LESSON MAKER PRO

Move, Flip, Match

Practice rigid motions and congruence.

HIGH SCHOOL · HSG-CO.B.6

CCSS.Math.Content.HSG-CO.B.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..."

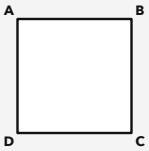
NAME _____ DATE _____

RIGID MOTIONS

A translation, reflection, or rotation keeps all lengths and angle measures the same. Two figures are congruent if one can be mapped onto the other using one or more rigid motions.

WORKED EXAMPLE

The square shown has vertices labeled clockwise. Rotate it 90 degrees clockwise about its center. Name the image of each vertex.



1. Read the vertices in clockwise order: A, B, C, D.
2. A 90-degree clockwise turn moves each vertex one position clockwise.
3. Match each vertex to the next vertex.

Answer: A' = B, B' = C, C' = D, D' = A

PRACTICE 4 problems

1 Translate P(-3, 4) by <5, -2>. Give P'.

ANSWER _____

2 Reflect Q(6, -1) across the y-axis. Give Q'.

ANSWER _____

3 Rotate R(2, -5) 180 degrees about the origin. Give R'.

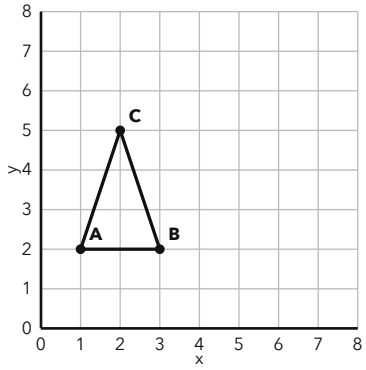
ANSWER _____

4 Are triangles EFG and HIJ congruent? Name one rigid motion, or write not congruent. E(0, 1), F(3, 1), G(1, 4); H(-2, 5), I(1, 5), J(-1, 8).

ANSWER _____

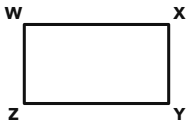
APPLY IT Show your work

1 A game designer uses the triangle logo shown. Translate the logo 4 units right and 2 units up. Give A', B', and C'.



ANSWER _____

2 For a school concert, four spotlights sit at vertices WXYZ of the rectangular rig shown, labeled clockwise. The rig rotates 180 degrees about its center. Where do W and X move?



ANSWER _____

CHALLENGE One step up

Triangle KLM has K(1, 2), L(4, 2), and M(2, 5). Triangle NOP has N(2, 1), O(-1, 1), and P(1, 4). Are the triangles congruent? If yes, describe a rigid-motion sequence and state the matching vertices.

WORK SPACE AND ANSWER

ANSWER KEY

Move, Flip, Match

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PART 1 · PRACTICE

#	PROBLEM	ANSWER
1	Translate P(-3, 4) by <5, -2>. Give P'.	**P' = (2, 2)**
2	Reflect Q(6, -1) across the y-axis. Give Q'.	**Q' = (-6, -1)**
3	Rotate R(2, -5) 180 degrees about the origin. Give R'.	**R' = (-2, 5)**
4	Are triangles EFG and HIJ congruent? Name one rigid motion, or write not congruent. E(0, 1), F(3, 1), G(1, 4); H(-2, 5), I(1, 5), J(-1, 8).	**Congruent. Translate 2 units left and 4 units up.**

PART 2 · APPLY IT

1. **A' = (5, 4), B' = (7, 4), C' = (6, 7)** Add 4 to each x-coordinate and add 2 to each y-coordinate.
2. **W' = Y and X' = Z** A 180-degree rotation sends each vertex of a rectangle to the opposite vertex.

CHALLENGE

Yes. Reflect triangle KLM across the y-axis, then translate 3 units right and 1 unit down. K maps to N, L maps to O, and M maps to P.

Accept equivalent coordinate notation and any correct description of the translation in problem 4. For the challenge, accept an equivalent rigid-motion sequence that maps K to N, L to O, and M to P.