Lines of Symmetry

Teacher
Lines of Symmetry

Geometry: Students will understand geometric concepts and applications.

G.3 Apply transformations and use symmetry to analyze mathematical situations.

5.G.3.1 Identify line of symmetry in simple geometric figures.

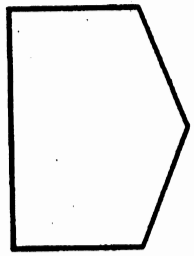
Lines of symmetry occur when a shape can be folded into halves that match each other *exactly*. The piece can be folded vertically, horizontally, or diagonally. Each cut will be one line of symmetry.

Caution: A rectangle cannot be folded diagonally and still be symmetrical. This is a common mistake students make.

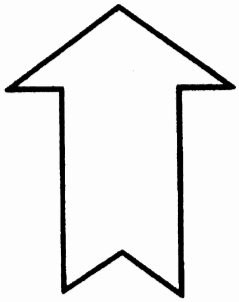
Student Worksheet

1. **Which figure below has both line symmetry and rotational symmetry?**

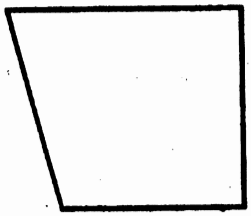
A



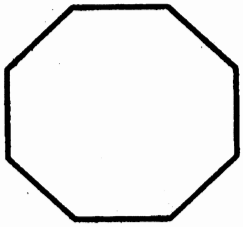
B



C



D



2. **Which of the following can never have rotational symmetry?**

A **scalene triangle**

B **pentagon**

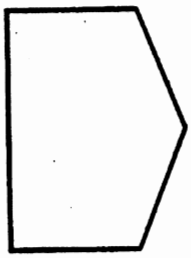
C **rectangle**

D **regular octagon**

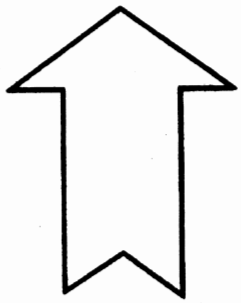
Answer Sheet

1. **Which figure below has both line symmetry and rotational symmetry?**

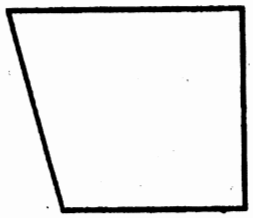
A



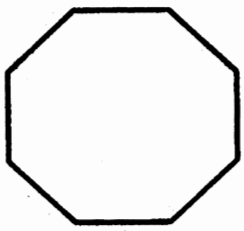
B



C



D



2. **Which of the following can never have rotational symmetry?**

A **scalene triangle**

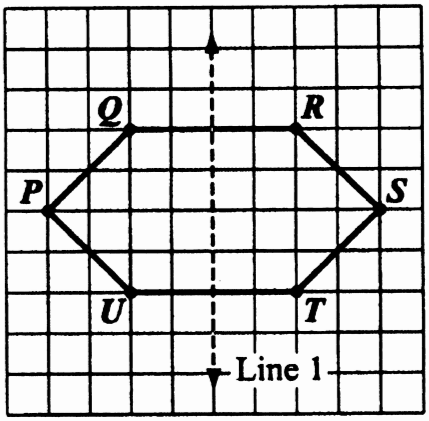
B **pentagon**

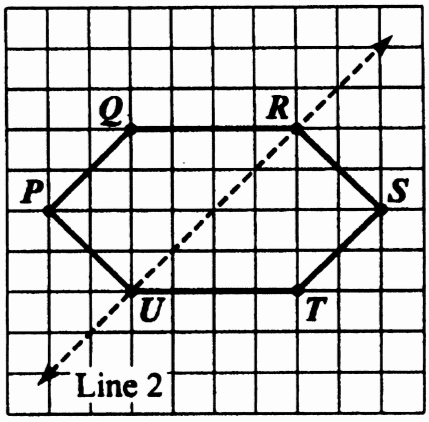
C **rectangle**

D **regular octagon**

Student Worksheet

Hexagon *PQRSTU* is shown in the diagrams below. In the first diagram, Line 1 passes through the midpoints of sides $\overline{QR}$ and $\overline{UT}$. In the second diagram, Line 2 passes through vertices *R* and *U*.





a. Is Line 1 a line of symmetry? Explain your reasoning.

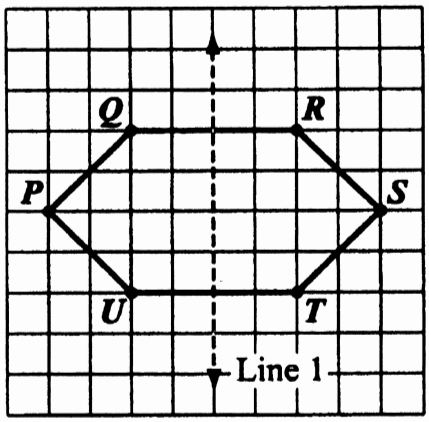
b. Is Line 2 a line of symmetry? Explain your reasoning.

