LESSON MAKER PRO

Shape Shift

Use rigid motions to show congruence.

HIGH SCHOOL · GDA.GM.E

GDA.GM.E "Showing that two figures are congruent involves showing that there is a rigid motion (translation, rotation, reflection, or glide reflection) or, equivalently, a sequence of rigid motions that maps one figure to the other."

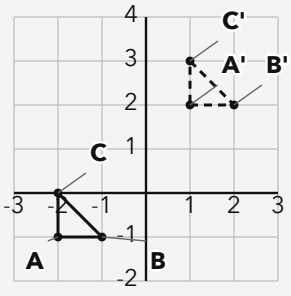
NAME _____ **DATE** _____

THE BIG IDEA

Translations, rotations, and reflections keep a figure's size and shape. To show two figures are congruent, find a rigid motion that sends every vertex to its matching vertex.

WORKED EXAMPLE

Which translation maps the solid triangle to the dashed triangle?



1. A(-2, -1) moves to A'(1, 2), right 3 and up 3.
2. B and C each move right 3 and up 3.

Answer: Translate right 3 units and up 3 units.

PRACTICE 4 problems

1 What translation maps A(6, 7) to A'(2, 7) and B(8, 9) to B'(4, 9)?

ANSWER _____

2 Reflect A(6, 8), B(7, 8), and C(6, 9) across the x-axis. List the image vertices.

ANSWER _____

3 A(6, 7) maps to A'(-7, 6), and B(8, 7) maps to B'(-7, 8). Name the rotation about the origin.

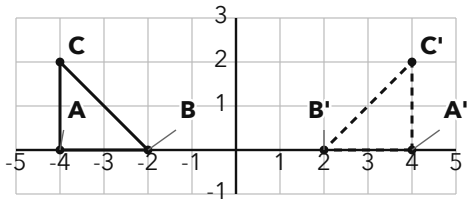
ANSWER _____

4 A(5, 6) maps to A'(10, -6), and B(7, 6) maps to B'(12, -6). Name a reflection and a translation, in that order.

ANSWER _____

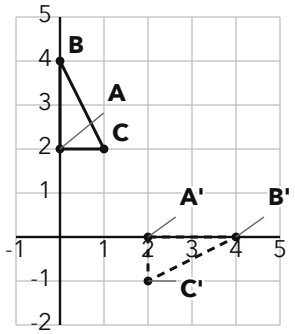
APPLY IT Show your work

1 A designer flips a sticker logo. Which rigid motion maps the solid triangle to the dashed triangle? Give its coordinate rule.



ANSWER _____

2 A game designer turns a map marker about the origin. Which rotation maps the solid marker to the dashed marker?



ANSWER _____

CHALLENGE One step up

A shape is reflected across the y-axis, then rotated 180° about the origin. Name one rigid motion with the same effect. Show why using (x, y).

WORK SPACE AND ANSWER

Shape Shift

PART 1 · PRACTICE

#	PROBLEM	ANSWER
1	What translation maps A(6, 7) to A'(2, 7) and B(8, 9) to B'(4, 9)?	**Left 4 units.**
2	Reflect A(6, 8), B(7, 8), and C(6, 9) across the x-axis. List the image vertices.	**A'(6, -8), B'(7, -8), C'(6, -9).**
3	A(6, 7) maps to A'(-7, 6), and B(8, 7) maps to B'(-7, 8). Name the rotation about the origin.	**90° counterclockwise.**
4	A(5, 6) maps to A'(10, -6), and B(7, 6) maps to B'(12, -6). Name a reflection and a translation, in that order.	**Reflect across the x-axis, then translate right 5 units.**

PART 2 · APPLY IT

1. **Reflect across the y-axis: (x, y) maps to (-x, y).** Each image vertex has the opposite x-coordinate and the same y-coordinate as its matching vertex.
2. **Rotate 90° clockwise about the origin.** The rule (x, y) maps to (y, -x) sends all three solid vertices to their matching dashed vertices.

CHALLENGE

Reflection across the x-axis. The two moves send (x, y) to (-x, y), then to (x, -y), which is the rule for reflecting across the x-axis.

Accept equivalent descriptions of the same rigid motion. In the challenge, the coordinate rule must account for both moves.