LESSON MAKER PRO

Move the Shape

Show how points change on a coordinate plane.

HIGH SCHOOL · MT.CORE.GEOM.TRANS.1

MT.CORE.GEOM.TRANS.1 "Represent transformations in the plane using a variety of methods."

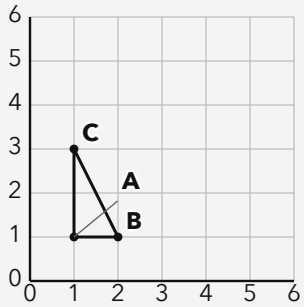
NAME _____ DATE _____

TRANSFORMATION RULES

A translation moves every point the same way: right 3 and up 2 means (x, y) -> (x + 3, y + 2). Reflect across the x-axis with (x, y) -> (x, -y), or across the y-axis with (x, y) -> (-x, y). A 90° counterclockwise rotation about the origin uses (x, y) -> (-y, x).

WORKED EXAMPLE

Move the triangle right 3 and up 2. Find the new vertices.



1. Use (x, y) -> (x + 3, y + 2).
2. A(1, 1) -> A'(4, 3); B(2, 1) -> B'(5, 3).
3. C(1, 3) -> C'(4, 5).

Answer: A'(4, 3), B'(5, 3), C'(4, 5)

PRACTICE 4 problems

1 Translate T(-2, 4) using (x, y) -> (x + 5, y - 3). Find T'.

ANSWER _____

2 Reflect G(-4, 2) across the y-axis. Find G'.

ANSWER _____

3 Rotate H(3, -1) 90° counterclockwise about the origin. Find H'.

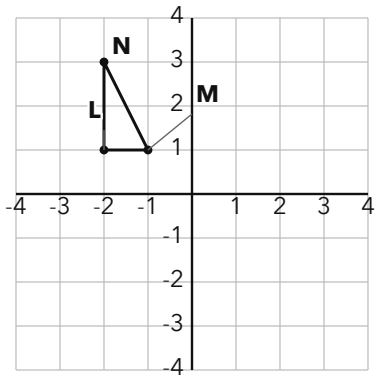
ANSWER _____

4 For (x, y) -> (x - 3, y + 4), give the horizontal move and the vertical move.

ANSWER _____

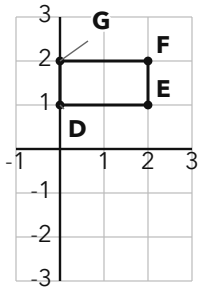
APPLY IT Show your work

1 An app designer rotates the triangle icon 90° counterclockwise about the origin. Find the image vertices.



ANSWER _____

2 A game designer flips the badge across the x-axis. Find the image vertices.



ANSWER _____

CHALLENGE One step up

Reflect P(-1, 2) across the y-axis, then move it right 3 and down 2. Find P' and write one rule for both moves.

WORK SPACE AND ANSWER

ANSWER KEY

Move the Shape

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PART 1 · PRACTICE

#	PROBLEM	ANSWER
1	Translate T(-2, 4) using (x, y) -> (x + 5, y - 3). Find T'.	**T'(3, 1)**
2	Reflect G(-4, 2) across the y-axis. Find G'.	**G'(4, 2)**
3	Rotate H(3, -1) 90° counterclockwise about the origin. Find H'.	**H'(1, 3)**
4	For (x, y) -> (x - 3, y + 4), give the horizontal move and the vertical move.	**Left 3; up 4.**

PART 2 · APPLY IT

1. **L'(-1, -2), M'(-1, -1), N'(-3, -2)** Apply (x, y) -> (-y, x) to each vertex.
2. **D'(0, -1), E'(2, -1), F'(2, -2), G'(0, -2)** Keep each x-coordinate and change the sign of each y-coordinate.

CHALLENGE

P'(4, 0); (x, y) -> (3 - x, y - 2)

Accept equivalent descriptions of the horizontal and vertical moves in problem 4. In the challenge, the reflection happens before the translation.