

## Algebra 1: 1.5 Rewriting Equations & Formulas DAY ONE

Review WARM-UP:

Solve the equation.

$$1. \quad \begin{array}{r} y - 4 = 9 \\ +4 \quad +4 \\ \hline y = 13 \end{array}$$

$$3. \quad \begin{array}{r} 6h = 18 \\ \div 6 \quad \div 6 \\ \hline h = 3 \end{array}$$

$$5. \quad \begin{array}{r} 4 - u = 2 \\ -4 \quad -4 \\ \hline -u = -2 \\ \div -1 \quad \div -1 \\ \hline u = 2 \end{array}$$

$$-\frac{1}{2}x = 5$$

$$2. \quad \begin{array}{r} p + 5 = -6 \\ -5 \quad -5 \\ \hline p = -11 \end{array}$$

$$4. \quad \begin{array}{r} \frac{x}{-2} = 5 \cdot -2 \\ \cdot -2 \quad \cdot -2 \\ \hline x = -10 \end{array}$$

$$6. \quad \begin{array}{r} -y = 2.3 \\ \div -1 \quad \div -1 \\ \hline y = -2.3 \end{array}$$

Warm Up

### Learning Outcomes:

I can rewrite literal equations.

I can rewrite (and use) formulas for area.

I can rewrite (and use) other common formulas.

## 1.5 Rewriting Equations & Formulas with work DAY ONE

SAD MEP

Solve for y:

$$\begin{array}{r} 3y + 14 = 9 \\ \underline{-14 \quad -14} \\ 3y = -5 \\ \underline{\div 3 \quad \div 3} \\ y = -\frac{5}{3} \end{array}$$

Solve the literal equation

$$\begin{array}{r} 3y + 4x = 9 \text{ for } y. \\ \underline{-4x \quad -4x} \\ 3y = -4x + 9 \\ \underline{\div 3 \quad \div 3} \\ y = -\frac{4}{3}x + 3 \end{array}$$

Example 1

Solve the literal equation for  $y$ .

$$\begin{array}{r} 1. 3y - x = 9 \\ \underline{+x \quad +x} \\ 3y = x + 9 \\ \underline{\div 3 \quad \div 3} \\ y = \frac{x}{3} + 3 \\ \boxed{y = \frac{1}{3}x + 3} \end{array}$$

$$\begin{array}{r} 2. 2x - 2y = 5 \\ \underline{-2x \quad -2x} \\ -2y = -x + 5 \\ \underline{\div -2 \quad \div -2} \\ y = x - \frac{5}{2} \\ \boxed{y = x - \frac{5}{2}} \end{array}$$

## 1.5 Rewriting Equations & Formulas with work DAY ONE

### YOUR TURN:

Solve the formula for the indicated variable.

7. Area of a triangle:  $A = \frac{1}{2}bh$ ; Solve for h.

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

$$\frac{2A}{b} = \frac{bh}{b}$$

$$h = \frac{2A}{b}$$

$$2 \rightarrow A = \frac{bh}{2} \cdot 2$$

Sep 22-7:10 PM

### Core Concept

#### Common Formulas

**Temperature**  $F$  = degrees Fahrenheit,  $C$  = degrees Celsius

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

#### Simple Interest

$I$  = interest,  $P$  = principal,  
 $r$  = annual interest rate (decimal form),  
 $t$  = time (years)

$$I = Prt$$

#### Distance

$d$  = distance traveled,  $r$  = rate,  $t$  = time

$$d = rt$$

**Example:** Solve the temperature formula for  $F$ .

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

**Practice:**

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

9. A fever is generally considered to be a body temperature greater than 100°F. Your friend has a temperature of 37°C. Does your friend have a fever?

$$F = \frac{9}{5}(37) + 32 = 98.6^\circ\text{F}$$

$(9/5)(37) + 32 = 98.6$

$$98.6 < 100$$

NO Fever

Sep 22-7:13 PM

## 1.5 Extra Practice WS

A: 1 - 7(o), 13 - 16

B: 1 - 7, 10 - 14

C: 1 - 11(o), 13 - 16

## 1.5 Rewriting Equations & Formulas Day 2

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### WARM-UP:

Review...

Solve the formula for the indicated variable.

8. Surface area of a cone:  $S = \pi r^2 + \pi r\ell$ ; Solve for  $\ell$

What about this?

Solve the literal equation  $y = 3x + 5xz$  for  $x$ .

## More Practice:

Solve the literal equation for  $x$ .

4.  $y = 5x - 4x$

5.  $2x + kx = m$

6.  $3 + 5x - kx = y$

Sep 22-7:15 PM

### Your Turn:

The formula for the surface area  $S$  of a rectangular prism is

$S = 2\ell w + 2\ell h + 2wh$ . Solve the formula for the length  $\ell$ .