



SKILL 9: PROBLEM SOLVING: Scale Drawings

A **scale drawing** is used to illustrate something that is too large or too small to show the actual size. The scale is the ratio of a length in the drawing to the actual length it represents. If the units are the same, they may be omitted from the scale. For example, 1 cm : 4 cm may be written as 1 : 4 or $\frac{1}{4}$.

Example

Find the actual height of the motorcycle.

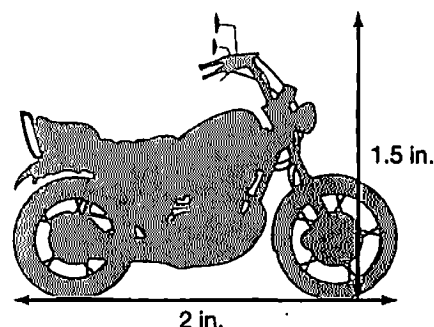
Read What information do you know? The scale of the drawing is 1 in. = 3 ft. The height of the motorcycle in the drawing is 1.5 in.

Plan What proportion can you write?

$$\begin{array}{l} \text{scale} \rightarrow \frac{1}{3} = \frac{1.5}{x} \\ \text{actual} \rightarrow \end{array}$$

Solve Find the cross product. $x = 4.5$

The actual height of the motorcycle is 4.5 feet.



Look Back Check to see that your answer makes sense. If 1 inch on the drawing represents 3 feet, then 1.5 inches would represent 3 feet plus half of 3 feet (1.5 feet), or a total of 4.5 feet. The answer makes sense.

Guided Practice

1. Find the actual length of the motorcycle represented in the drawing.

a. How many inches long is the motorcycle in the drawing? _____

b. Write a proportion you can use to find the length in feet. _____

c. What is the actual length of the motorcycle? _____

2. A house is 60 feet long. Find the length of the house in a scale drawing for each scale given.

a. 1 in. = 15 ft _____

b. 1 in. = 40 ft _____

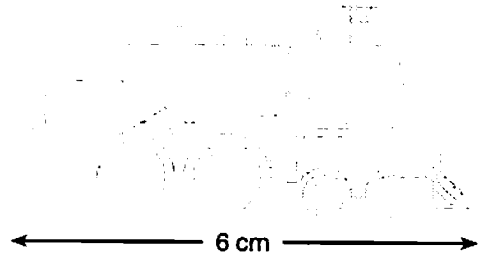
c. 1 in. = 16 ft _____

d. 1 in. = 300 ft _____

SKILL 9: Practice

Find the actual length of the locomotive for each scale.

1. 1 cm = 1 m _____
2. 1 cm = 0.7 m _____
3. 2 cm = 1 m _____



Solve each problem.

4. Sammy created a model of a frontier fort. He used a scale of 1 in. to 2 ft. The walls of his model were 9 inches tall. How tall were the walls of the actual frontier fort? _____
5. An artist makes a scale model of a sculpture of a child. She uses a scale of 1 in. = 6 in. The actual sculpture will be 48 inches tall. What is the height of the scale model? _____
6. In Barry's classroom, the scale on the globe is 1 cm : 250 km. Barry used a tape measure. He found that it was about 40 centimeters from Dallas to Singapore. Find the estimate of the air distance between Dallas and Singapore. _____
7. On a scale drawing, the width of a room is 6 in. and its length is 9 in. The actual length of the room is 18 ft. What is the actual width of the room? _____



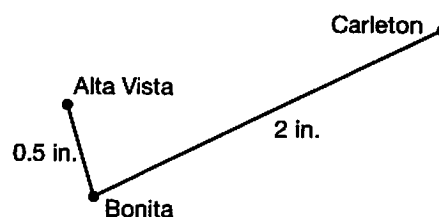
8. Find the length of the hex nut in a drawing that was made using a scale of 8 : 3. The actual length of the hex nut is 1.5 cm.

Skill 9

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|------------------|-----------------|
| A 0.56 cm | C 4.5 cm |
| B 4 cm | D 12 cm |

9. The actual distance between Alta Vista and Bonita is 16 miles. Use the map to find the actual distance between Bonita and Carleton.

Skill 7



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|---------------|----------------|
| F 4 mi | H 32 mi |
| G 8 mi | J 64 mi |