Name _____ Date _____

LESSON 2.8

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Study Guide

For use with the lesson "Rewrite Equations and Formulas"

GOAL **Write equations in function form and rewrite formulas.**

Vocabulary

An equation in x and y is written in **function form** when the dependent variable y is isolated on one side of the equation.

A **literal equation** is an equation that contains two or more variables.

EXAMPLE 1 Rewrite an equation in function form

Write $9x - 4y = 8$ in function form.

Solution

To write an equation in function form, solve the equation for y.

$9x - 4y = 8$ Write original equation.

$-4y = 8 - 9x$ Subtract $9x$ from each side.

$y = -2 + \frac{9}{4}x$ Divide each side by -4.

The equation $y = -2 + \frac{9}{4}x$ is written in function form.

EXAMPLE 2 Solve a literal equation

The formula for the volume of a rectangular prism is $V = \ell wh$. Solve the formula for ℓ.

Solution

$V = \ell wh$ Write original equation.

$\frac{V}{wh} = \frac{\ell wh}{wh}$ Assume $w \neq 0$ and $h \neq 0$. Divide each side by wh.

$\frac{V}{wh} = \ell$ Simplify.

The rewritten equation is $\frac{V}{wh} = \ell$.

Exercises for Examples 1 and 2

Write the equation in function form.

1. $7x + y = 12$ **2.** $3y - 9x = 21$ **3.** $5y - 2x = 15$

Solve the literal equation.

4. $I = Prt$ for P **5.** $A = \frac{1}{2}(b_1 + b_2)h$ for b_2

LESSON 2.8

Study Guide *continued*

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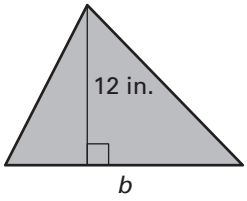
EXAMPLE 3 Solve and use a geometric formula

The area A of a triangle is given by the formula $A = \frac{1}{2}bh$ where b is the base and h is the height.



a. Solve the formula for the base b.

b. Use the rewritten formula to find the base of the triangle shown, which has an area of 106.8 square inches.

Solution

a. **Solve** the formula for b.

$A = \frac{1}{2}bh$	Write original formula.
$2A = bh$	Multiply each side by 2.
$\frac{2A}{h} = b$	Divide each side by h.

b. **Substitute** 106.8 for A and 12 for h in the rewritten formula.

$b = \frac{2A}{h}$	Write rewritten formula.
$b = \frac{2(106.8)}{12}$	Substitute 106.8 for A and 12 for h.
$b = 17.8$	Simplify.

The base of the triangle is 17.8 inches.

Exercises for Example 3

The surface area S of a sphere is given by the formula $S = 4\pi r^2$ where r is the radius of the sphere.

6. Solve the formula for r.

7. Use the rewritten formula from Exercise 6 to find r when $S = 314$ square meters. Use 3.14 for π.