LESSON MAKER PRO

Motion Match

Map figures with rigid motions.

HIGH SCHOOL · GEO-G.CO.6

GEO-G.CO.6 "Use geometric descriptions of rigid motions to transform figures and to predict the effect of a given rigid motion on a given figure. Given two figures..."

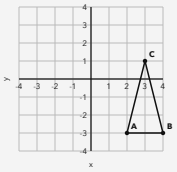
NAME _____ DATE _____

RIGID MOTION RULES

Translations, rotations, and reflections preserve lengths and angle measures. Two figures are congruent if one can be mapped onto the other by one or more rigid motions.

WORKED EXAMPLE

Triangle ABC is shown. Rotate it 180° about the origin. Find A', B', and C'.



1. For 180°, use (x, y) → (-x, -y).
2. A(2, -3) → A'(-2, 3).
3. B(4, -3) → B'(-4, 3), and C(3, 1) → C'(-3, -1).

Answer: A'(-2, 3), B'(-4, 3), C'(-3, -1)

PRACTICE 4 problems

1 Translate A(-6, 7), B(-3, 7), and C(-5, 10) by <5, -4>. Give the image coordinates.

ANSWER _____

2 Reflect P(8, -6) across the y-axis.

ANSWER _____

3 Rotate Q(-7, 5) 90° counterclockwise about the origin.

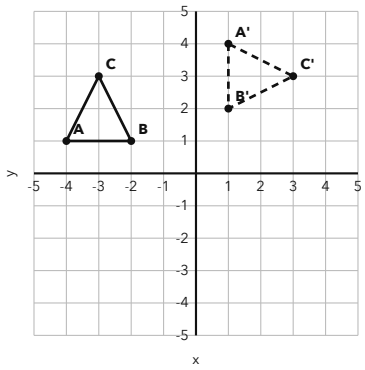
ANSWER _____

4 Triangle RST has R(-8, -2), S(-5, -2), T(-7, 2). Triangle UVW has U(4, 6), V(7, 6), W(5, 10). Are they congruent? Name a motion.

ANSWER _____

APPLY IT Show your work

1 An esports club uses the solid logo. The dashed logo is an animation frame. What rigid motion maps ABC to A'B'C'?



ANSWER _____

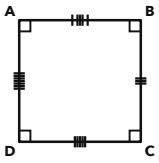
2 A music app moves album-art triangle A(-3, 8), B(-1, 8), C(-2, 11) 9 units right and 4 units down. It then reflects the triangle across the y-axis. Find the final coordinates.

WORK SPACE

ANSWER _____

CHALLENGE One step up

Reflect the shown square across diagonal AC. List the image of each vertex, then explain why the image is congruent to the original.



WORK SPACE AND ANSWER

ANSWER KEY # Motion Match

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PART 1 · PRACTICE

#	PROBLEM	ANSWER
1	Translate A(-6, 7), B(-3, 7), and C(-5, 10) by <5, -4>. Give the image coordinates.	**A'(-1, 3), B'(2, 3), C'(0, 6)**
2	Reflect P(8, -6) across the y-axis.	**P'(-8, -6)**
3	Rotate Q(-7, 5) 90° counterclockwise about the origin.	**Q'(-5, -7)**
4	Triangle RST has R(-8, -2), S(-5, -2), T(-7, 2). Triangle UVW has U(4, 6), V(7, 6), W(5, 10). Are they congruent? Name a motion.	**Yes. Translate 12 units right and 8 units up.**

PART 2 · APPLY IT

1. **A 90° clockwise rotation about the origin.** Each point follows (x, y) → (y, -x). For example, A(-4, 1) maps to A'(1, 4).
2. **A''(-6, 4), B''(-8, 4), C''(-7, 7)** After the translation, the vertices are (6, 4), (8, 4), and (7, 7). Reflecting across the y-axis changes each x-coordinate to its opposite.

CHALLENGE

A'=A, B'=D, C'=C, D'=B. A reflection is a rigid motion, so it preserves all lengths and angle measures. Therefore the image is congruent to the original square.

Accept equivalent coordinate notation and any precise description of the stated motion. For congruence decisions, require a valid rigid-motion mapping.