \frac{A}{h} = \frac{1}{2}b \cdot \frac{2}{1}$
 $\frac{2A}{h} = b$

3.7 Homework

p.177 #11-13, 16-32even

16-28

$y =$

30, 32

$x =$

y	x
-2	-6
-1	0
0	1

$x = 3y$
 $3(-2)$