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1.5 Notetaking with Vocabulary

***Learning target*: Understand solving liner equations.**

Success criteria: I can rewrite equations and formulas.

Write the meaning of each vocabulary term.

literal equation - an equation that has 2 or more different variables.
- when you solve for 1 variable, the solutions contains the other variables.

formula - a type of literal equation

Core Concepts

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

$d = rt$ $\frac{d}{t} = r$ $\frac{d}{r} = t$

Examples 1–3, solve the literal equation for *y*.

1. $y - 2x = 15$
$+2x \quad +2x$

$y = 2x + 15$

2. $4x + y = 2$
$-4x \quad -4x$

$y = 2 - 4x$

3. $5x - 2 = 8 + 5y$
$-8 \quad -8$

$\frac{5x}{5} - \frac{10}{5} = \frac{5y}{5}$

$x - 2 = y$

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Examples 4-6, solve the literal equation for x.

Tricky

4. $y = 10x - 4x$

$\frac{y}{6} = \frac{6x}{6}$

$\frac{y}{6} = x$

$\frac{1}{6}y = x$

5. $q = 3x + 9xz$

$\frac{q}{(3+9z)} = \frac{x(3+9z)}{(3+9z)}$

$\frac{q}{(3+9z)} = x$

6. $r = 4 + 7x - sx$

$-4 \quad -4$

$r - 4 = 7x - sx$

$\frac{r-4}{7-s} = \frac{x(7-s)}{7-s}$

$\frac{r-4}{7-s} = x$

Practice

In Exercises 1–3, solve the literal equation for y.

1. $y + x = 11$
2. $3x - y = -4$
3. $3x + 1 = 7 - 4y$

In Exercises 4 - 6, solve the literal equation for x.

4. $y + 4x = 10x - 6$
5. $4g + r = 2r - 2x$
6. $3z + 8 = 12 + 3x - z$

Example 7, solve the formula for the indicated variable.

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

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1.5 Notetaking with Vocabulary (continued)

Practice:

Volume of a cone: $V = \frac{1}{3}\pi r^2 h$; Solve for h.

$\frac{3}{1} \cdot V = \frac{3}{1} \cdot \frac{1}{3}\pi r^2 h$

$\frac{3V}{\pi r^2} = \frac{\pi r^2 h}{\pi r^2}$

$\frac{3V}{\pi r^2} = h$

Example 8:

The amount A of money in an account after simple interest has been earned is given by the formula $A = P + Prt$ where P is the principal, r is the annual interest rate in decimal form, and t is the time in years.

a. Solve the formula for r.

$A = P + Prt$

$-P \quad -P$

$\frac{A - P}{Pt} = \frac{Prt}{Pt}$

$\frac{A-P}{Pt} = r$

b. The amount of money in an account after interest has been earned is \$1080, the principal is \$1000, and the time is 2 years. What is the annual interest rate?

$A = 1080$

$P = 1000$

$t = 2$

$\frac{1080 - 1000}{1000(2)} = r$

$\frac{80}{2000} = r$

$.04 = r$

The annual interest rate is 4%.

c. Solve the formula for P.

$A = \frac{P}{P} + \frac{Prt}{P}$

$\frac{A}{(1+rt)} = \frac{P(1+rt)}{(1+rt)}$

$\frac{A}{1+rt} = P$