

## Lesson 10-7

### Example 1 Find the Circumference of a Circle

Find the circumference of each circle to the nearest tenth.

a. radius = 6.3 centimeters

$$\begin{aligned}C &= 2\pi r && \text{Circumference of a circle} \\C &= 2 \cdot \pi \cdot 6.3 && \text{Replace } r \text{ with } 6.3. \\C &\approx 39.6 && \text{Simplify. Use a calculator.}\end{aligned}$$

The circumference is about 39.6 centimeters.

b. diameter = 9 feet

$$\begin{aligned}C &= \pi d && \text{Circumference of a circle} \\C &= \pi \cdot 9 && \text{Replace } d \text{ with } 9. \\C &\approx 28.3 && \text{Simplify. Use a calculator.}\end{aligned}$$

The circumference is about 28.3 feet.

### Example 2 Use Circumference to Solve a Problem

**SWIMMING POOL** A small town wishes to build a circular swimming pool at the community center. The circumference of the pool is to be 90 feet. How large should the radius of the new pool be?

**Explore** You know the circumference of the new pool. You need to find its radius.

**Plan** Use the formula for the circumference of a circle to find the radius.

**Solve**

$$\begin{aligned}C &= 2\pi r && \text{Circumference of a circle} \\90 &= 2 \cdot \pi \cdot r && \text{Replace } C \text{ with } 90. \\ \frac{90}{2\pi} &= r && \text{Divide each side by } 2\pi. \\ 14.3 &\approx r && \text{Simplify. Use a calculator.}\end{aligned}$$

The radius of the pool should be about 14.3 feet.

**Examine** Check the reasonableness of the solution by replacing  $r$  with 14.3 in  $C = 2\pi r$ .

$$\begin{aligned}C &= 2\pi r && \text{Circumference of a circle} \\C &= 2 \cdot \pi \cdot 14.3 && \text{Replace } r \text{ with } 14.3. \\C &\approx 89.8 && \text{Simplify. Use a calculator.}\end{aligned}$$

The solution is reasonable.

**Example 3 Find Areas of Circles**

**Find the area of each circle. Round to the nearest tenth.**

**a. diameter = 8 yards**

$$A = \pi r^2 \quad \text{Area of a circle}$$

$$A = \pi \cdot 4^2 \quad \text{Replace } r \text{ with 4.}$$

$$A = \pi \cdot 16 \quad \text{Evaluate } 4^2.$$

$$A \approx 50.3 \quad \text{Use a calculator.}$$

The area is about 50.3 square yards.

**b. radius = 5.4 meters**

$$A = \pi r^2 \quad \text{Area of a circle}$$

$$A = \pi \cdot (5.4)^2 \quad \text{Replace } r \text{ with 5.4.}$$

$$A = \pi \cdot 29.16 \quad \text{Evaluate } 5.4^2.$$

$$A \approx 91.6 \quad \text{Use a calculator.}$$

The area is about 91.6 square meters.