

8-3

Name _____ Date _____

Scale Drawings (pages 324–327)

A **scale drawing** is exactly the same shape as an object, but the drawing may be larger or smaller than the real object. When you know the length in a scale drawing, you can use a proportion to find the actual length, ℓ .

Reading a Scale Drawing

The scale written on the drawing or model gives the ratio that compares the lengths on the drawing to the actual lengths of the object. Use the scale of the drawing for one of the ratios and the known and unknown lengths for the other ratio. Write a proportion and solve it for the unknown length.

EXAMPLES

- A** A model car has a scale of 1:16. A window on the model measures $\frac{1}{32}$ of a meter. What will this same window measure on the real car?

$$\frac{1}{16} = \frac{\frac{1}{32} \text{ meter}}{\ell} \quad \text{Write a proportion.}$$

$$\ell = 16\left(\frac{1}{32} \text{ meter}\right) \quad \text{Find cross products.}$$

$$\ell = \frac{1}{2} \text{ meter} \quad \text{Solve.}$$

The actual window measures $\frac{1}{2}$ meter.

- B** The doorway of an actual house measures 3 ft wide. How wide will the doorway in a model house be if the scale is 1 ft = 2 in.?

$$\frac{1 \text{ ft}}{2 \text{ in.}} = \frac{3 \text{ ft}}{\ell} \quad \text{so } 1 \times \ell = 6 \text{ or } \ell = 6.$$

The model doorway will be 6 inches wide.

Try These Together

- The scale of a map is 1 inch = 25 miles. The distance on the map between two cities is 7 inches. How many miles apart are they?
- A line on a scale drawing of a building measures 15 inches. The same length on the actual building is 5 yards. What is the scale of the drawing in simplest form?

HINT: Write a proportion using $\frac{1}{25}$ as one ratio.

HINT: One ratio is $\frac{15}{5}$ and the other is $\frac{x \text{ inches}}{1 \text{ yard}}$.

PRACTICE

- 3. Transportation** The oldest monorail system in the world is in Wuppertal, Germany. Its track is 8.5 miles long. If you wanted to build a model of the track that has a scale of 1 inch = 0.5 miles, how long would the model track be?



- 4. Standardized Test Practice** Mavis and Reese want to rearrange the furniture in their living room. Before they move the furniture, they make a model. The scale for the model is 1 inch = 2 feet. If their sofa is actually 6 feet long, how long is the model of the sofa?

A 3 inches

B 4 inches

C 3 feet

D 4 feet

Answers: 1. 175 miles 2. 3 inches to 1 yard 3. 17 inches 4. A