LESSON MAKER PRO

Match the Moves

Test whether rigid motions match two figures.

GRADE 7 · 7A.GM.C.42.a

7A.GM.C.42.a "Given a pair of two-dimensional figures, determine if a series of rigid motions maps one figure onto the other, recognizing that if such a sequence exists the figures are congruent..."

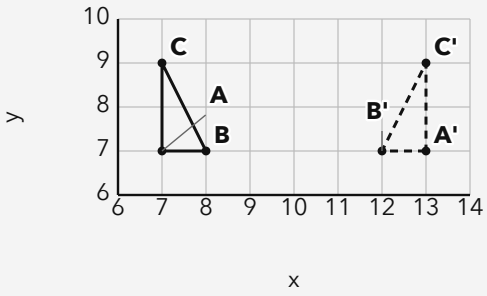
NAME _____ DATE _____

THE BIG IDEA

Translations, reflections, and rotations keep a figure's size and shape. If these moves match every labeled vertex of one figure to the other, the figures are congruent.

WORKED EXAMPLE

What rigid motion maps triangle ABC onto triangle A'B'C'?



1. A and A' are the same distance from the line x = 10, on opposite sides.
2. Reflect A, B, and C across x = 10. Each lands on its matching vertex.

Answer: Reflect across x = 10. The triangles are congruent.

PRACTICE 4 problems

1 ABC: A(0,0), B(2,0), C(0,2). A'B'C': A'(3,0), B'(5,0), C'(3,2). Name the rigid motion.

ANSWER _____

2 ABC: A(0,0), B(2,0), C(0,2). A'B'C': A'(0,0), B'(4,0), C'(0,4). Can rigid motions map ABC onto A'B'C'? Explain.

ANSWER _____

3 ABC: A(0,0), B(3,0), C(0,2). A'B'C': A'(0,0), B'(-3,0), C'(0,2). Name the rigid motion.

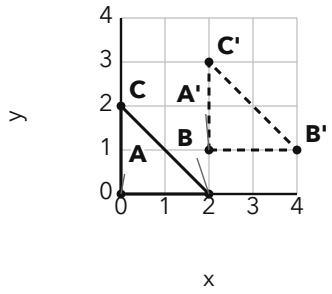
ANSWER _____

4 ABC: A(0,0), B(2,0), C(0,3). A'B'C': A'(4,1), B'(2,1), C'(4,4). Name two rigid motions that map ABC onto A'B'C'.

ANSWER _____

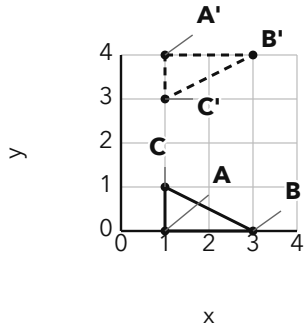
APPLY IT Show your work

1 Two players use the triangle badges shown. What move matches the solid badge to the dashed badge? Are they congruent?



ANSWER _____

2 An artist tests two placements for a game icon. What move matches the solid icon to the dashed icon? Are they congruent?



ANSWER _____

CHALLENGE One step up

ABC: A(0,0), B(2,0), C(0,3). A'B'C': A'(4,1), B'(4,3), C'(1,1). Give a rotation and a translation that map ABC onto A'B'C'.

WORK SPACE AND ANSWER

ANSWER KEY

Match the Moves

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PART 1 · PRACTICE

#	PROBLEM	ANSWER
1	ABC: A(0,0), B(2,0), C(0,2). A'B'C': A'(3,0), B'(5,0), C'(3,2). Name the rigid motion.	**Translate 3 units right.**
2	ABC: A(0,0), B(2,0), C(0,2). A'B'C': A'(0,0), B'(4,0), C'(0,4). Can rigid motions map ABC onto A'B'C'? Explain.	**No. AB is 2 units long, but A'B' is 4 units long. Rigid motions keep lengths the same.**
3	ABC: A(0,0), B(3,0), C(0,2). A'B'C': A'(0,0), B'(-3,0), C'(0,2). Name the rigid motion.	**Reflect across the y-axis.**
4	ABC: A(0,0), B(2,0), C(0,3). A'B'C': A'(4,1), B'(2,1), C'(4,4). Name two rigid motions that map ABC onto A'B'C'.	**Reflect across the y-axis, then translate 4 units right and 1 unit up.**

PART 2 · APPLY IT

1. **Translate 2 units right and 1 unit up. Yes, the badges are congruent.** Each dashed vertex is 2 units right and 1 unit above its matching solid vertex.
2. **Reflect across y = 2. Yes, the icons are congruent.** Each matching pair of vertices is the same distance from y = 2, on opposite sides.

CHALLENGE

Rotate 90° counterclockwise about the origin, then translate 4 units right and 1 unit up.

Accept equivalent sequences of rigid motions when every labeled vertex maps to its matching vertex.