Name ________________________ Date ____________________________

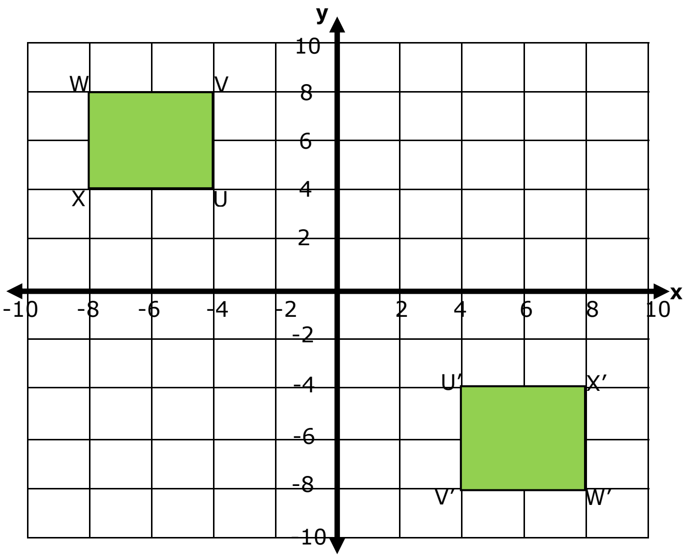
Transformations within a Plane - Guided Lesson Explanation:

Explanation#1

A rotation turns a figure around a fixed point.

180° is ½ of a full turn. The rotation will turn the rectangle ½ of a full turn in the counter-clockwise direction.

Rotate point X(-8, 4) 180° counterclockwise around the origin. The point will move from Quadrant IV to Quadrant II. To find the exact location, imagine (0, 0) and E forming opposite corners of a box. Rotate the box, keeping the (0, 0) corner fixed.



Now rotate point U(-4, 4) 180° counterclockwise around the origin. The point will move from Quadrant IV to Quadrant II. Again, imagine a box to find the exact location.

Now rotate points V(-4, 8) and W(-8, 8) 180° counterclockwise around the origin.

The rotated points form a rectangle, UVWX, congruent to U′V′W′X′.

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Explanation # 2

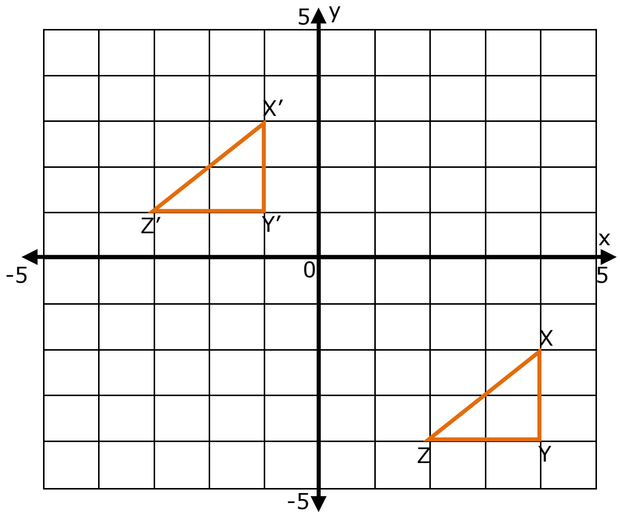
A translation slides a figure to a different location.

Move point X(4, -2) left 5 units and up 5 units. X′ has coordinates (-1, 3).

Now move point Y(4, -4) left 5 units and up 5 units. Y′ has coordinates (-1, 1).

Now move point Z(2, 4) left 5 units and up 5 units. Z′ has coordinates (-3,1).

The translated points form a triangle congruent to ΔXYZ.



Since you moved each vertex left 5 units and up 5 units, you can find the new vertices by subtracting 5 from each x-coordinate and subtracting 5 from each y-coordinate.

Write the coordinates of the vertices using arrow notation:

X(4, -2) ⟶ X′ (-1, 3)

Y(4, -4) ⟶ Y′(-1, 1)

Z(2, -4) ⟶ Z′ (-3, 1)

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Explanation#3

A translation slides a figure to a different location.

Graph the image of O (4, -6).

This means to move the dot 10 units left, as you will see below.