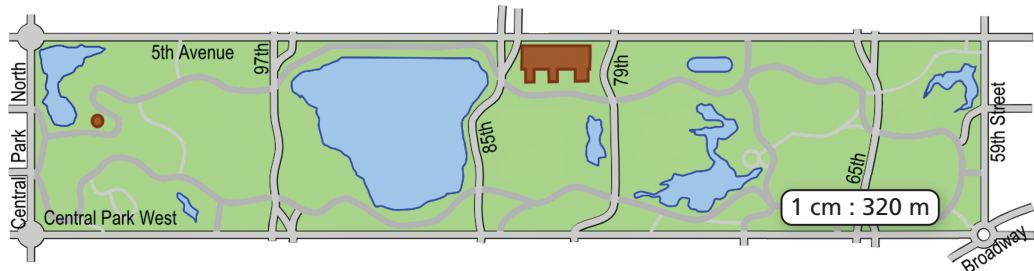# 5.4b Scale Drawings

EXAMPLE **1** **Finding an Actual Area**

Central Park is a rectangular park in New York City. Find the actual area of the park.

1 cm : 320 m

Step 1: Use a centimeter ruler to find the length and width of the park in the scale drawing.

The scale drawing of the park is 12.5 centimeters long and 2.5 centimeters wide.

Step 2: Use the scale to write and solve proportions to find the actual length and width of the park. Let ℓ be the actual length and let w be the actual width.

$$\frac{1 \text{ cm}}{320 \text{ m}} = \frac{12.5 \text{ cm}}{\ell \text{ m}} \qquad \text{drawing distance} \qquad \frac{1 \text{ cm}}{320 \text{ m}} = \frac{2.5 \text{ cm}}{w \text{ m}}$$

actual distance

$$\ell = 320 \cdot 12.5 \qquad\qquad w = 320 \cdot 2.5$$

$$\ell = 4000 \qquad\qquad\qquad w = 800$$

Step 3: Use a formula to find the area.

$$A = \ell w \qquad\qquad \text{Write formula.}$$

$$= 4000(800) \qquad \text{Substitute 4000 for } \ell \text{ and 800 for } w.$$
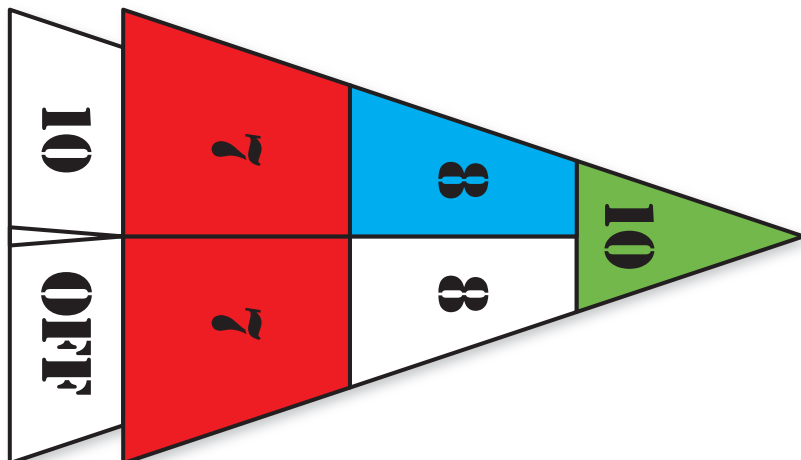
$$= 3{,}200{,}000 \qquad \text{Multiply.}$$

∴ The actual area of Central Park is 3,200,000 square meters.

Practice

The shuffleboard diagram has a scale of 1 cm : 1 ft. Find the actual area of the region.

1. red region

2. blue region

3. green region

EXAMPLE 2 **Recreating a Scale Drawing**

Recreate the scale drawing of a Romanian flag so that it has a scale of 1 in. : 4 ft.

1 in. : 8 ft

Step 1: Compare measurements in the original scale drawing to measurements in the new scale drawing.

Original drawing

1 in.
8 ft

New drawing

1 in.   1 in.
4 ft   4 ft

Measurements in the new scale drawing will be 2 times longer than measurements in the original scale drawing.

Step 2: Use an inch ruler to measure the original scale drawing. Multiply the measurements by 2 and create the new scale drawing.

Original scale drawing	*New scale drawing*
Length: 1.5 in.	Length: $1.5 \cdot 2 = 3$ in.
Width: 1 in.	Width: $1 \cdot 2 = 2$ in.
Blue bar width: 0.5 in.	Blue bar width: $0.5 \cdot 2 = 1$ in.
Yellow bar width: 0.5 in.	Yellow bar width: $0.5 \cdot 2 = 1$ in.
Red bar width: 0.5 in.	Red bar width: $0.5 \cdot 2 = 1$ in.

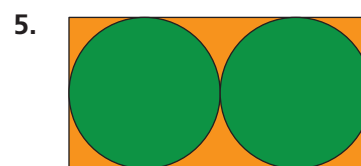3 in.

2 in.

1 in.   1 in.   1 in.
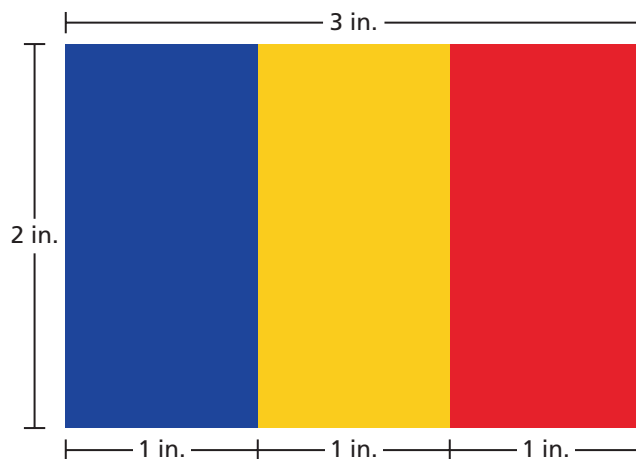
Practice

Recreate the scale drawing so that it has a scale of 1 cm : 4 m.

4.

1 cm : 8 m

5.

1 cm : 2 m