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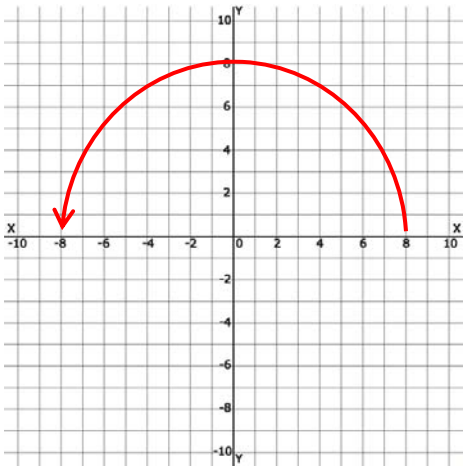
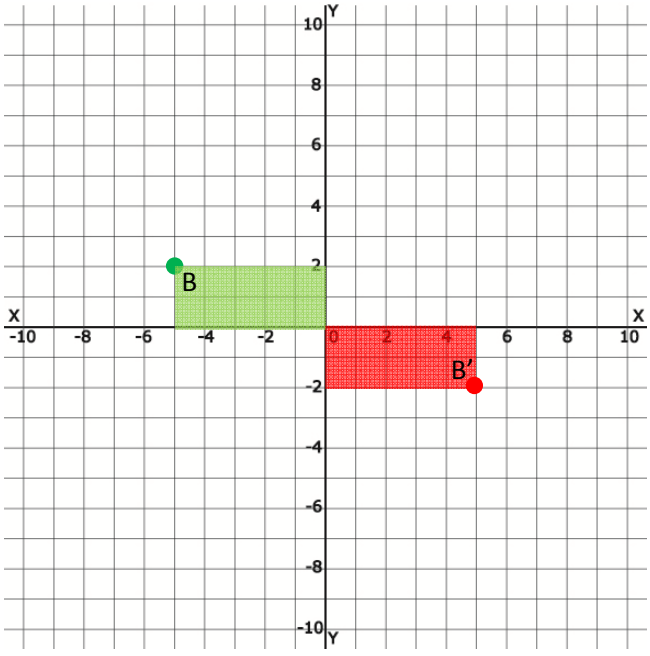
Drawing Transformed Figures Problems - Guided Lesson Explanation

Explanation#1

Step 1) A rotation turns a figure around a fixed point.180° is ½ of a full turn. The rotation will turn the point 1/2 of a full turn in the counterclockwise direction.



Step 2) Rotate the point 180° counterclockwise around the origin. The point will move from Quadrant II to Quadrant IV. To find the exact location, imagine (0, 0) and B forming opposite corners of a box. Rotate the box, keeping the (0, 0) corner fixed.



Step 3) The new location is *B'*(5, -2).

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Explanation # 2

A reflection flips the figure over a line to create a mirror image.

A rotation turns the figure around a point.

A translation slides the figure to a different location.

Image A shows a translation down 4 and right 1.

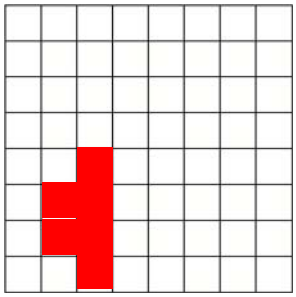


Image B shows a reflection across a vertical line. **Image B is the correct image.**

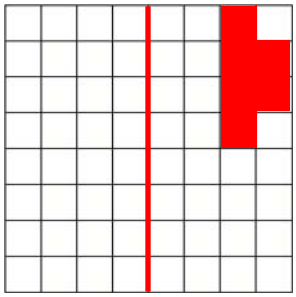
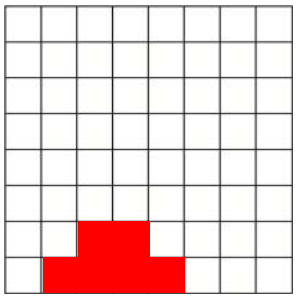


Image C shows a rotation 90° counterclockwise.



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Explanation # 3

A glide reflection is the composition of a translation followed by a reflection across a line parallel to the direction of the translation.

The image of a point (x,y) translated h units horizontally and k units vertically is (x+h,y+k).

The image of a point (x,y) reflected across the x-axis is (x, -y).

