Line of Symmetry

Apply the skill to decisions and designs

Name _____ **Date** _____ **Score** _____ / 6

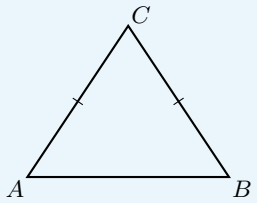
QUICK REVIEW

A line of symmetry is a fold that makes both halves match exactly. Corresponding points lie the same distance from the fold. A non-square rectangle has 2 symmetry lines; a square has 4. Equal area on each side alone is not enough: the outlines must match.

Worked example

Find all lines of symmetry of this figure.

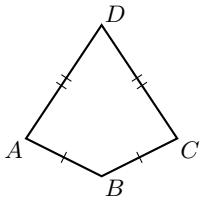
1. The top vertex lies above the midpoint of the base.
2. A vertical fold pairs the two equal slanted sides.
3. Only this center fold matches the figure, giving 1 symmetry line.
Answer: 1 line(s) of symmetry.



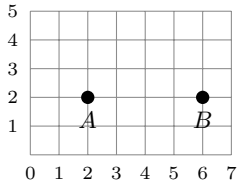
Practice Problems

Show your thinking.

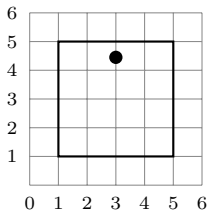
1. A badge needs its left and right sides to match. Find the symmetry line count.



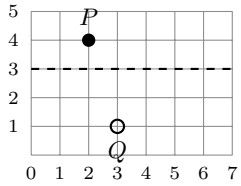
2. Points A and B must land on each other when the grid is folded. Find and draw the vertical fold.



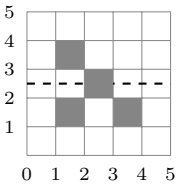
3. A square sign has a single dot centered just under the top edge. Treat the dot as part of the design. Which of the four square folds still works?



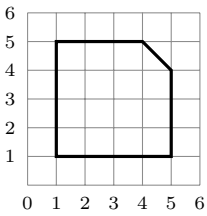
4. The dashed fold is horizontal. Q should be the mirror point of P, but it is in the wrong column and row. Mark the correct point.



5. Shade exactly one more grid square so the pattern matches across the dashed fold. Do not erase any gray squares.



6. A square card had its top-right corner cut off, equally far along both edges. Draw the fold that still makes both sides match.



Answer Key

1. 1 line(s) of symmetry.
2. The vertical fold is at column 4.
3. Only the vertical center fold.
4. Column 2, row 2.
5. Shade the top-right square above the unmatched lower-right square.
6. Only the diagonal from the bottom-left corner to the middle of the cut.

Step-by-Step Solutions

Follow each calculation, then check your own work.

Problem 1

1. The top and bottom vertices lie on the vertical center line.

2. A vertical fold pairs the two left edges with their matching right edges.

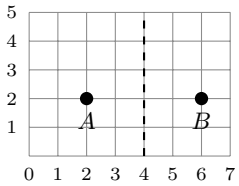
3. A horizontal fold swaps unequal top and bottom parts, so there is 1 symmetry line.

Problem 2

1. A and B are on row 2, at columns 2 and 6.

2. They are $6 - 2 = 4$ columns apart; half that distance is $4 \div 2 = 2$.

3. Column $2 + 2 = 4$ is halfway between them. Draw a vertical line there.

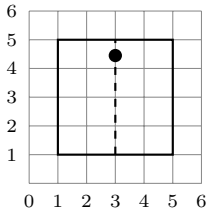


Problem 3

1. The dot lies on the vertical center line, so that fold keeps it in place.

2. The horizontal fold would move it near the bottom edge. The diagonals move it near a left or right edge.

3. There is no dot in any of those new places. Only the vertical fold matches both the outline and the dot.

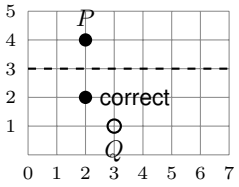


Problem 4

1. Point P is in column 2, one row above the fold on row 3.

2. Across a horizontal fold, keep the column. Go one row below the fold: $3 - 1 = 2$.

3. Move from Q at $(3, 1)$ one square left and one up to $(2, 2)$.

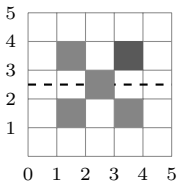


Problem 5

1. The middle gray square crosses the fold and already matches itself.

2. The top-left and bottom-left gray squares match across the fold.

3. The lower-right gray square has no partner. Shade its matching top-right square.

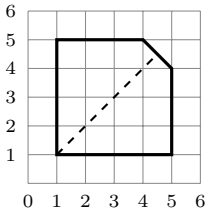


Problem 6

1. The two ends of the cut are each one square away from the former top-right corner.

2. The diagonal rising from bottom left pairs these cut ends and the uncut sides. It meets the cut at its midpoint.

3. The other diagonal and the two center folds send the cut to uncut corners, so they do not match.



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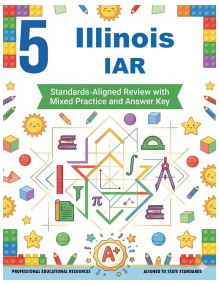

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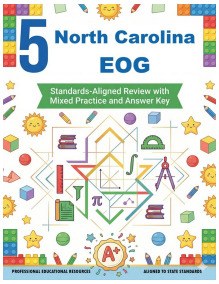

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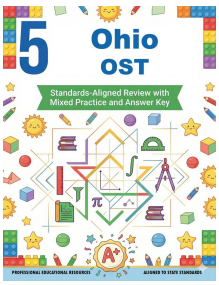

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