4.1 4.2 4.3 4.4

4.1 Ratios Within Similar Parallelograms

You know that a scale factor relates each length in a figure to the corresponding length in its image. You can also write a ratio to compare any two lengths in a single figure.
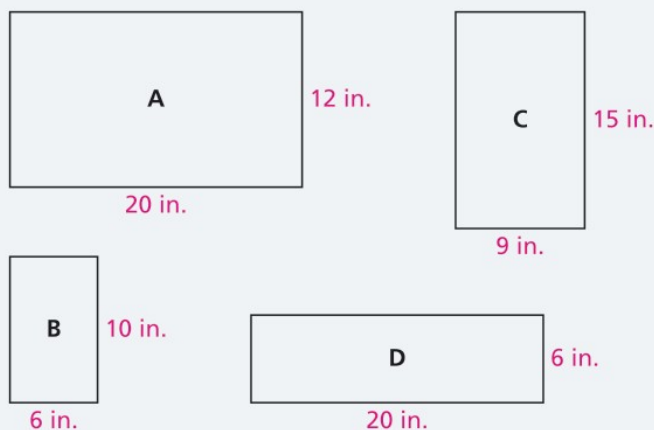
- What information does the ratio of side lengths within a figure give?

For the diagrams in this Investigation, all measurements are drawn to scale unless otherwise noted.
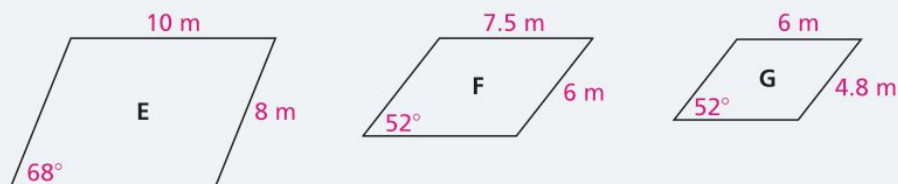
Problem 4.1

A **1.** Which rectangles are similar? Explain your reasoning.

2. a. For each rectangle, find the ratio of the length of a short side to the length of a long side.

  b. What do you notice about the ratios in part (a) for similar rectangles? About the ratios for non-similar rectangles?

3. Choose two similar rectangles. Find the scale factor from the smaller rectangle to the larger rectangle. What does the scale factor tell you?

4. Compare the information given by the scale factor from part (3) to the information given by the ratios of side lengths from part (2).

4.1   4.2   4.3   4.4

Problem **4.1**   *continued*

B   **1.** Which of the parallelograms below are similar? Explain.

10 m

E

8 m

68°

7.5 m

F

6 m

52°

6 m

G

4.8 m

52°

2. For each parallelogram, find the ratio of the length of a long side to the length of a short side. How do the ratios compare?

C   **1.** Suppose you find the ratio of the lengths of **adjacent sides,** two sides that meet at a vertex, in a rectangle. This ratio is equivalent to the ratio of the corresponding side lengths in another rectangle. Are the figures similar? Explain your reasoning.

2. Suppose you find the ratio of the lengths of adjacent sides in a parallelogram. This ratio is equivalent to the ratio of the adjacent sides in another parallelogram. Are the figures similar? Explain.

A C E Homework starts on page 90.

Did You Know?

Hancock Place is an office building in Boston, Massachusetts. The tower of the building has a unique shape. While most office buildings are rectangular, the base of the tower of Hancock Place is a parallelogram. This makes the tower look two-dimensional from some vantage points.

St. James Ave.

Trinity Pl.

tower base

Clarendon St.

Stuart St.

Hancock Place blueprint

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