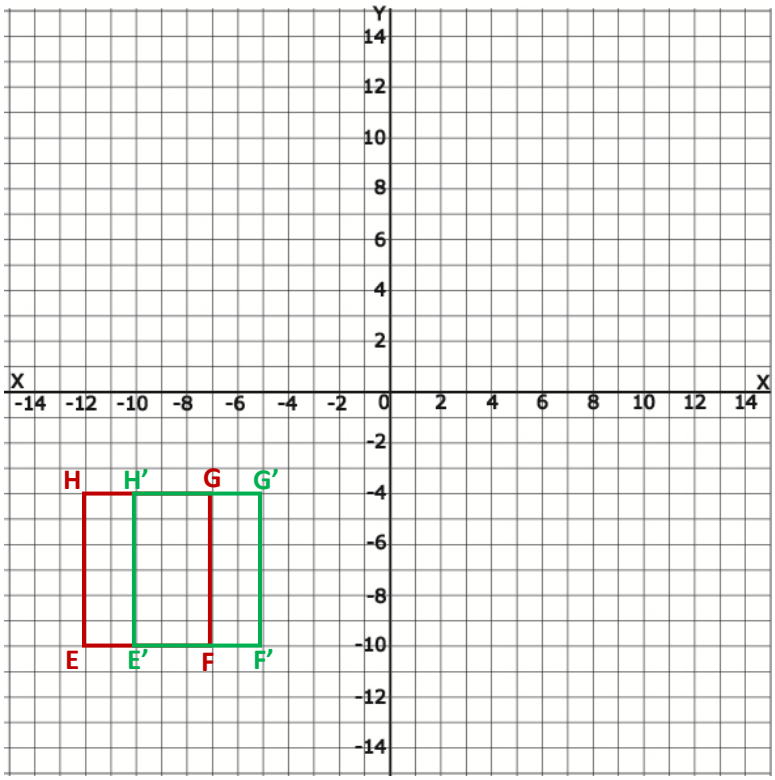
Translate EFGH. Use the transformation rule (x, y) (x+2, y) to find the image of each of its vertices.

E(-12, -10) → E(-10, -10)

F(-7, -10) → F(-5, -10)

G(-7, -4) → G(-5, -4)

H(-12, -4) → H(-10, -4)



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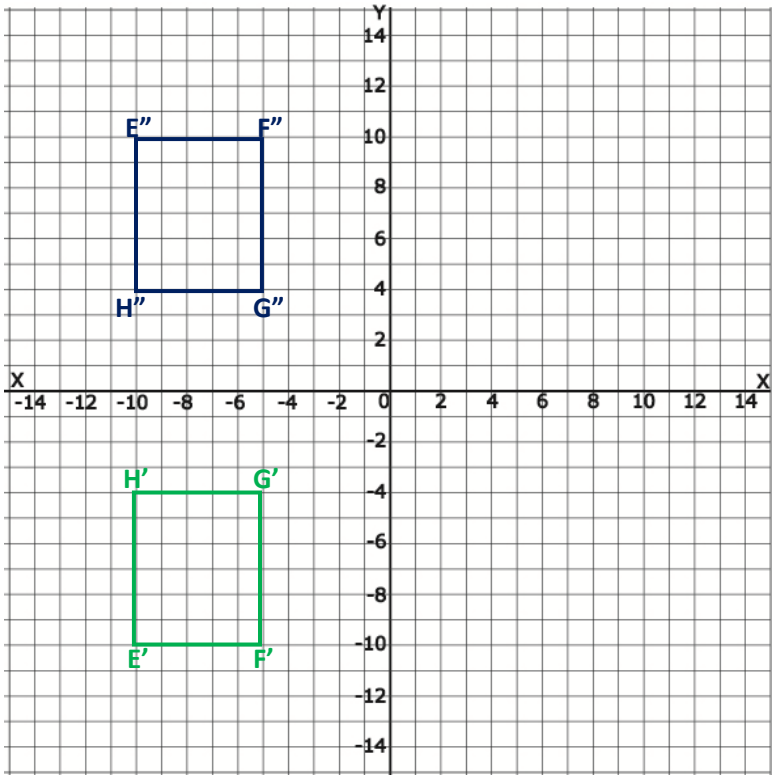
Reflect E'F'G'H' across the x-axis. Use the transformation rule (x, y) → (x, -y) to find the image of its four vertices.

E'(-10, -10) → E''(-10, 10)

F'(-5, -10) → F''(-5, 10)

G'(-5, -4) → G''(-5, 4)

H'(-10, -4) → H''(-10, 4)



So, the image of EFGH after translation 2 unit horizontally and 0 units vertically and reflection across the x axis is E"F"G"H".