Name _____ Date _____

LESSON 9.6

# Study Guide

*For use with pages 619–624*

**GOAL** **Identify line and rotational symmetries of a figure.**

## Vocabulary

**Line symmetry** occurs in a figure in a plane if the figure can be mapped onto itself by a reflection in a line.

The **line of symmetry** is the line of reflection that maps a figure onto itself.

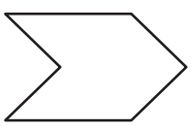
**Rotational symmetry** occurs in a figure in a plane if the figure can be mapped onto itself by a rotation of 180° or less about the center of the figure.

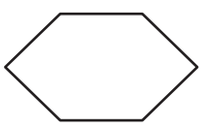
The **center of symmetry** is the center of a figure with rotational symmetry.

**EXAMPLE 1** ## Identify lines of symmetry

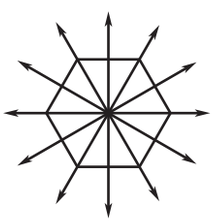
**How many lines of symmetry does the hexagon have?**

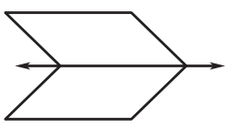
**a.** 

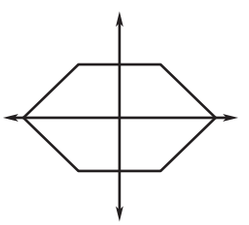
**b.** 

**c.** 

**Solution**

**a.** Six lines of symmetry 

**b.** One line of symmetry 

**c.** Two lines of symmetry 

## Exercises for Example 1

**How many lines of symmetry does the object appear to have?**

**1.** 

**2.** 

**3.** 

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# Study Guide *continued*

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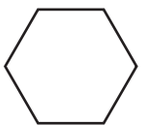
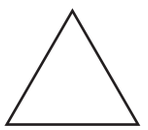
**EXAMPLE 2** ## Identify rotational symmetry

**Does the figure have rotational symmetry? If so, *describe* any rotations that map the figure onto itself.**

**a.** Regular hexagon **b.** Equilateral Triangle **c.** Trapezoid





**Solution**

**a.** The regular hexagon has rotational symmetry. The center is the intersection of the diagonals. Rotations of 60°, 120°, or 180° about the center all map the hexagon onto itself.

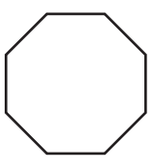
**b.** The equilateral triangle has rotational symmetry. The center is the intersection of the diagonals. Rotations of 120° about the center map the equilateral triangle onto itself.

**c.** The trapezoid does not have rotational symmetry because no rotation of 180° or less maps the trapezoid onto itself.

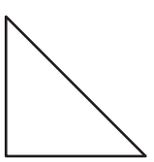
## Exercises for Example 2

**Does the figure have rotational symmetry? If so, *describe* any rotations that map the figure onto itself.**

**4.** Regular octagon



**5.** Right triangle



**6.** Parallelogram