Name: _____ Date: _____ Hour: _____

Unit 6A: Day 3 and 4: Reflections on the coordinate plane

Focus Question: What do reflections look like?

   A. Vocabulary
1. Reflection: a **rigid** transformation (or **isometry**) in which the pre-image is **mirrored** or **flipped** across a line of reflection to create a **congruent** image.

2. The picture below is a pre-image and a line of reflection. Use patty paper to create its reflection. Label all known measurements of the image. **You know these measurements because the image is** **Congruent ≅** **to the pre-image.**
(same shape & same size)
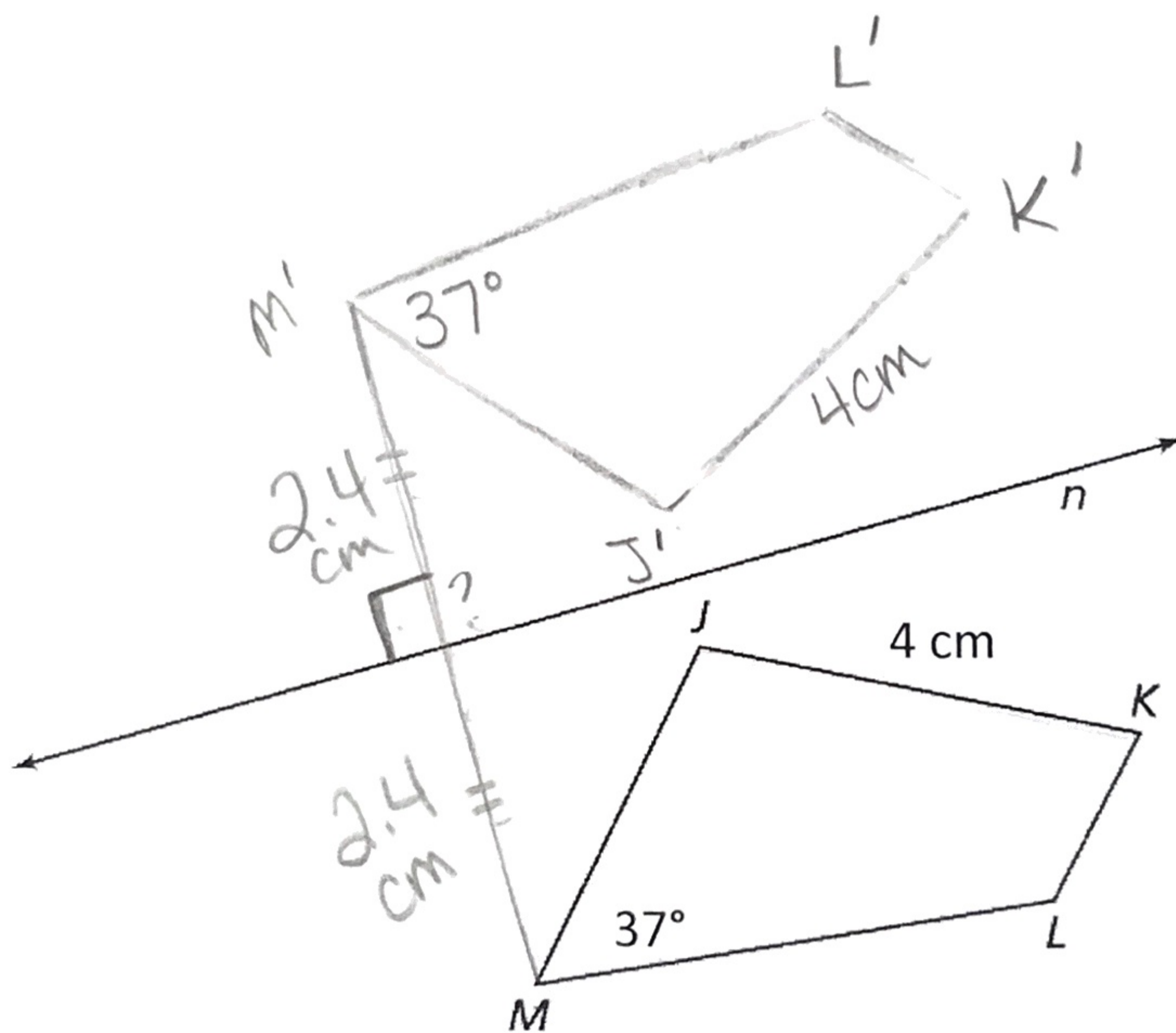
3. Connect M to M'. What type of angle was created at the line of reflection? **90° right**

   The line of reflection is **perpendicular** **to the lines that connect the pre-image and image.** ⊥

