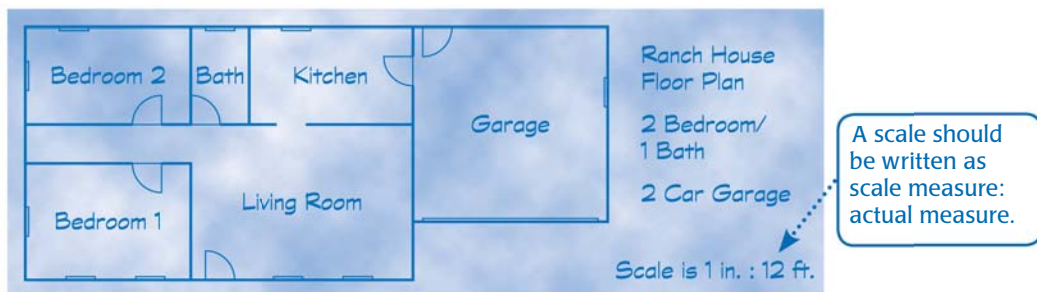


SCALE DRAWINGS AND SCALE MODELS The floor plan below is an example of a *scale drawing*. A **scale drawing** is a two-dimensional drawing of an object in which the dimensions of the drawing are in proportion to the dimensions of the object. A **scale model** is a three-dimensional model of an object in which the dimensions of the model are in proportion to the dimensions of the object.



The **scale** of a scale drawing or scale model relates the drawing's or model's dimensions and the actual dimensions. For example, the scale 1 in. : 12 ft on the floor plan means that 1 inch in the floor plan represents an actual distance of 12 feet.

EXAMPLE 4 Use the scale on a map

MAPS Use a metric ruler and the map of Ohio to estimate the distance between Cleveland and Cincinnati.

Solution

From the map's scale, 1 centimeter represents 85 kilometers. On the map, the distance between Cleveland and Cincinnati is about 4.2 centimeters.

Write and solve a proportion to find the distance d between the cities.

$$\frac{1}{85} = \frac{4.2}{d}$$

← centimeters
← kilometers

$$1 \cdot d = 85 \cdot 4.2 \quad \text{Cross products property}$$

$$d = 357 \quad \text{Simplify.}$$

► The actual distance between Cleveland and Cincinnati is about 357 kilometers.



GUIDED PRACTICE for Example 4

5. Use a metric ruler and the map in Example 4 to estimate the distance (in kilometers) between Columbus and Cleveland.
6. **MODEL SHIPS** The ship model kits sold at a hobby store have a scale of 1 ft : 600 ft. A completed model of the *Queen Elizabeth II* is 1.6 feet long. Estimate the actual length of the *Queen Elizabeth II*.