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Lesson 1.4 Reteach

An equation that has two or more variables is called a **literal equation**. You can solve for any variable in terms of the other variable(s), just as you do for equations with one variable.

EXAMPLE Rewriting an Equation

Solve the equation $3y + x = 9$ for y.

This equation is being solved for y in terms of x. Use properties of equality to undo the operations in the equation and isolate y.

$3y + x = 9$	Write the equation.
$\underline{-x} \quad \underline{-x}$	Subtraction Property of Equality
$3y = 9 - x$	Simplify.
$\frac{3y}{3} = \frac{9-x}{3}$	Division Property of Equality
$y = 3 - \frac{1}{3}x$	Simplify.

A **formula** is a type of literal equation that shows how one variable is related to one or more other variables, such as area or volume formulas. A formula can be rewritten or solved for one of the variables in terms of the other variable(s), as shown in the previous example.

EXAMPLE Rewriting a Formula

The formula for the area A of a triangle is $A = \frac{1}{2}bh$. Solve the formula for b.

$A = \frac{1}{2}bh$	Write the equation.
$2 \cdot A = 2 \cdot \frac{1}{2}bh$	Multiplication Property of Equality
$2A = bh$	Simplify.
$\frac{2A}{h} = \frac{bh}{h}$	Division Property of Equality
$\frac{2A}{h} = b$	Simplify.

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Lesson 1.4 Reteach (continued)

Temperature conversion formulas are also literal equations and can be rewritten to solve for one variable in terms of the other variable(s).

EXAMPLE Rewriting the Temperature Formula

The formula $C = K - 273$ converts temperatures from Kelvin K to degrees Celsius C. Solve the formula for K.

$C = K - 273.15$	Write the equation.
$+ 273.15 = + 273.15$	Addition Property of Equality
$C + 273.15 = K$	Simplify.

▶ So, the rewritten formula is $K = C + 273.15$.

Solve the equation for y.

1. $5x - \frac{1}{2}y = -3$

2. $2x - 7y = 4\pi$

3. $3y - 1.5x = 6$

4. $4.2x - 1.4y = 2.1$

Solve the equation for the bold variable.

5. $PV = n\boldsymbol{R}T$

6. $P = 2\ell + 2\boldsymbol{w}$

7. $C = 1200 + 60\boldsymbol{x}$

8. $S = \pi r^2 + 2\pi r\boldsymbol{h}$

9. The formula for energy is $E = mc^2$. Solve the formula for m.

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