4. Measure from M to the line of reflection. Then measure from M' to the line of reflection.

   The image and pre-image are the **same** distance from the line of reflection.
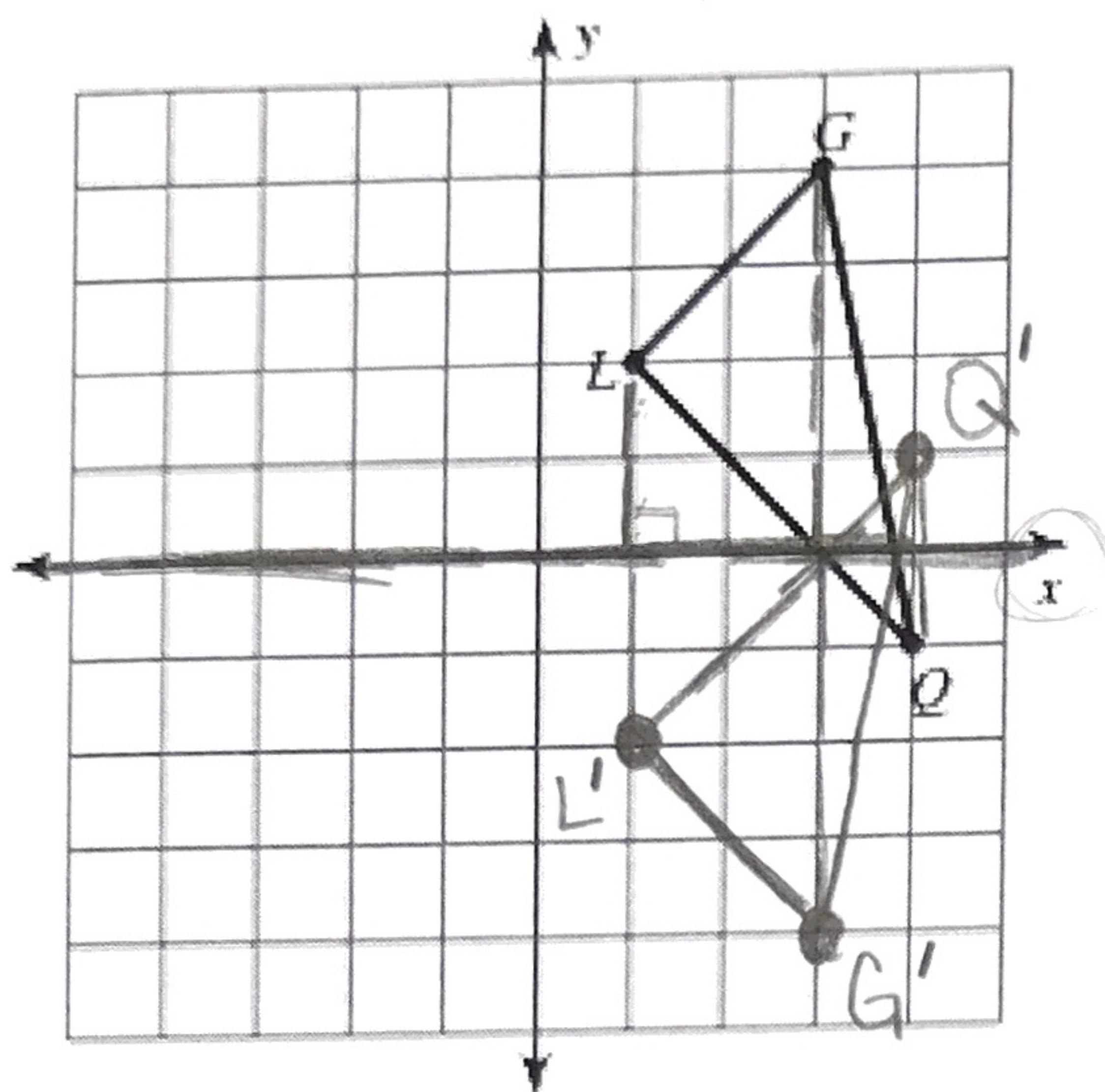
   The word for this is **equidistant**.
   ↑ ↑
   equal distance

In math 8 you are required to be able to reflect across three lines: the x – axis, the y – axis, and the line y = x.

We will use the properties we just learned to help us do this.

**B.** Reflections on the plane: Graph the given transformation

1) reflection across the x-axis

For these two, we follow the same steps:

1) Highlight the axis given as the line of reflection

2) Pick a point and count the spaces to the line of reflection because we need to keep the distance the _Same_

3) Continue on the same line because it makes a _90°_ angle, counting the same number of spaces past the line of reflection because we need to keep the distance the _Same_.

