LESSON MAKER PRO

Motion Match

Use rigid motions to prove shapes match.

HIGH SCHOOL · HSG-CO.B

CCSS.Math.Content.HSG-CO.B "Understand congruence in terms of rigid motions"

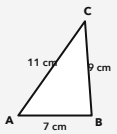
NAME _____ DATE _____

RIGID MOTIONS KEEP SIZE

Translations, rotations, and reflections preserve side lengths and angle measures. A figure and its image are congruent when a sequence of rigid motions maps one onto the other. A reflection reverses orientation, but a translation or rotation does not.

WORKED EXAMPLE

Triangle ABC is reflected. What is the length of A'B'?



1. AB measures 7 cm in the figure.
2. A reflection preserves length.
3. So A'B' has the same length.

Answer: 7 cm

PRACTICE 4 problems

1 Point P(-3, 4) is translated to P'(2, 1). Write the translation vector.

ANSWER _____

2 Rotate Q(4, -2) 180° about the origin. What are the coordinates of Q'?

ANSWER _____

3 A rigid motion maps J to M, K to N, and L to P. Write a congruence statement.

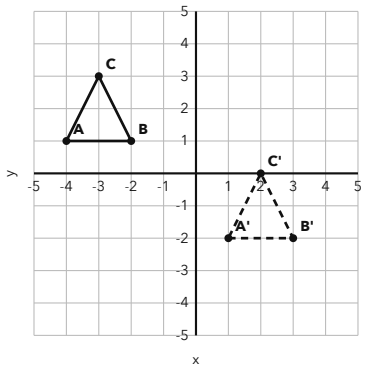
ANSWER _____

4 A(1, 2), B(3, 2), and C(2, 5) map to A'(-1, 2), B'(-3, 2), and C'(-2, 5). Name the rigid motion.

ANSWER _____

APPLY IT Show your work

1 A skatepark logo is shown before and after it is moved. Use the graph. Write the translation vector and state whether the two logos are congruent.



ANSWER _____

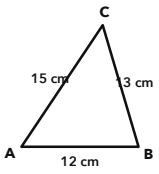
2 A student rotates a triangular phone decal 90° counterclockwise about the origin. Its vertices are P(1, 4), Q(3, 4), and R(1, 6). Give P', Q', and R', then state whether the decal is congruent to the original.

WORK SPACE

ANSWER _____

CHALLENGE One step up

The game icon triangle ABC is translated 4 units right, then reflected across the x-axis. List A'B', B'C', and C'A', and state whether its orientation is the same or reversed.



WORK SPACE AND ANSWER

ANSWER KEY

Motion Match

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PART 1 · PRACTICE

#	PROBLEM	ANSWER
1	Point P(-3, 4) is translated to P'(2, 1). Write the translation vector.	**<5, -3>**
2	Rotate Q(4, -2) 180° about the origin. What are the coordinates of Q'?	**(-4, 2)**
3	A rigid motion maps J to M, K to N, and L to P. Write a congruence statement.	**ΔJKL ≅ ΔMNP**
4	A(1, 2), B(3, 2), and C(2, 5) map to A'(-1, 2), B'(-3, 2), and C'(-2, 5). Name the rigid motion.	**reflection across the y-axis**

PART 2 · APPLY IT

1. **<5, -3>; yes, the logos are congruent.** Compare A(-4, 1) to A'(1, -2), which is 5 units right and 3 units down. A translation is a rigid motion, so congruence is preserved.
2. **P'(-4, 1), Q'(-4, 3), R'(-6, 1); yes.** For a 90° counterclockwise rotation, use (x, y) → (-y, x). A rotation preserves all lengths and angles.

CHALLENGE

A'B' = 12 cm, B'C' = 13 cm, C'A' = 15 cm; orientation is reversed.

Accept equivalent vector notation for translations. For the challenge, accept the side lengths in any order if they are correctly matched to the labeled sides.