LESSON MAKER PRO

Coordinate Moves

Track each vertex through a transformation.

GRADE 7 · 7.GM.4.3

7.GM.4.3 "Graph and describe translations (with directional and algebraic instructions), reflections across the x- and y-axes, and rotations in 90° increments about the origin of figures on a coordinate plane..."

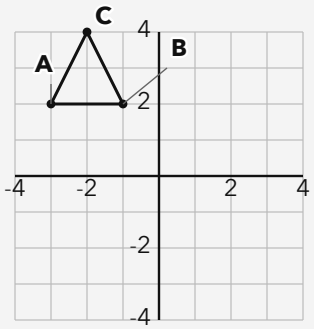
NAME _____ DATE _____

MOVE EVERY VERTEX

A translation changes every vertex by the same horizontal and vertical amounts. A reflection across the x-axis sends (x, y) to (x, -y), while a reflection across the y-axis sends it to (-x, y). About the origin, a 90° clockwise rotation sends (x, y) to (y, -x), a 90° counterclockwise rotation sends it to (-y, x), and a 180° rotation sends it to (-x, -y).

WORKED EXAMPLE

Move the triangle 4 units right and 3 units down. Find its new vertices.



1. Read the vertices: A(-3, 2), B(-1, 2), C(-2, 4).
2. Add 4 to each x-coordinate and subtract 3 from each y-coordinate.
3. A'(1, -1), B'(3, -1), C'(2, 1).

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

PRACTICE 4 problems

1 Move T(1, -2) left 3 units and up 5 units. Find T'.

ANSWER _____

2 Reflect U(-4, -1) across the x-axis. Find U'.

ANSWER _____

3 Reflect V(2, -3) across the y-axis. Find V'.

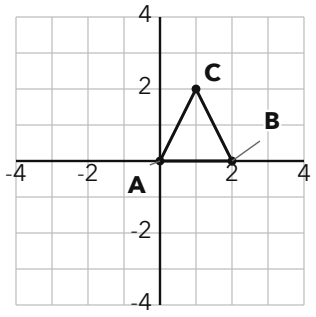
ANSWER _____

4 Rotate W(3, 1) 90° clockwise about the origin. Find W'.

ANSWER _____

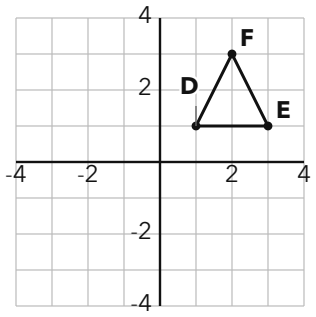
APPLY IT Show your work

1 In a sticker-design app, move the triangle 2 units left and 1 unit up. Find A', B', and C'.



ANSWER _____

2 In a video game, rotate the triangle 180° about the origin. Find D', E', and F'.



ANSWER _____

CHALLENGE One step up

Reflect P(-1, -2) across the y-axis, then rotate the result 90° counterclockwise about the origin. Find P' and show the coordinate after each move.

WORK SPACE AND ANSWER

ANSWER KEY

Coordinate Moves

GRADE 7 · 7.GM.4.3

PART 1 · PRACTICE

#	PROBLEM	ANSWER
1	Move T(1, -2) left 3 units and up 5 units. Find T'.	**T'(-2, 3)**
2	Reflect U(-4, -1) across the x-axis. Find U'.	**U'(-4, 1)**
3	Reflect V(2, -3) across the y-axis. Find V'.	**V'(-2, -3)**
4	Rotate W(3, 1) 90° clockwise about the origin. Find W'.	**W'(1, -3)**

PART 2 · APPLY IT

1. **A'(-2, 1), B'(0, 1), C'(-1, 3)** Subtract 2 from each x-coordinate and add 1 to each y-coordinate.
2. **D'(-1, -1), E'(-3, -1), F'(-2, -3)** A 180° rotation changes the sign of both coordinates of every vertex.

CHALLENGE

After reflection: (1, -2). After rotation: P'(2, 1).

Accept coordinates written without prime marks if the vertex labels are clear.