4) Put a point and label it

5) Repeat with any remaining points of the pre-image

2) reflection across the y-axis

$y = mx + b$ $m: 1$ (slope)
$y = x$ $b: (y\,int)\ 0$
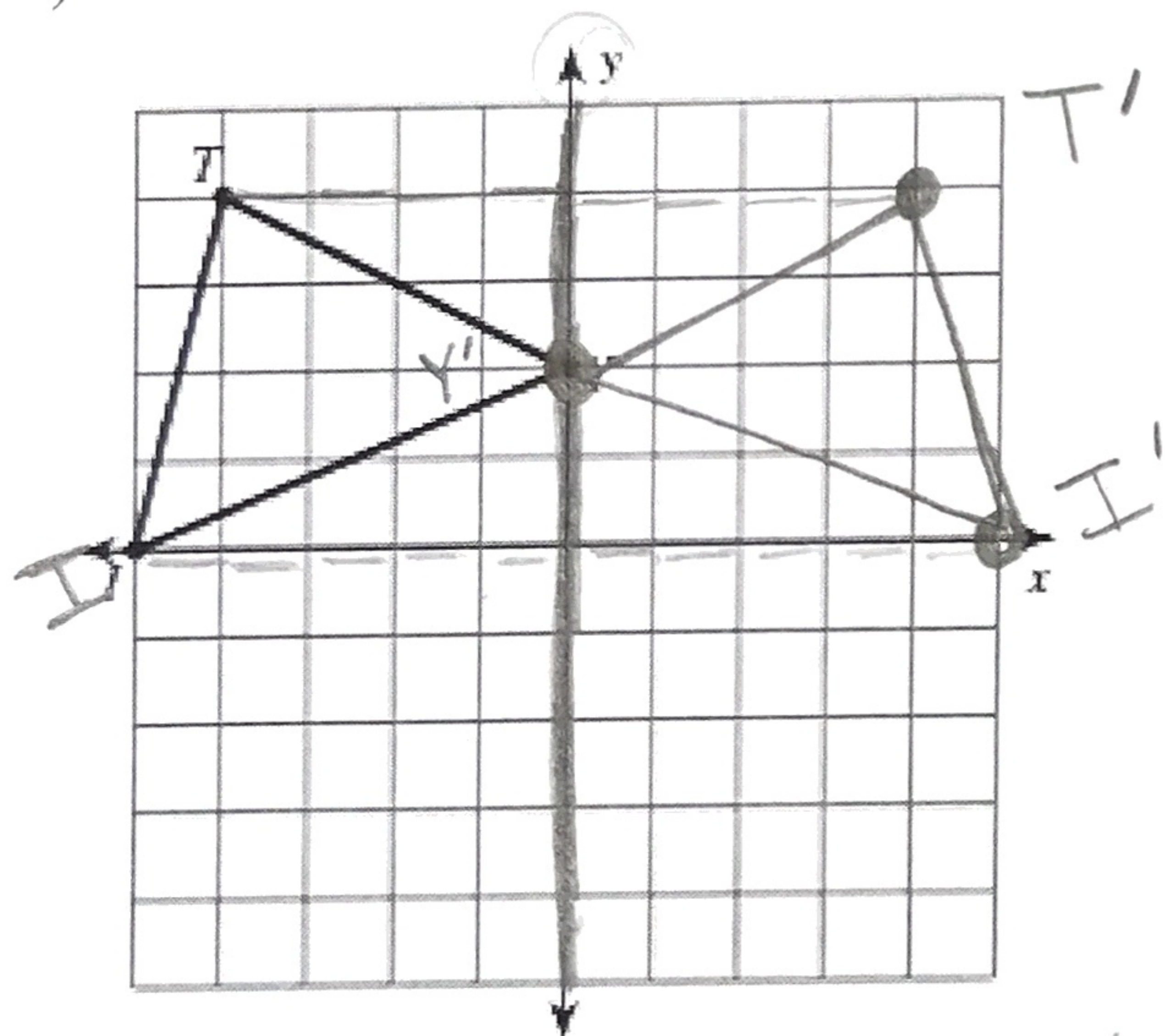
3) Reflect across the line y = x
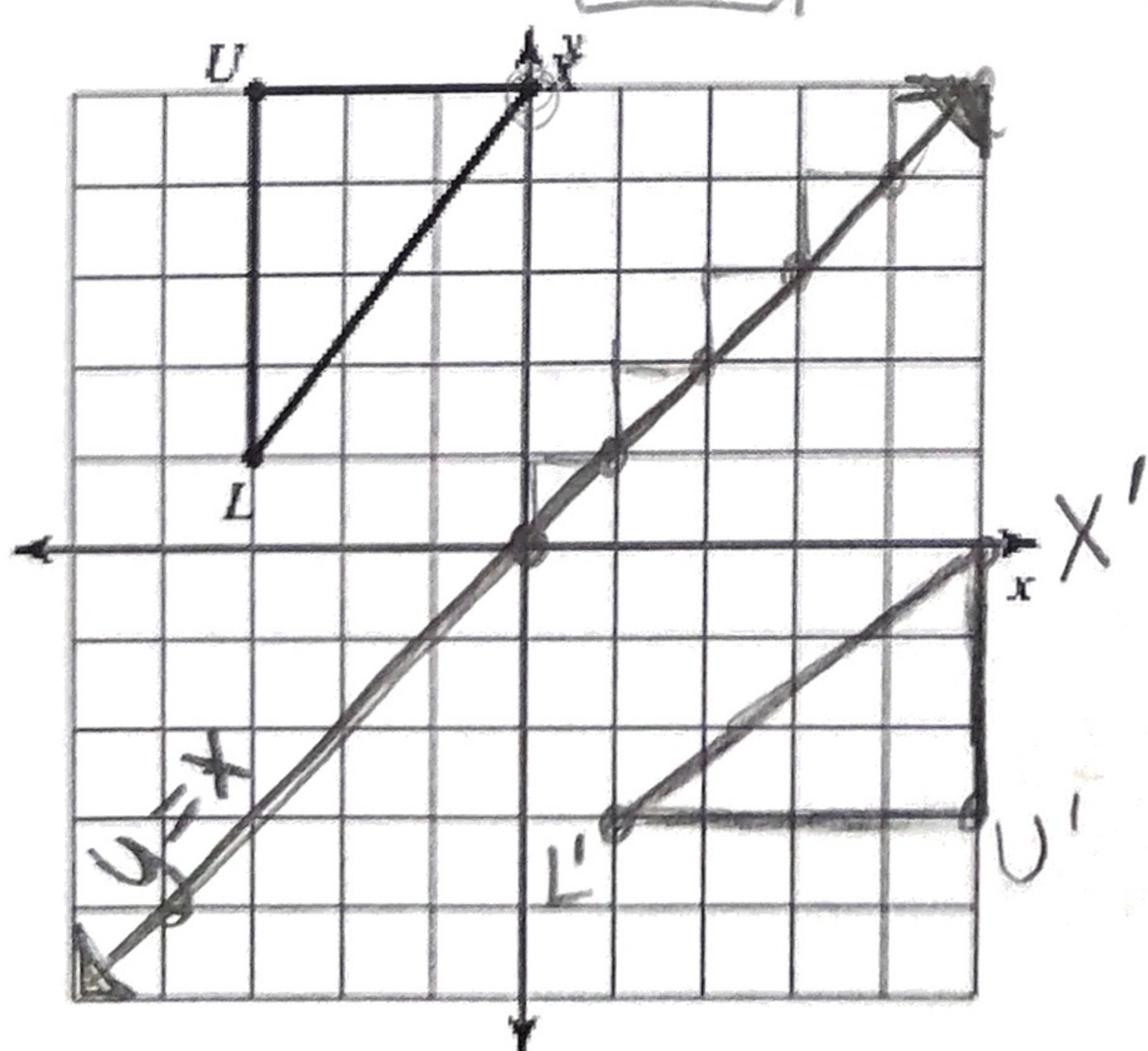
This one is harder and we will come up with a short cut that you have to memorize.

