

# Study Guide

## Solving Equations and Formulas

If an equation that contains more than one variable is to be solved for a specific variable, use the properties of equality to isolate the specified variable on one side of the equation.

**Example:** Solve  $ax - b = c$  for  $x$ .

$$ax - b = c$$

$$ax - b + b = c + b \quad \text{Add } b \text{ to each side.}$$

$$ax = c + b$$

$$\frac{ax}{a} = \frac{c + b}{a} \quad \text{Divide each side by } a.$$

$$x = \frac{c + b}{a} \quad a \neq 0$$

**Solve for  $x$ .**

1.  $15x + 1 = y$

2.  $x + 45z = 90$

3.  $(x + f) + 2 = j$

4.  $xy + z = 9$

5.  $x(4 - k) = p$

6.  $7x + 3y = m$

7.  $2x + b = c$

8.  $x(1 + y) = z$

9.  $16z + 4x = y$

**10. Health** The formula  $H = \frac{34 - A}{2}$  is sometimes used to relate a person's age,  $A$ , to the number of hours of sleep they need every day,  $H$ .

- Does this formula work for you? If not, why not?
- For what ages does the formula seem to work best?
- Solve the formula for  $A$ .
- How old is a person who is getting his or her optimal amount of sleep, 8 hours per day?