

ANSWER MAZE



SYMMETRY: CARRYING A FIGURE ONTO ITSELF

Symmetry: Lines, Turns and the Full Turn

One page · 10–15 minutes · nothing to prepare

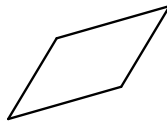
FREE

4

How many lines of symmetry does this parallelogram have?

2 → go to 3
0 → go to 7

Look at one corner. Where does it land when the shape is flipped over a diagonal?

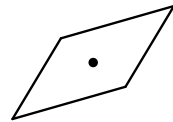


7

What is the smallest turn about the dot that carries this parallelogram onto itself?

180° → go to 2
Only 360° → go to 6

Look at two corners across the dot from each other.

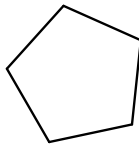


2

How many lines of symmetry does this regular pentagon have?

1 → go to 3
5 → go to 5

Look at each corner in turn, and at the side across from it.

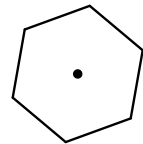


5

How many turns about the dot carry this regular hexagon onto itself? Count the full turn too.

6 → go to 8
5 → go to 6

Look at the whole list of turns, from the smallest to the largest.



1. **Hand out page 3.** Tracing paper helps, but it is not needed.
2. **Say this once:** *“A line of symmetry is not just a line that cuts the shape into two matching pieces. The shape must land exactly on itself. And the full turn always counts.”*
3. **Start at box 4.** Six boxes and you are out. **Write every box number in the row at the foot as you go.**

Student sheet	page 3, one per student.
Answers	page 4.

The route is 4 → 7 → 2 → 5 → 8 → 1 → out. Boxes 3 and 6 are not on it. **They look like every other box:** a shape, a question, two answers, two destinations and a hint. Both of their answers lead back onto the route.

Every wrong answer is a common mistake, and the mistakes are of two kinds. Three boxes send a wrong answer to box 3, about lines of symmetry. A student there took the diagonals of the parallelogram or of the rectangle for lines of symmetry because they cut matching pieces, or found one line of the regular pentagon and stopped looking. Three boxes send a wrong answer to box 6, about turns. A student there thought the parallelogram has no turn because it has no line, left the full turn out of a count, or took a corner for the center of the turn.

What the row at the foot tells you in one glance. A clean run is **six numbers**. A longer row shows where it went wrong. The number just before 3 or 6 is the box the student got wrong. Box 3 means a mistake about lines, and box 6 a mistake about turns.



This is the free lesson this activity came from. The worksheet, the full answers and the lesson plan are on it, at three levels of difficulty.

chooseyourlesson.com — 135 free geometry lessons.

Answer Maze

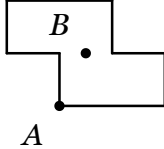
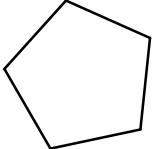
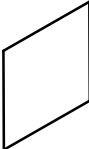
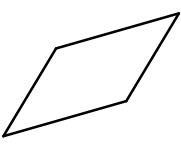
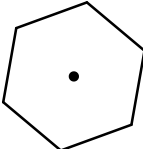
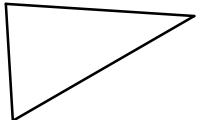
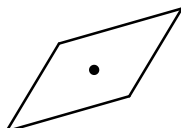
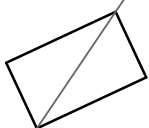
Start at box 4 · lines and turns

Name _____

Period _____

Date _____

Answer the question in the box. Go to the box your answer sends you to. The full turn counts as a turn.

1 This shape turns onto itself about one of the two dots. Which dot? Dot A → go to 6 Dot B → you are out <i>Look at where the shape lands after a half turn about each dot.</i> 	2 How many lines of symmetry does this regular pentagon have? 1 → go to 3 5 → go to 5 <i>Look at each corner in turn, and at the side across from it.</i> 
3 How many lines of symmetry does this rhombus have? 4 → go to 4 2 → go to 7 <i>Look at the two pieces each line makes. Is one piece the mirror image of the other?</i> 	4 How many lines of symmetry does this parallelogram have? 2 → go to 3 0 → go to 7 <i>Look at one corner. Where does it land when the shape is flipped over a diagonal?</i> 
5 How many turns about the dot carry this regular hexagon onto itself? Count the full turn too. 6 → go to 8 5 → go to 6 <i>Look at the whole list of turns, from the smallest to the largest.</i> 	6 This triangle has no line of symmetry. Which turn carries it onto itself? 360°, the full turn → go to 2 No turn at all → go to 7 <i>Look at where every point of the triangle is after one full turn.</i> 
7 What is the smallest turn about the dot that carries this parallelogram onto itself? 180° → go to 2 Only 360° → go to 6 <i>Look at two corners across the dot from each other.</i> 	8 Is the gray line a line of symmetry of this rectangle? No → go to 1 Yes → go to 3 <i>Look at a corner on one side of the line. Where does its mirror image land?</i> 

Write every box number here as you go. It shows you the way back if you lose your place. A clean run is six numbers.

--	--	--	--	--	--



135 free geometry lessons — worksheets, worked answers and lesson plans.
chooseyourlesson.com

Answer Maze — answers

For the teacher

The route, in order. Boxes 3 and 6 are not on it. They come last in the table. Nobody reaches them by being right.

4 → 7 → 2 → 5 → 8 → 1 → out

	Box	Right answer, and why	Wrong answer, and where it goes	Right goes to
1	Box 4	0 Flip the parallelogram over either diagonal: the other two corners do not land on corners. No other line works either.	2 The student counted the two diagonals, because they cut the shape into matching pieces. Goes to box 3.	box 7
2	Box 7	180° A half turn about the dot swaps each corner with the corner across from it, so the parallelogram lands on itself.	Only 360° The student thought a shape with no line of symmetry has no turn either. Goes to box 6.	box 2
3	Box 2	5 A regular pentagon has a line of symmetry from each of its five corners to the middle of the side across from it.	1 The student found one line and stopped looking. Goes to box 3.	box 5
4	Box 5	6 The hexagon lands on itself after turns of 60°, 120°, 180°, 240°, 300° and 360°. That is six turns, with the full turn.	5 The student left out the full turn. Goes to box 6.	box 8
5	Box 8	No Flip the rectangle over the gray diagonal: the other two corners do not land on corners. The two triangles match, but that is not the test.	Yes The student took the line because the two pieces match. Goes to box 3.	box 1
6	Box 1	Dot B A half turn about dot B, the center of the S, carries the S onto itself. No turn about dot A, a corner, does.	Dot A The student took a corner for the center of the turn. Goes to box 6.	out
	Box 3	2 The rhombus folds onto itself along each of its two diagonals. The lines joining the middles of opposite sides cut matching pieces, but they are not lines of symmetry.	4 The student also counted the two lines joining the middles of opposite sides, because they cut matching pieces. Goes to box 4.	box 7
	Box 6	360°, the full turn A full 360° turn carries every shape onto itself, so it always counts.	No turn at all The student did not count the full turn. Goes to box 7.	box 2

Guessing does not get a student out. Every simple guessing rule, such as always taking the first answer, goes wrong within the first three boxes. One shortcut does work: a student can find the route by following the arrows backward from “you are out.” So ask a student with a clean row to explain one box.