Pre- Image Points	Image Points
X (0, 5)	X′ (5, 0)
U (-3, 5)	U′ (5, -3)
L (-3, 1)	L′ (1, -3)

Shortcut: When you reflect over the line y = x, the x goes to the _y_ spot, and the y goes to the _x_ spot. So basically, they _switch_ (flip)
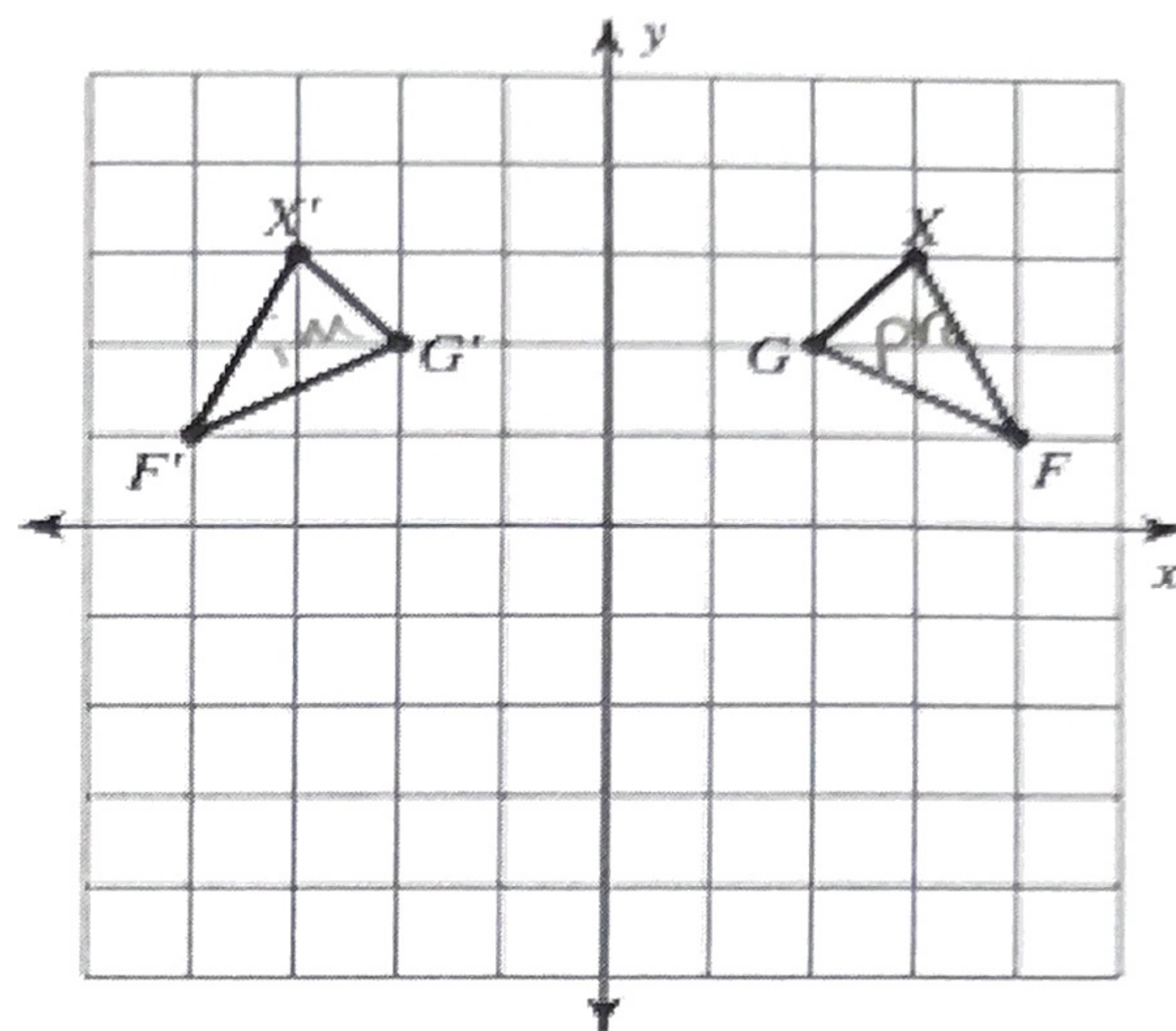
You may also have to describe a reflection. Remember to use correctly vocabulary.

Write a rule to describe each transformation.

