LESSON MAKER PRO

Turn and Match

Explore turns, flips, and matching shapes.

GRADE 6 · 6.GM.1

6.GM.1 "Use translations, reflections, and rotations to establish congruence and understand symmetry (not on a coordinate plane). Predict, describe, and apply translations (slides), reflections (flips)..."

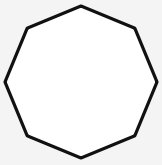
NAME _____ DATE _____

THE BIG IDEA

A shape has rotational symmetry when a turn makes it fit exactly on itself. For a regular shape, divide 360° by its number of sides to find the smallest such turn. A line of symmetry divides a shape into matching mirror halves. Slides, flips, and turns keep a figure congruent to the original.

WORKED EXAMPLE

What is the smallest turn that makes this regular octagon fit exactly on itself?

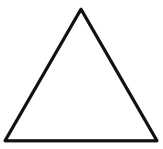


1. Count 8 equal sides.
2. Divide a full turn by 8: 360° / 8 = 45°.

Answer: 45°

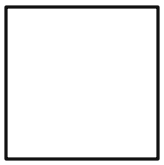
PRACTICE 6 problems

1 What is the smallest turn that makes this shape fit exactly on itself?



ANSWER _____

2 How many lines of symmetry does this shape have? What is its smallest turn that fits exactly?



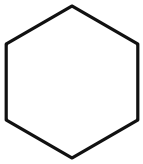
ANSWER _____

3 How many lines of symmetry does this shape have? What is its smallest turn that fits exactly?



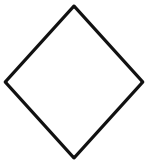
ANSWER _____

4 What is the smallest turn that makes this regular shape fit exactly on itself?



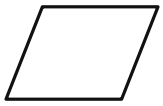
ANSWER _____

5 How many lines of symmetry does this shape have?



ANSWER _____

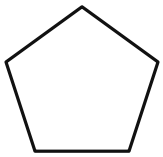
6 Flip this shape to make a copy. Is the copy congruent to the original? Does the original shape have any lines of symmetry?



ANSWER _____

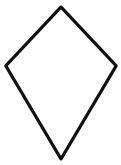
APPLY IT Show your work

1 A game designer puts this regular badge on a spinning screen. What is the smallest turn that makes the badge look unchanged?



ANSWER _____

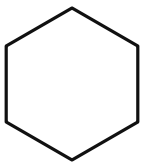
2 Maya slides this kite-shaped sticker across her notebook, then flips it. Is the sticker still congruent to its starting shape? How many lines of symmetry does the starting shape have?



ANSWER _____

CHALLENGE One step up

List every turn greater than 0° but less than a full turn that makes this regular shape fit exactly on itself. How many turns are on your list?



WORK SPACE AND ANSWER

ANSWER KEY

Turn and Match

GRADE 6 · 6.GM.1

PART 1 · PRACTICE

#	PROBLEM	ANSWER
1	What is the smallest turn that makes this shape fit exactly on itself?	**120°**
2	How many lines of symmetry does this shape have? What is its smallest turn that fits exactly?	**4 lines of symmetry; 90°**
3	How many lines of symmetry does this shape have? What is its smallest turn that fits exactly?	**2 lines of symmetry; 180°**
4	What is the smallest turn that makes this regular shape fit exactly on itself?	**60°**
5	How many lines of symmetry does this shape have?	**2 lines of symmetry**
6	Flip this shape to make a copy. Is the copy congruent to the original? Does the original shape have any lines of symmetry?	**Yes, the copy is congruent. No, the original has no lines of symmetry.**

PART 2 · APPLY IT

1. **72°** The regular badge has 5 sides. Divide 360° by 5 to get 72°.
2. **Yes, it is congruent; 1 line of symmetry.** A slide and a flip preserve the sticker's size and shape. The starting kite has one line of symmetry through its top and bottom corners.

CHALLENGE

60°, 120°, 180°, 240°, and 300°; 5 turns

Count a full turn as fitting a shape exactly, but do not include it in the challenge list. For the flip problem, accept any wording that says the copy is congruent even though the parallelogram has no line of symmetry.