Determine whether the figure has rotational symmetry. If so, describe the rotations that map the figure onto itself.





3.



4.



Does the figure have the rotational symmetry shown? If not, does the figure have any rotational symmetry?

5. 120°



6. 180°



7. 45°



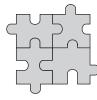
8. 36°



9. 180°



10. 90°



In Exercises 11-16, draw a figure for the description. If not possible, write not possible.

- **11.** A triangle with exactly two lines of symmetry
- **12.** A quadrilateral with exactly two lines of symmetry

- **13.** A pentagon with exactly two lines of symmetry
- **14.** A hexagon with exactly two lines of symmetry

- **15.** An octagon with exactly two lines of symmetry
- **16.** A quadrilateral with exactly four lines of symmetry

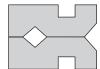
17. Paper Folding A piece of paper is folded in half and some cuts are made, as shown. Which figure represents the piece of paper unfolded?



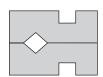
A.



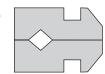
B.



C.



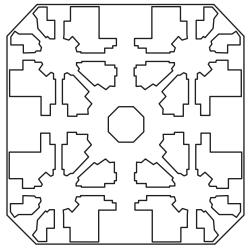
D.



In Exercises 18 and 19, use the following information.

Taj Mahal The Taj Mahal, located in India, was built between 1631 and 1653 by the emperor Shah Jahan as a monument to his wife. The floor map of the Taj Mahal is shown.

- **18.** How many lines of symmetry does the floor map have?
- **19.** Does the floor map have rotational symmetry? If so, describe a rotation that maps the pattern onto itself.



In Exercises 20 and 21, use the following information.

Drains Refer to the diagram below of a drain in a sink.

- **20.** Does the drain have rotational symmetry? If so, describe the rotations that map the image onto itself.
- **21.** Would your answer to Exercise 20 change if you disregard the shading of the figures? *Explain* your reasoning.