4)
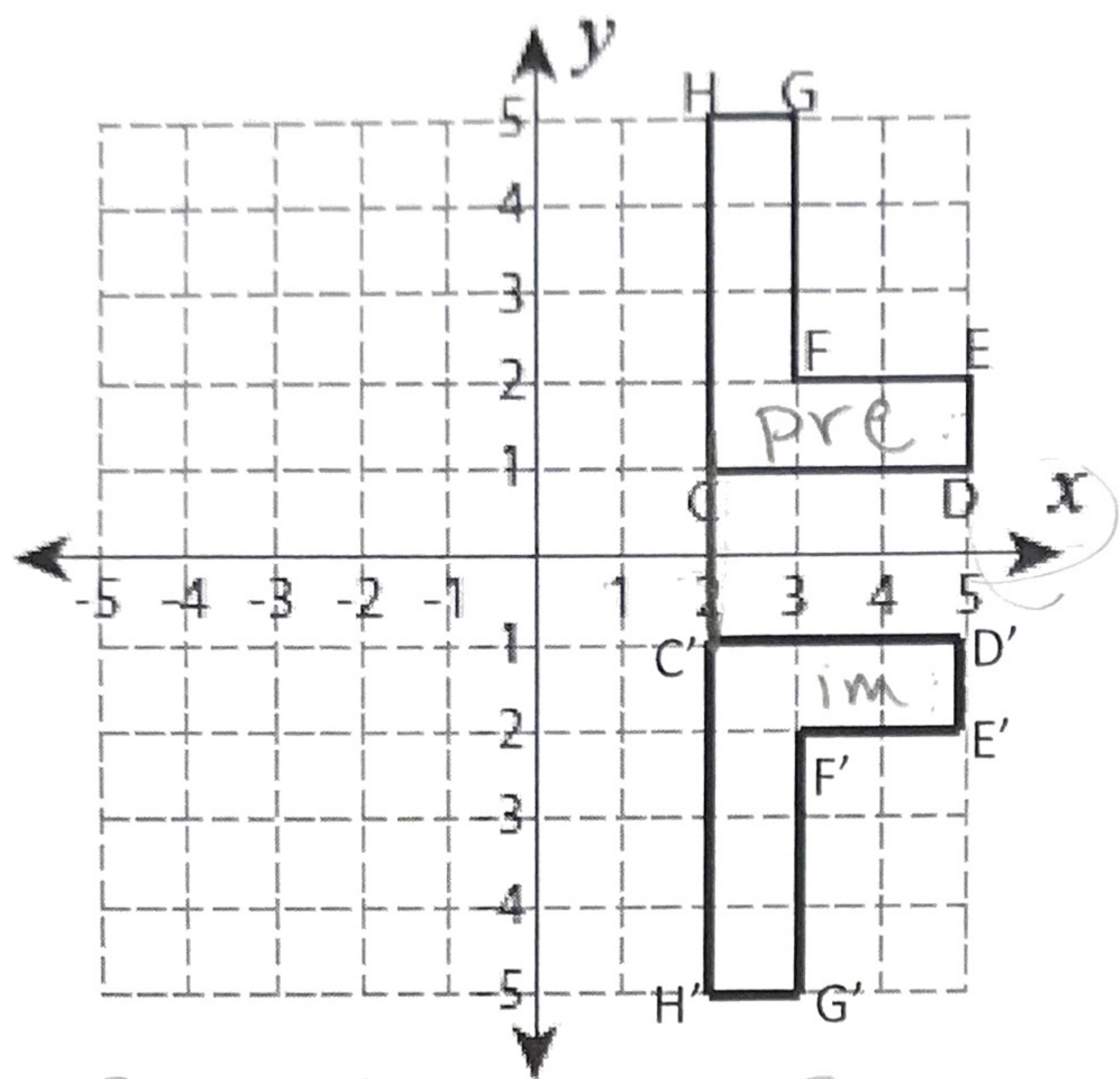
Reflection of the
preimage over the x-axis

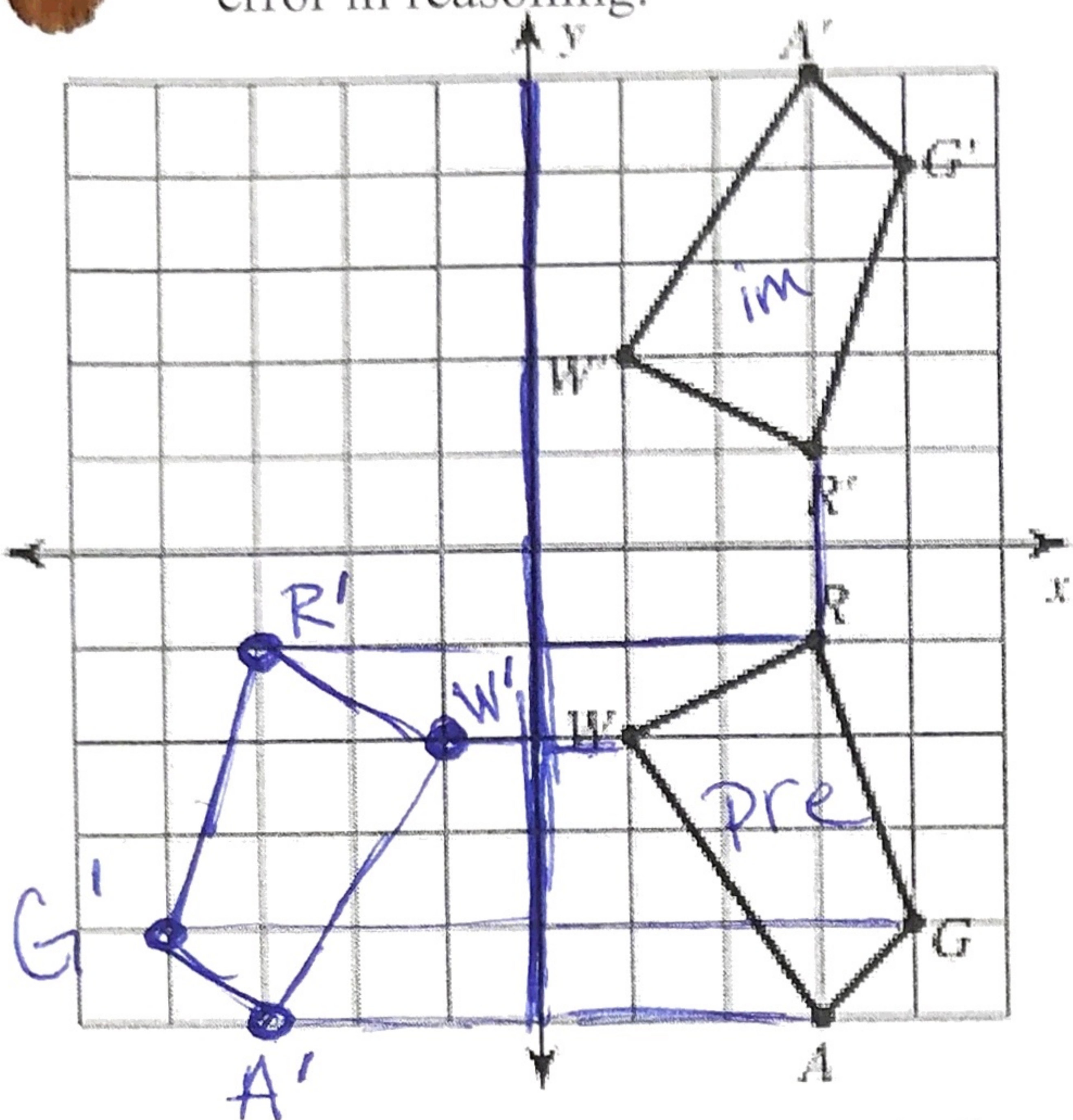You will practice using the Reflections Practice Sheet. Tomorrow

