

Mirror Shape Mission

Draw symmetry lines that make matching halves.

GRADE 6 • 6.MG.4.b

6.MG.4.b "Draw lines of symmetry to divide regular polygons into two congruent parts."

NAME _____

DATE _____

SYMMETRY IN REGULAR POLYGONS

A line of symmetry splits a shape into two congruent mirror-image parts. In a regular polygon, the number of lines of symmetry equals the number of sides, and every line passes through the center.

WORKED EXAMPLE

A regular nonagon is shown. Draw every line of symmetry.

1. A nonagon has 9 equal sides.
2. A regular nonagon has 9 lines of symmetry.
3. Draw each line through the center, from a vertex to the midpoint of the opposite side.

Answer: 9 lines of symmetry

PRACTICE 6 problems

- 1** A regular triangle is shown. Draw every line of symmetry.

ANSWER _____

- 2** A regular square is shown. Draw every line of symmetry.

ANSWER _____

- 3** A regular pentagon is shown. Draw every line of symmetry.

ANSWER _____

- 4** A regular hexagon is shown. Draw every line of symmetry.

ANSWER _____

- 5** A regular heptagon is shown. Draw every line of symmetry.

ANSWER _____

- 6** A regular octagon is shown. Draw every line of symmetry.

ANSWER _____

APPLY IT Show your work

- 1** The student council is designing a regular octagon patch for the robotics team. On the patch outline, draw every line of symmetry so the design can be folded into matching halves. How many lines do you draw?

WORK SPACE

ANSWER _____

- 2** A gamer is making a regular heptagon sticker for a controller case. Draw one line of symmetry that divides the sticker into two congruent parts. How many different symmetry lines could you choose?

WORK SPACE

ANSWER _____

CHALLENGE One step up

CHALLENGE

A regular decagon is shown. Draw every line of symmetry. Then explain how many lines go through two opposite vertices and how many go through the midpoints of two opposite sides.

PART 1 • PRACTICE

#	PROBLEM	ANSWER
1	A regular triangle is shown. Draw every line of symmetry.	3 lines of symmetry
2	A regular square is shown. Draw every line of symmetry.	4 lines of symmetry
3	A regular pentagon is shown. Draw every line of symmetry.	5 lines of symmetry
4	A regular hexagon is shown. Draw every line of symmetry.	6 lines of symmetry
5	A regular heptagon is shown. Draw every line of symmetry.	7 lines of symmetry
6	A regular octagon is shown. Draw every line of symmetry.	8 lines of symmetry

PART 2 • APPLY IT

- 8 lines of symmetry** A regular octagon has 8 sides. It has 8 symmetry lines, each passing through its center.
- 7 possible lines of symmetry** For a regular heptagon, a symmetry line goes through a vertex, the center, and the midpoint of the opposite side. There is one possible line for each of the 7 vertices.

CHALLENGE

10 lines of symmetry: 5 lines pass through opposite vertices, and 5 lines pass through midpoints of opposite sides.

Accept correctly drawn lines that pass through the center and create two congruent mirror-image halves. For the heptagon sticker, accept any one valid vertex-to-opposite-side-midpoint symmetry line.