1.5 Use a Problem Solving Plan

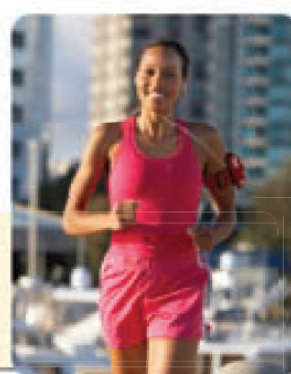| **Before** | You used problem solving strategies. |
| **Now** | You will use a problem solving plan to solve problems. |
| **Why?** | So you can determine a route, as in Example 1. |

$$4(25)$$
$$100$$

KEY CONCEPT   *For Your Notebook*

A Problem Solving Plan

STEP 1 **Read and Understand** Read the problem carefully. Identify what you know and what you want to find out.

STEP 2 **Make a Plan** Decide on an approach to solving the problem.

STEP 3 **Solve the Problem** Carry out your plan. Try a new approach if the first one isn't successful.

STEP 4 **Look Back** Once you obtain an answer, check that it is reasonable.

FORMULAS A **formula** is an equation that relates two or more quantities. You may find it helpful to use formulas in problem solving.

KEY CONCEPT   *For Your Notebook*

Formulas

Temperature

$C = \frac{5}{9}(F - 32)$ where F = degrees Fahrenheit and C = degrees Celsius

Simple interest

$I = Prt$ where I = interest, P = principal, r = interest rate (as a decimal), and t = time

Distance traveled

$d = rt$ where d = distance traveled, r = rate (constant or average speed), and t = time

Profit

$P = I - E$ where P = profit, I = income, and E = expenses

LESSON 1.5 **Practice A**
For use with the lesson "Use a Problem Solving Plan"

In Exercises 1–3, identify what you know and what you need to find out. You do *not* need to solve the problem.

1. In science class, you are comparing the growths of plants subject to different conditions. Plant A has grown 25 inches in the same amount of time plant B has grown 17.5 inches. Plant A grew how many times as much as plant B?

$\underline{\text{K}}$

Plant A growth
Plant B growth

$\underline{\text{F}}$

Quotient of A to B

2. Your class is making a mosaic mural out of 1-inch by 1-inch colored tiles. You will make a rectangular mural that is 8 feet long and 4 feet tall. How many tiles will you need to make the mural?

$$\frac{)c}{tile\ size}$$

Mural

$$\frac{P}{\triangle\ to\ Sm\ units}$$

Find se in of
tiles & mural

Quotient of the
Mural to the tiles

3. Your baseball team has raised $240 for T-shirts and hats. It will cost $15 for each of the 20 players to have a T-shirt and a hat. How much more money will each player have to pay to cover the cost?

$$\frac{15}{}$$

#of Players
Cost / Player-
Initial $

$$\frac{F}{}$$
Find total cost

Use Subtraction
to find # needed
then Divide

In Exercises 4 and 5, state the formula that is needed to solve the problem. You d o *not* need to solve the problem.

4. The temperature is 25°C. What is the temperature in degrees Fahrenheit?

5. You are traveling 150 miles to your cousin's house. You travel at a rate of 50 miles per hour. When will you get to your cousin's house?

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

5 $D = RT$
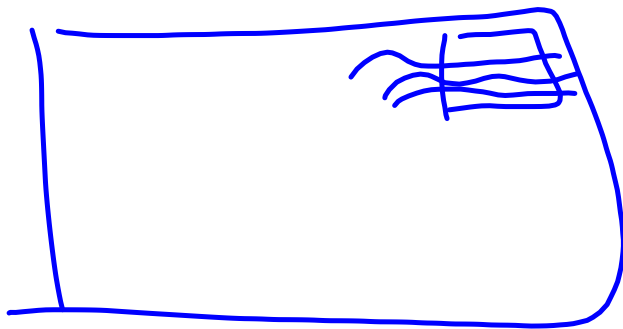
6. **Stamp Collection** Your stamp collection consists of 120 stamps. Each stamp has either a cancellation mark or no cancellation mark. There are 76 more stamps with cancellation marks than stamps without cancellation marks. Let x be the number of stamps without cancellation marks. Which equation correctly models this situation?

A. $x + 76 = 120$

B. $x + (x + 76) = 120$

C. $x + (x - 76) = 120$

7. **Picnic** You are responsible for buying the hamburger rolls for an upcoming picnic. Each bag of rolls costs \$1.30 and contains 8 rolls. You need to buy a total of 64 rolls. How much money will it cost for the rolls?

$$64 \div 8 = 8 \text{ bags}$$

$$8 (1.30) = \$10.40$$

8. **Temperature** Yesterday's high and low temperatures were 50°F and 41°F, respectively. What are these temperatures in degrees Celsius?

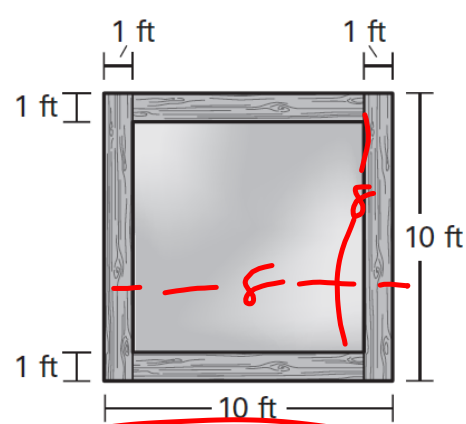$$C = \frac{5}{9}(F - 32)$$

$$C = \frac{5}{9}(\boxed{50} - 32)$$

$$C = 10$$

9. Sandbox A civic group is building a sandbox that is enclosed by 1-foot wide railroad ties. The group needs to find the area inside the sandbox to find the amount of sand needed. Use the figure and the formula for area to write an equation that you can use to find the area inside the sandbox.

1 ft   1 ft

1 ft

8 ft

10 ft

1 ft

10 ft

$$A = bh$$
$$= 8 \cdot 8$$
$$= 64$$

$$A = (13 - 2)(1 + -2)$$