LESSON MAKER PRO

Transformation Detectives

Name the single move from preimage to image.

GRADE 8 · MA.8.GR.2.1

MA.8.GR.2.1 "Given a preimage and image generated by a single transformation, identify the transformation that describes the relationship."

NAME _____ DATE _____

SPOT THE MOVE

Compare each preimage point with its matching image point. A translation moves all points the same distance and direction, a reflection flips points across a line, a rotation turns points around a center, and a dilation changes distances from a center by the same factor.

WORKED EXAMPLE

Look at the number line. What transformation maps M and N to M′ and N′?

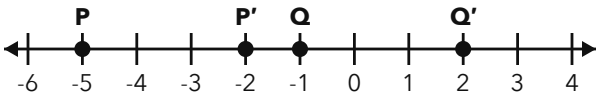


1. M moves from -6 to 0.
2. N moves from -2 to 4.
3. Both points move 6 units right.

Answer: translation 6 units right

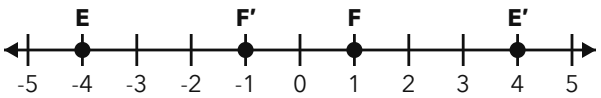
PRACTICE 6 problems

1 Look at the number line. What transformation maps P and Q to P′ and Q′?



ANSWER _____

2 Look at the number line. What transformation maps E and F to E′ and F′?



ANSWER _____

3 Triangle A(1, 4), B(3, 4), C(2, 6) maps to triangle A′(-4, 6), B′(-2, 6), C′(-3, 8). Identify the transformation.

ANSWER _____

4 Triangle Q(-2, 1), R(-4, 3), S(-1, 4) maps to triangle Q′(2, 1), R′(4, 3), S′(1, 4). Identify the transformation.

ANSWER _____

5 Triangle T(2, 1), U(4, 1), V(3, 3) maps to triangle T′(-1, 2), U′(-1, 4), V′(-3, 3). Identify the transformation.

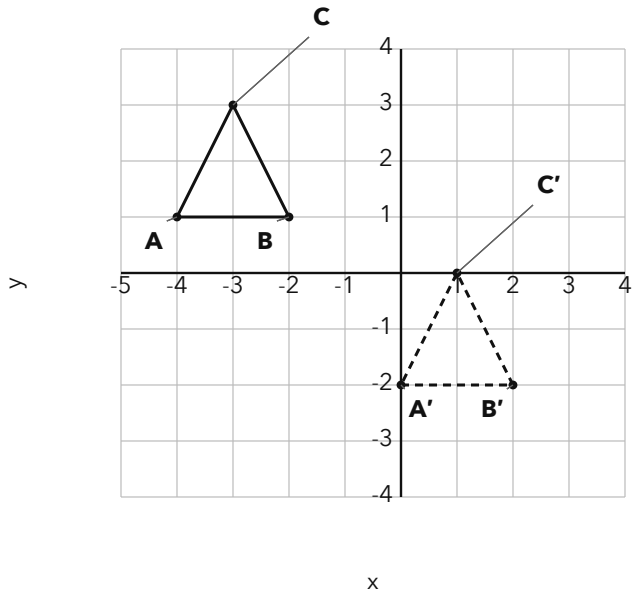
ANSWER _____

6 Triangle J(-2, 3), K(1, 2), L(2, -1) maps to triangle J′(-6, 9), K′(3, 6), L′(6, -3). Identify the transformation.

ANSWER _____

APPLY IT Show your work

1 A game design club posts a logo before and after editing it. The solid triangle is the original logo, and the dashed triangle is the edited logo. Identify the transformation.



ANSWER _____

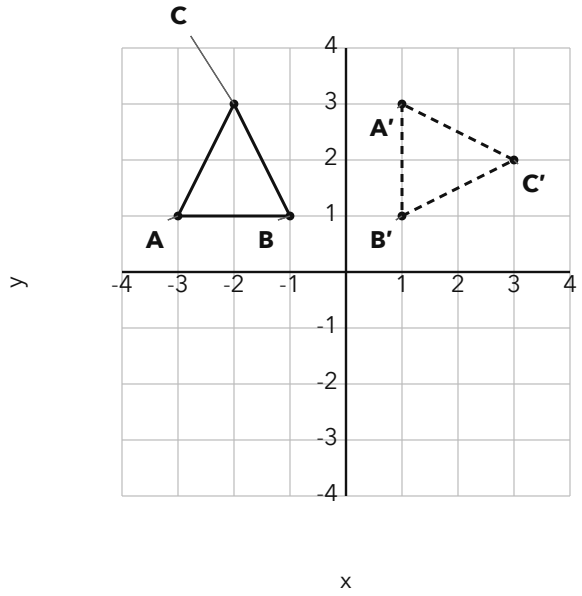
2 For a digital art project, a student changes triangle H(1, 2), I(4, 2), J(2, 5) into H′(-1, -2), I′(-4, -2), J′(-2, -5). Identify the transformation.

WORK SPACE

ANSWER _____

CHALLENGE One step up

The solid triangle is the preimage, and the dashed triangle is the image. Identify the transformation and explain how the coordinates of the vertices support your answer.



WORK SPACE AND ANSWER

ANSWER KEY

Transformation Detectives

GRADE 8 · MA.8.GR.2.1

PART 1 · PRACTICE

#	PROBLEM	ANSWER
1	Look at the number line. What transformation maps P and Q to P′ and Q′?	**translation 3 units right**
2	Look at the number line. What transformation maps E and F to E′ and F′?	**reflection across 0 on the number line**
3	Triangle A(1, 4), B(3, 4), C(2, 6) maps to triangle A′(-4, 6), B′(-2, 6), C′(-3, 8). Identify the transformation.	**translation 5 units left and 2 units up**
4	Triangle Q(-2, 1), R(-4, 3), S(-1, 4) maps to triangle Q′(2, 1), R′(4, 3), S′(1, 4). Identify the transformation.	**reflection across the y-axis**
5	Triangle T(2, 1), U(4, 1), V(3, 3) maps to triangle T′(-1, 2), U′(-1, 4), V′(-3, 3). Identify the transformation.	**90° counterclockwise rotation about the origin**
6	Triangle J(-2, 3), K(1, 2), L(2, -1) maps to triangle J′(-6, 9), K′(3, 6), L′(6, -3). Identify the transformation.	**dilation centered at the origin with scale factor 3**

PART 2 · APPLY IT

1. **translation 4 units right and 3 units down** Each matching vertex has an x-coordinate 4 greater and a y-coordinate 3 less. This is a translation 4 units right and 3 units down.
2. **180° rotation about the origin** Each image point has coordinates that are the opposites of the preimage coordinates. That coordinate change is a 180° rotation about the origin.

CHALLENGE

A 90° clockwise rotation about the origin. The rule (x, y) → (y, -x) maps A(-3, 1) to A′(1, 3), B(-1, 1) to B′(1, 1), and C(-2, 3) to C′(3, 2).

Accept equivalent direction wording, such as "right 6 units," and coordinate rules that correctly describe the transformation. For rotations, the center and direction must be correct.