across

5)

Reflection of the
preimage over
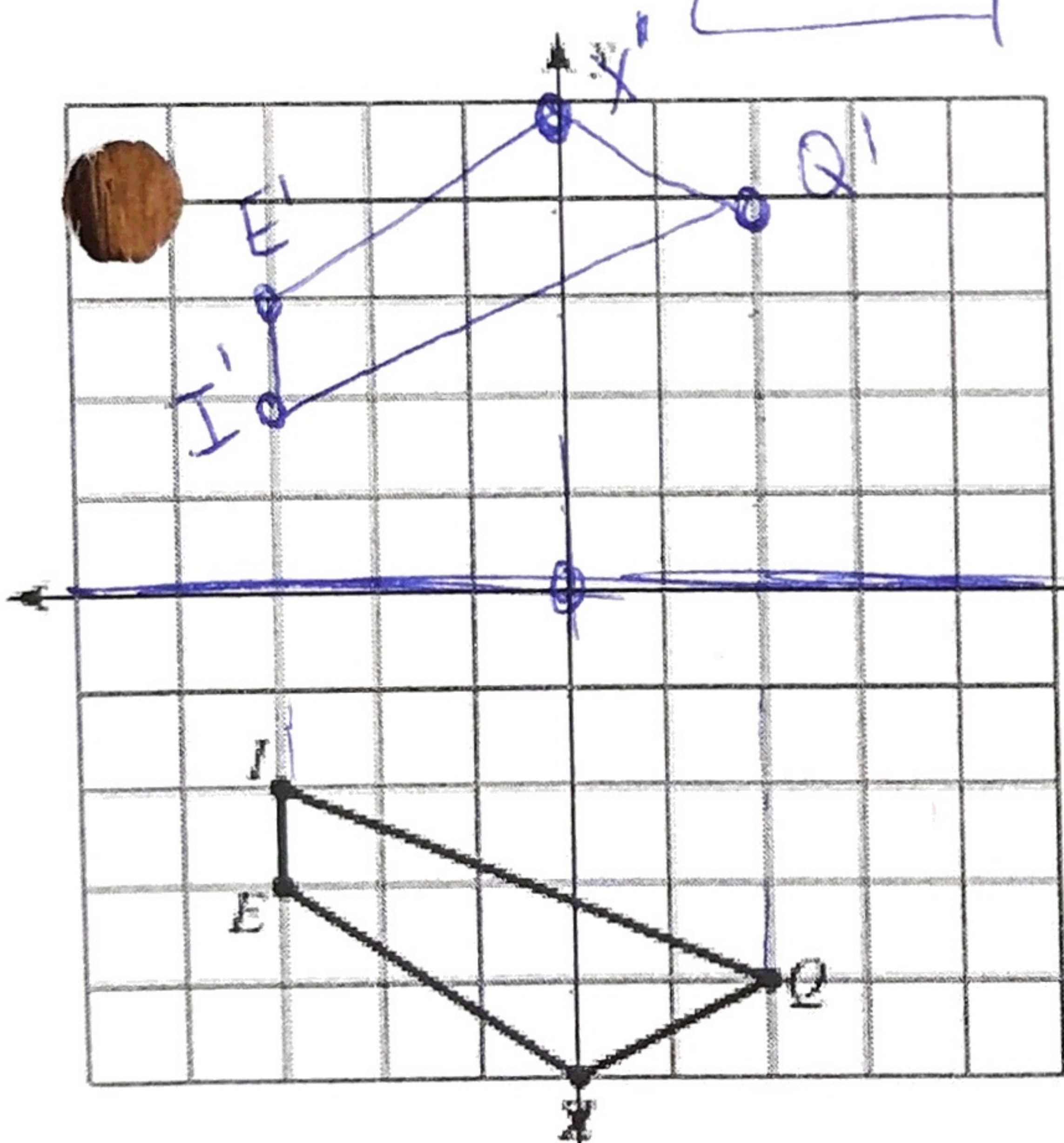the y-axis

Reflections Practice Sheet

Name: 2nd hr.

1. Maria was asked to reflect the figure over the y – axis. Her answer is shown below. Explain Maria's error in reasoning.

① Maria had to reflect a figure
② She drew A'G'R'W'
③ She reflected over the wrong axis.
④ I will draw the correct answer.

