

SHAPES AND MORE SHAPES

Performance Standard 9B.D

Identify the lines of symmetry in regular polygons and predict the number of lines of symmetry in an octagon accordingly:

- *Mathematical knowledge:* Determine congruence and similarity of 3 polygons, draw lines of symmetry, and predict the number of lines of symmetry in an octagon.
- *Strategic knowledge:* Use appropriate strategies to draw and identify the number of lines of symmetry and make predictions about the number of lines of symmetry in an octagon.
- *Explanation:* Explain completely and clearly what was done and why it was done.

Procedures

1. ***In order to identify, describe, classify, and compare relationships using points, lines, planes, and solids (9B)***, students should experience sufficient learning opportunities to develop the following:
 - Determine congruence and similarity of given shapes.
2. Provide each student with a copy of the “Shapes and More Shapes” recording sheet and the rubric. Have students review and discuss the task to be completed and how the rubric will be used to evaluate it. Be sure students understand that a line of symmetry divides a figure into two congruent parts.
3. Ask students to complete the following parts of the task and record their responses on the recording sheet:
 - Part A: Construct all lines of symmetry for each 3 polygons and identify the number of lines in each polygon.
 - Part B: Predict how many lines of symmetry are in an octagon and explain how the prediction was made.
 - Part C: Draw all the lines of symmetry in an octagon based on the lines of symmetry already drawn.
4. Evaluate each student’s work using the rubric as follows and use the guide on the rubric to determine the performance level.
 - 4 = All lines of symmetry were constructed correctly and an accurate prediction for the octagon was made; all strategies used were appropriate; explanations were complete and clear.
 - 3 = Lines of symmetry or prediction of lines of symmetry in the octagon included minor errors, but not in both; strategies were mostly appropriate; explanations were mostly complete and clear.
 - 2 = Lines of symmetry and prediction of lines of symmetry in the octagon included minor errors; some strategies were appropriate; explanations were not adequate.
 - 1 = Lines of symmetry and prediction of lines of symmetry in the octagon included major errors; strategies were mostly inappropriate or irrelevant; explanations were inappropriate to the task.
 - 0 = Task was not attempted.

Examples of Student Work follow

Resources

- Copies of the “Shapes and More Shapes” recording sheet
- Mathematics Rubric

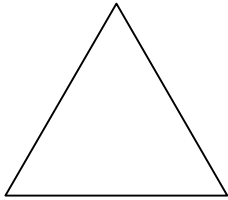
Time Requirements

- 15 - 20 minutes

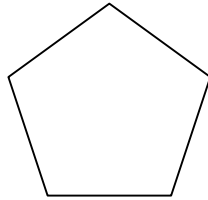
NAME _____ DATE _____

SHAPES AND MORE SHAPES

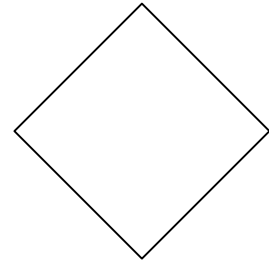
Part A: Draw all the lines of symmetry that you find in each of the regular polygons below. Write how many lines you found in each shape.



_____ lines

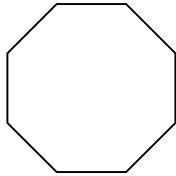


_____ lines



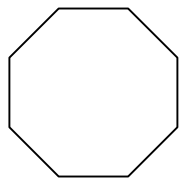
_____ lines

Part B: Now, predict how many lines of symmetry this regular polygon has. Why did you make this prediction?



Prediction: _____

Part C: Finally, draw all the lines of symmetry you think are in this shape.

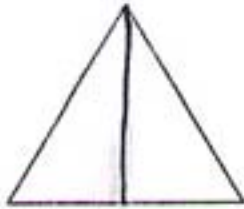


NAME _____

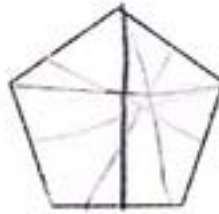
DATE

3-23-01

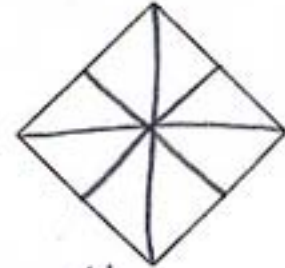
Part A: Draw all the lines of symmetry that you find in each of the regular polygons below. Write how many lines you found in each shape.



1 lines

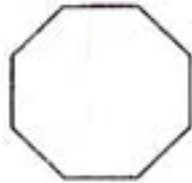


1 lines



4 lines

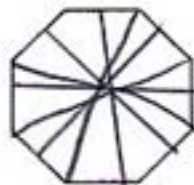
Part B: Now, predict how many lines of symmetry this regular polygon has. Why did you make this prediction?



Prediction:

My prediction is 8 lines
of symmetry. I think that
because it kind of looks like
it if you imagine it in
your head. I didn't cheat. There
is just 8 lines.

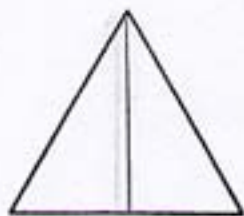
Part C: Finally, draw all the lines of symmetry you think are in this shape.



NAME _____

DATE March 28, 2001

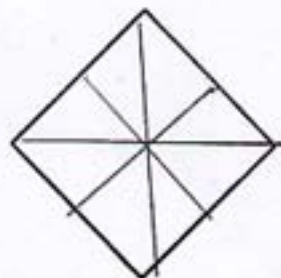
Part A: Draw all the lines of symmetry that you find in each of the regular polygons below. Write how many lines you found in each shape.



1 lines



1 lines



4 lines

Part B: Now, predict how many lines of symmetry this regular polygon has. Why did you make this prediction?



Prediction: I predict that there are 5 lines of symmetry in this polygon. I predict 5 because the 1st fold is up + down, the 2nd fold is from side to side, the third fold is the other side to side, the 4th fold + the 5th fold is one diagonal side to the other and the other diagonal side to the other. This is my prediction.

Part C: Finally, draw all the lines of symmetry you think are in this shape.



I found four lines of symmetry.