

EXERCISES

For more practice, see *Extra Practice*.

A Practice by Example

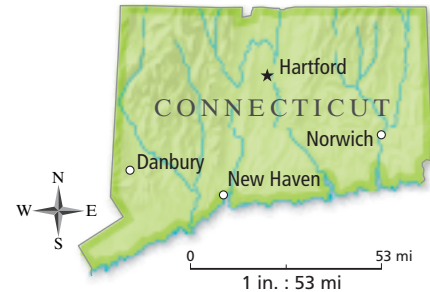
Example 1
(page 275)

Algebra A scale drawing has a scale of 3 in. : 10 ft. Find the actual length for each drawing length.

- | | | |
|-----------|-------------|------------|
| 1. 21 in. | 2. 15 in. | 3. 6 in. |
| 4. 45 in. | 5. 13.5 in. | 6. 1.5 in. |

Example 2
(page 276)

Geography Find the actual distance between each pair of cities. Use a ruler to measure. Round to the nearest mile.



- Hartford and Danbury
- Norwich and Hartford
- New Haven and Norwich
- New Haven and Danbury

Example 3
(page 276)

Architecture The height of a building in an architectural drawing is 10 in. Its actual height is 150 ft. What is the scale of the drawing?

- The width of the scale drawing of a sofa is 15 cm. The actual width of the sofa is 150 cm. What is the scale of the drawing?

B Apply Your Skills

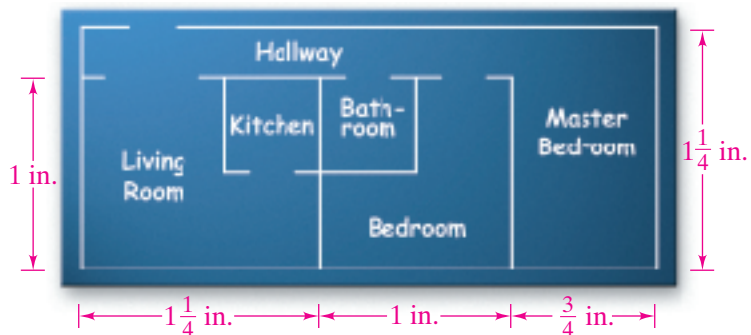
The scale of a map is $\frac{1 \text{ cm}}{3.75 \text{ km}}$. Find the actual distance for each map distance.

- | | | |
|-----------|-----------|-----------|
| 13. 8 cm | 14. 20 cm | 15. 28 cm |
| 16. 16 mm | 17. 24 mm | 18. 50 mm |

Writing in Math You are making a scale drawing with a scale of 2 in. = 17 ft. Explain how you decide how long you should draw an object that has an actual length of 51 ft.

Reasoning The scale of a drawing is 5 cm : 1 mm. Is the scale drawing larger or smaller than the actual figure? Explain.

Architecture The blueprint is a scale drawing of an apartment. The dimensions of the master bedroom are 12 ft \times 20 ft.



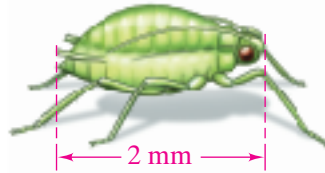
- Complete: The scale is ξ : 4 ft.
- Sketch a copy of the floor plan. Write the actual dimensions in place of the scale dimensions.

The scale of a map is 1 cm : 3.6 km. Find the actual distance for each map distance. Round your answer to the nearest tenth, if necessary.

22. 12 cm 23. 2 cm 24. 18 cm 25. 52 mm 26. 28 mm

Use a centimeter ruler to measure the length of the segment shown in each figure below. Find the scale of each drawing.

27. Peach Aphid



28. Killer Whale



29. **Dinosaurs** Special-effects artists often use scale models. The actual height of a velociraptor is estimated to have been approximately 2 ft. An artist draws the dinosaur with a height of 4 in. on paper.
- What would be an appropriate scale for a model of the velociraptor?
 - The same scale is used for a model of a tyrannosaurus, whose actual height was 16 ft. What is the height of the model?

C Challenge

The scale of a drawing is $\frac{1}{4}$ in. : 6 ft. Find the length on the drawing for each actual length.

30. 18 ft 31. 66 ft 32. 204 ft 33. 84 ft
34. A building is drawn with a scale of 1 in. : 3 ft. The height of the drawing is 1 ft 2 in. After a design change, the scale is modified to be 1 in. : 4 ft. What is the new height of the drawing?
35. **Stretch Your Thinking** Use the pattern in the equations below to find the sum of the first 100 odd numbers.



Test Prep

Reading Comprehension

Read the passage and answer the questions below.

Computer-Aided Spacesuit Design

Clothes designed for space must allow astronauts to move and breathe in an airless environment. An astronaut's suit must protect the astronaut from the sun's harsh rays. Computers help designers

improve spacesuits for future space travelers. For a computer image in which each length is $\frac{1}{8}$ of the actual length, the designer knows that all dimensions will have the same ratio.

36. Suppose the computer image of the pants of a spacesuit is 5 in. long. How long are the actual pants?

Multiple Choice



Take It to the NET

Online lesson quiz at
www.PHSchool.com

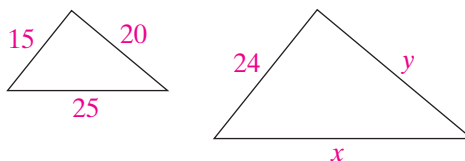
Web Code: aba-0507

37. An astronaut's arm is 32 in. long. Find the arm length in the computer image for a spacesuit.
38. The scale of a blueprint is 1 in. : 6.5 ft. What are the actual dimensions of a room if the blueprint's dimensions are 3 in. \times 4 in.?
A. 19.5 ft \times 26 ft B. 39 ft \times 52 ft
C. 26 ft \times 39 ft D. 6 ft \times 8 ft
39. The scale of a map is 1 cm : 5 km. The distance between two cities is 112 km. How far apart are they on a map?
A. 11.2 cm B. 22.4 cm C. 56 cm D. 560 cm

Mixed Review

Lesson 5-6

40. Find the values of x and y in the similar triangles below.



Lesson 2-6

Algebra

Solve each equation.

41. $3x + 2 = 17$

42. $\frac{x}{5} + 5 = 21$

43. $2a - 4 = 8$