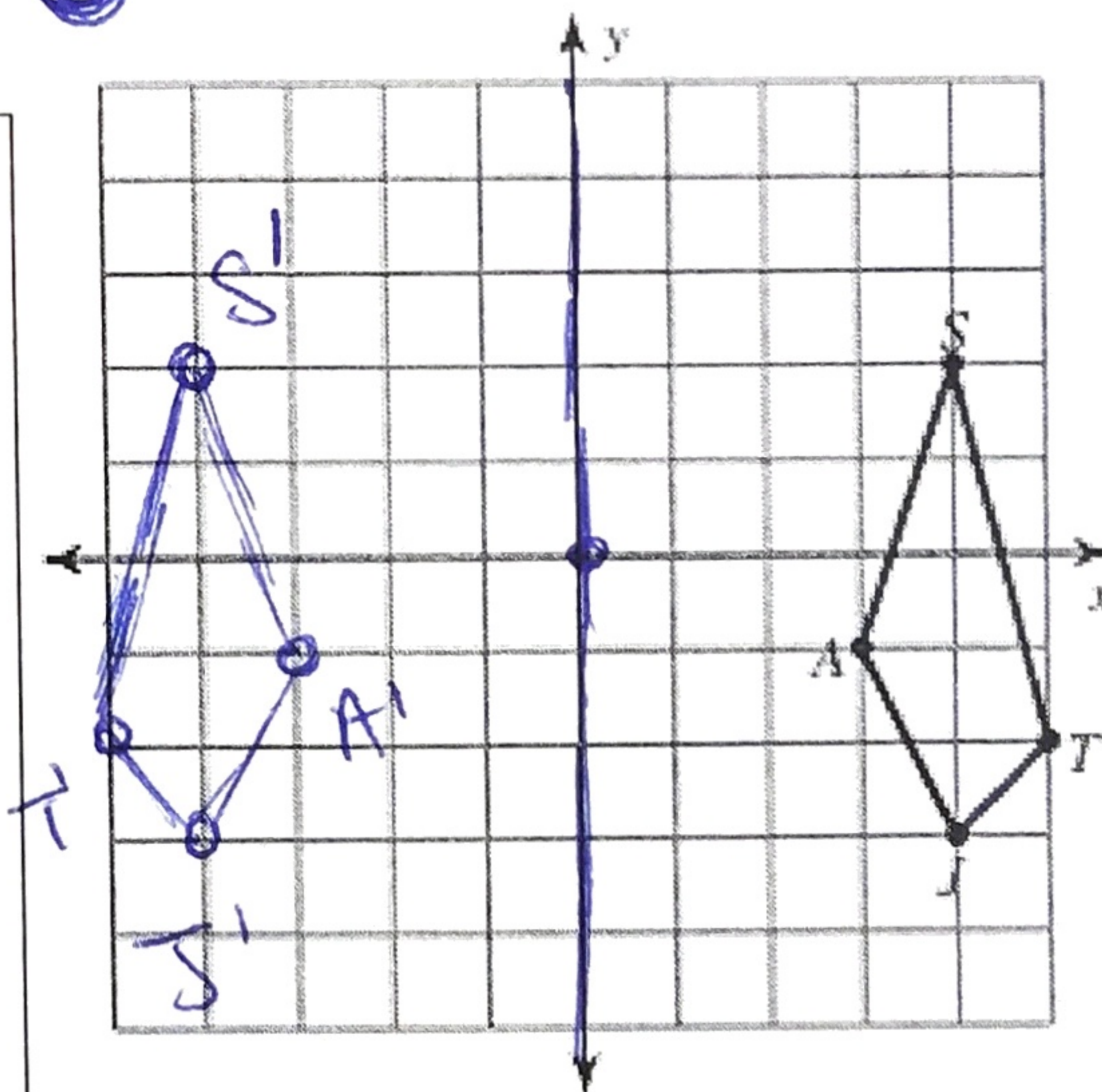For each graph below, perform the indicated reflection and then **give the coordinates of the image**.