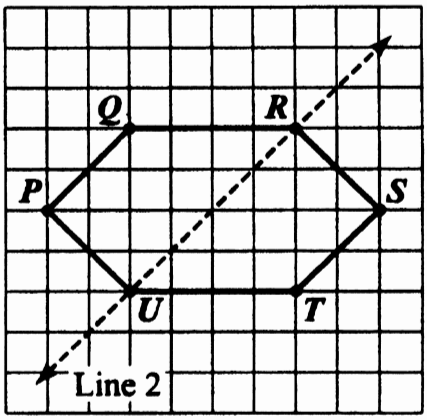
c. Is there a line, other than Line 1 or Line 2, that is a line of symmetry for hexagon *PQRSTU*?

- If there is another line of symmetry, describe where the line would be on the hexagon.
- If there is not another line of symmetry, explain why not.

Answer Sheet

Hexagon *PQRSTU* is shown in the diagrams below. In the first diagram, Line 1 passes through the midpoints of sides $\overline{QR}$ and $\overline{UT}$. In the second diagram, Line 2 passes through vertices *R* and *U*.





a. Is Line 1 a line of symmetry? Explain your reasoning. Yes, both sides are identical.

b. Is Line 2 a line of symmetry? Explain your reasoning. No, it isn't identical. Point S and Point P will not be the same.

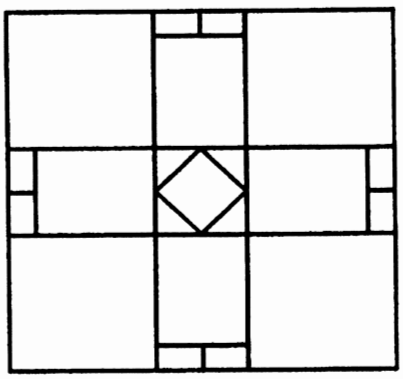
c. Is there a line, other than Line 1 or Line 2, that is a line of symmetry for hexagon *PQRSTU*? Yes, Line $\overline{PS}$.

- If there is another line of symmetry, describe where the line would be on the hexagon. Line $\overline{PS}$.
- If there is not another line of symmetry, explain why not.

Student Worksheet

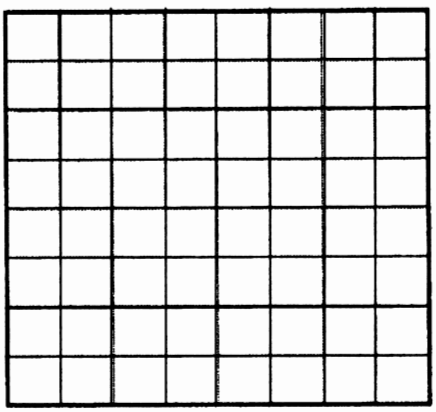
Part A

The design of a stained glass window is shown below. The design has four lines of symmetry. Draw the four lines of symmetry on the design.



Part B

On the grid below, draw a figure that has exactly one line of symmetry. Be sure to draw the line of symmetry for your figure.



Part C

On the lines below, explain why there is only one line of symmetry in the figure you drew in Part B.

_____

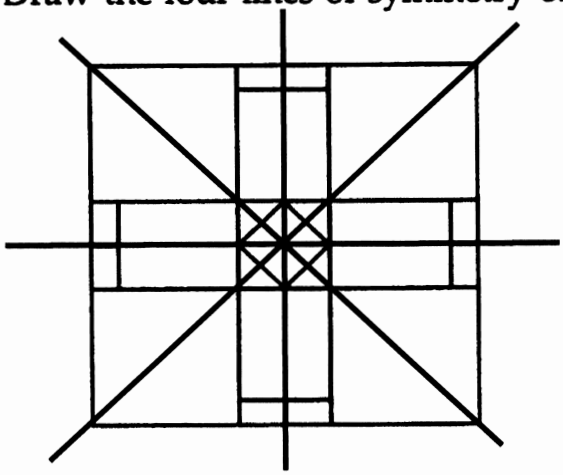
_____

_____

Answer Sheet

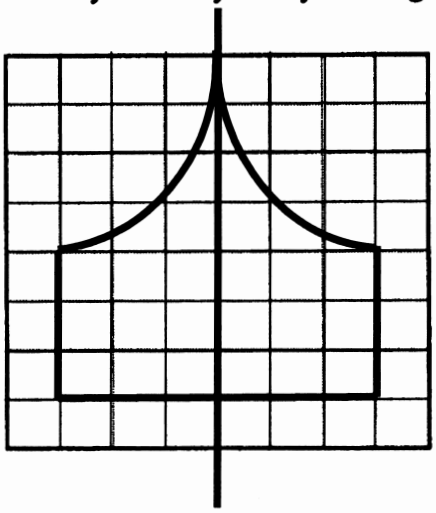
Part A

The design of a stained glass window is shown below. The design has four lines of symmetry. Draw the four lines of symmetry on the design.



Part B

On the grid below, draw a figure that has exactly one line of symmetry. Be sure to draw the line of symmetry for your figure.



Part C

On the lines below, explain why there is only one line of symmetry in the figure you drew in Part B.

If you fold it any other way, the two pieces will not be identical.