LESSON MAKER PRO

Match the Moves

Map figures with rigid motions

HIGH SCHOOL · GDA.GM.E.24

GDA.GM.E.24 "Define congruence of two figures in terms of rigid motions (a sequence of translations, rotations, and reflections); show that two figures are congruent by finding a sequence of rigid motions that maps one figure to the other."

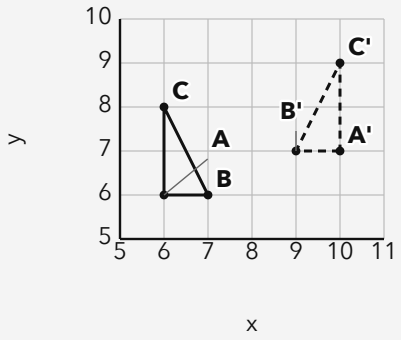
NAME _____ DATE _____

THE BIG IDEA

Translations, rotations, and reflections keep lengths and angles the same. Two figures are congruent if a sequence of these moves places every vertex of one figure on its matching vertex of the other.

WORKED EXAMPLE

Map the solid triangle onto the dashed triangle. Name the moves in order.



1. Reflect across x = 8.
2. Translate up 1 unit.

Answer: Reflect across x = 8, then translate up 1 unit.

PRACTICE 4 problems

1 A(-2, 1), B(-1, 1), C(-2, 3) map to A'(1, 0), B'(2, 0), C'(1, 2). Name the move.

ANSWER _____

2 A(1, 1), B(3, 1), C(1, 2) map to A'(-1, 1), B'(-3, 1), C'(-1, 2). Name the move.

ANSWER _____

3 A(1, 1), B(2, 1), C(1, 3) map to A'(-1, -1), B'(-2, -1), C'(-1, -3). Name the move.

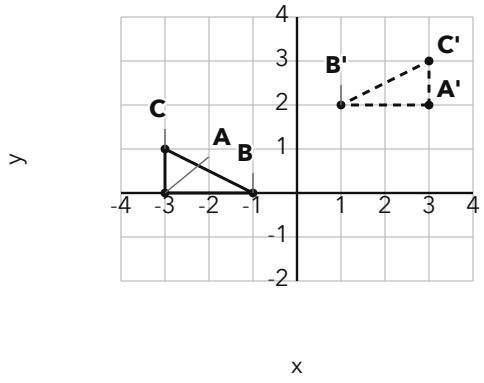
ANSWER _____

4 A(-2, -1), B(-1, -1), C(-2, 1) map to A'(1, 2), B'(1, 3), C'(-1, 2). Name a rotation about the origin followed by a translation.

ANSWER _____

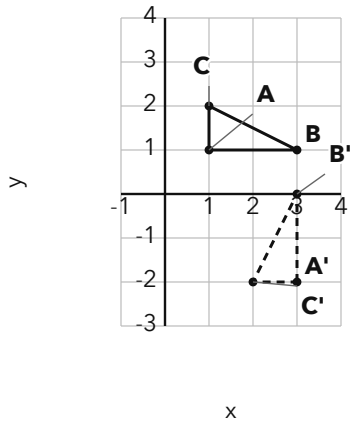
APPLY IT Show your work

1 A game artist must move the solid icon onto its dashed target. Name two moves in order.



ANSWER _____

2 A skate-park designer must move the solid ramp marker onto its dashed plan position. Name a rotation about the origin followed by a translation.



ANSWER _____

CHALLENGE One step up

A(-2, 0), B(-1, 0), C(-2, 2), D(-3, 1) map to A'(3, 1), B'(3, 2), C'(5, 1), D'(4, 0). Find a reflection, a rotation about the origin, and a translation, in that order. Check your moves with C.

WORK SPACE AND ANSWER

ANSWER KEY

Match the Moves

PART 1 · PRACTICE

#	PROBLEM	ANSWER
1	A(-2, 1), B(-1, 1), C(-2, 3) map to A'(1, 0), B'(2, 0), C'(1, 2). Name the move.	**Translate right 3 units and down 1 unit.**
2	A(1, 1), B(3, 1), C(1, 2) map to A'(-1, 1), B'(-3, 1), C'(-1, 2). Name the move.	**Reflect across the y-axis.**
3	A(1, 1), B(2, 1), C(1, 3) map to A'(-1, -1), B'(-2, -1), C'(-1, -3). Name the move.	**Rotate 180° about the origin.**
4	A(-2, -1), B(-1, -1), C(-2, 1) map to A'(1, 2), B'(1, 3), C'(-1, 2). Name a rotation about the origin followed by a translation.	**Rotate 90° counterclockwise about the origin, then translate up 4 units.**

PART 2 · APPLY IT

1. **Reflect across the y-axis, then translate up 2 units.** The reflection changes each x-coordinate's sign. Moving up 2 units then matches all three target vertices.
2. **Rotate 90° counterclockwise about the origin, then translate right 4 units and down 3 units.** After the rotation, A, B, and C are at (-1, 1), (-1, 3), and (-2, 1). Translating right 4 and down 3 places them on the dashed vertices.

CHALLENGE

Reflect across the x-axis, rotate 90° counterclockwise about the origin, then translate right 3 units and up 3 units. C(-2, 2) moves to (-2, -2), then (2, -2), then C'(5, 1).

Accept any sequence of rigid motions that maps every named vertex to its matching primed vertex. For the challenge, require the stated order and a correct check of C.