EXAMPLE 4 **Identifying Rotational Symmetry**

Tell whether each figure has rotational symmetry.

A 

Each time the figure is rotated 72° about its center, the image looks like the original figure.

The figure has rotational symmetry.

B 

For any rotation less than 360°, the image never looks like the original figure.

The figure does not have rotational symmetry.

Think and Discuss

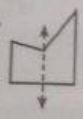
1. **Explain** how you can use your knowledge of reflection to create a figure that has a line of symmetry.
2. **Determine** whether all hexagons have six lines of symmetry.
3. **Explain** why the angle of rotation must be less than 360° when determining whether a figure has rotational symmetry.

8-11 Exercises

Learn It Online
Homework Help Online go.hrw.com,
keyword MR10 8-11
Exercises 1–22, 23, 29

GUIDED PRACTICE

See Example 1 Determine whether each dashed line appears to be a line of symmetry.

1. 
2. 
3. 

See Example 2 Find all of the lines of symmetry in each regular polygon.

4. 
5. 
6. 

See Example 3 Find all of the lines of symmetry in each design.

7. 
8. 

See Example 4 Tell whether each figure has rotational symmetry.

9. 

10. 

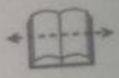
11. 

INDEPENDENT PRACTICE

See Example 1 Determine whether each dashed line appears to be a line of symmetry.

12. 

13. 

14. 

See Example 2 Find all of the lines of symmetry in each regular polygon.

15. 

16. 

17. 

See Example 3 Find all of the lines of symmetry in each object.

18. 

19. 

See Example 4 Tell whether each figure has rotational symmetry.

20. 

21. 

22. 

PRACTICE AND PROBLEM SOLVING

Extra Practice
See page EP17.

23. How many lines of symmetry does an equilateral triangle have? an isosceles triangle? a scalene triangle? Draw diagrams to support your answer.

24. Round objects can also have rotational symmetry. Which of the circular items below does not have rotational symmetry? Explain.

25. Draw a figure that has both line symmetry and rotational symmetry.

Music LINK

Many cultures play music on unique instruments. You might hear the sun drum or turtle drum in Native American music. In music made by people from the Appalachian Mountains, you might hear the strains of a dulcimer.

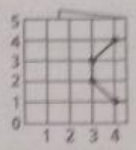
26. Determine whether the dashed line in each drawing is a line of symmetry.

a.

b.

27. **Write About It** The turtle drum is a regular octagon. How can you find all of the lines of symmetry in a regular polygon?

28. **Challenge** A student drew a drum in the shape of an octagon on a grid. What are the coordinates of the vertices of the unfolded half of the drum drawing if the fold shown is a line of symmetry?

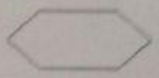


Test Prep and Spiral Review

29. **Multiple Choice** How many lines of symmetry are in a rectangle that is NOT a square?

Ⓐ 1 Ⓑ 2 Ⓒ 4 Ⓓ 6

30. **Short Response** Draw the lines of symmetry in the figure.



Compare. Write <, >, or =. (Previous Course)

31. 4,897,204 ▢ 4,895,190

32. 133,099,588 ▢ 133,099,600

Find each sum or difference. (Lesson 3-3)

33. 30 − 5.32

34. 80.37 + 15.125

35. 100 − 25.65

36. 200.6 + 62.78