NAME _____ DATE _____ PERIOD _____

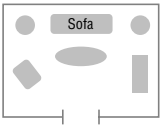
Study Guide and Intervention

7MG1.2

Scale Drawings and Models

Distances on a scale drawing or model are proportional to real-life distances. The **scale** is determined by the ratio of a given length on a drawing or model to its corresponding actual length.

Example 1 INTERIOR DESIGN **A designer has made a scale drawing of a living room for one of her clients. The scale of the drawing is 1 inch = $1\frac{1}{3}$ feet. On the drawing, the sofa is 6 inches long. Find the actual length of the sofa.**



1 in. = $1\frac{1}{3}$ ft

Let x represent the actual length of the sofa. Write and solve a proportion.

Drawing Scale → Actual Length

drawing distance → $\frac{1 \text{ in.}}{1\frac{1}{3} \text{ ft}} = \frac{6 \text{ in.}}{x \text{ ft}}$ ← drawing length

actual distance → ← actual length

$1 \cdot x = 1\frac{1}{3} \cdot 6$ Find the cross products.

$x = 8$ Simplify.

The actual length of the sofa is 8 feet.

To find the scale factor for scale drawings and models, write the ratio given by the scale in simplest form.

Example 2 **Find the scale factor for the drawing in Example 1.**

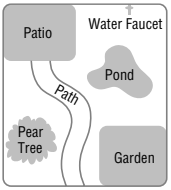
Write the ratio of 1 inch to $1\frac{1}{3}$ feet in simplest form.

$\frac{1 \text{ in.}}{1\frac{1}{3} \text{ ft}} = \frac{1 \cancel{\text{in.}}}{16 \cancel{\text{in.}}}$ **Convert $1\frac{1}{3}$ feet to inches.**

The scale factor is $\frac{1}{16}$ or 1:16. This means that each distance on the drawing is $\frac{1}{16}$ the actual distance.

Exercises

LANDSCAPING **Yutaka has made a scale drawing of his yard. The scale of the drawing is 1 centimeter = 0.5 meter.**



1 cm = 0.5 m

1. The length of the patio is 4.5 centimeters in the drawing. Find the actual length. **2.25 m**
2. The actual distance between the water faucet and the pear tree is 11.2 meters. Find the corresponding distance on the drawing. **22.4 cm**
3. Find the scale factor for the drawing. **$\frac{1}{50}$**