2. Reflect over the x – axis

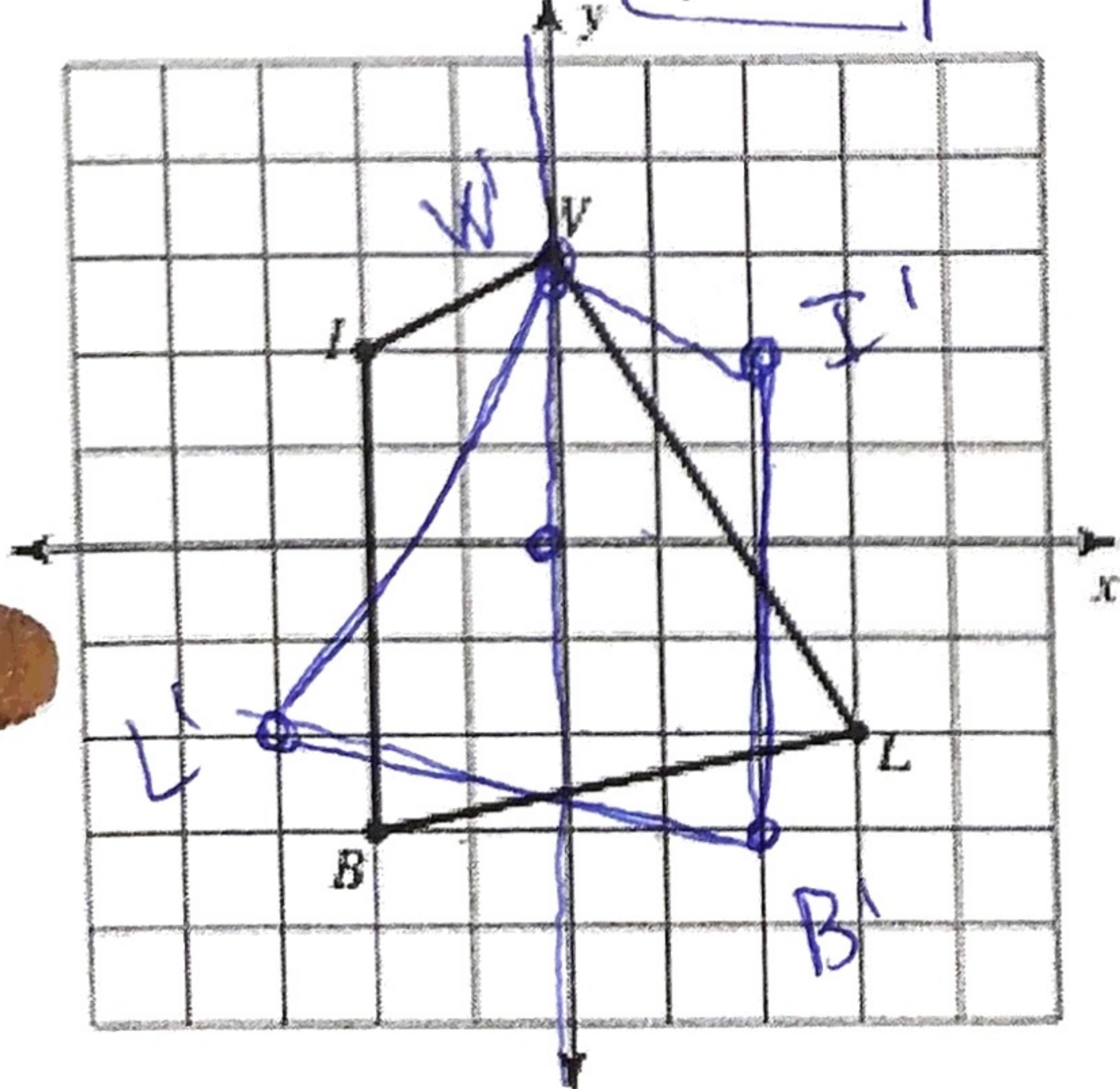Points of the Image

I' (-3,2)

Q' (2,4)

X' (0,5)

E' (-3,3)

3. Reflect over the y – axis

Points of the Image

S' (-4,2)

T' (-5,-2)

J' (-4,-3)

A' (-3,-1)
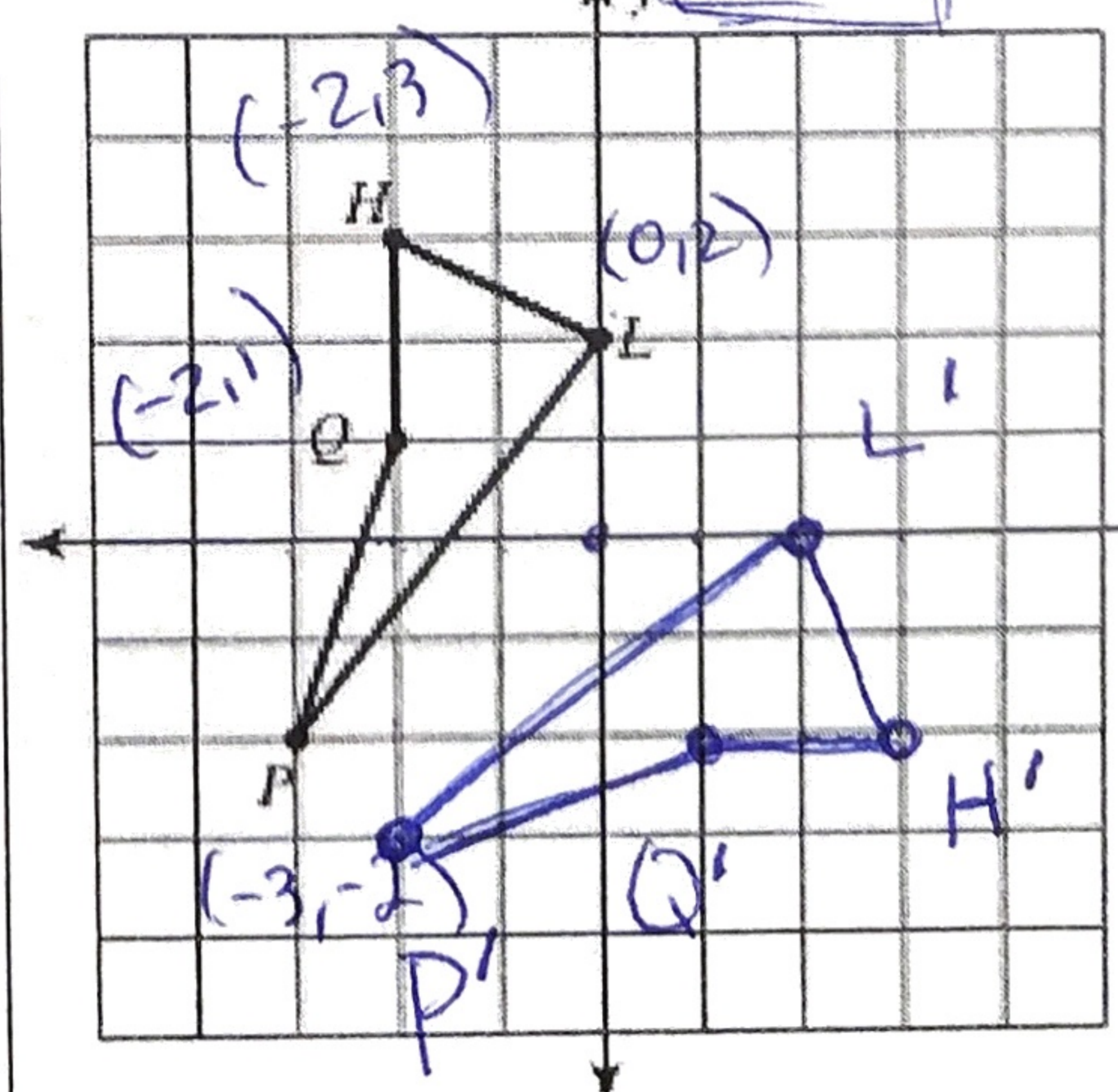
4. Reflect over the y – axis
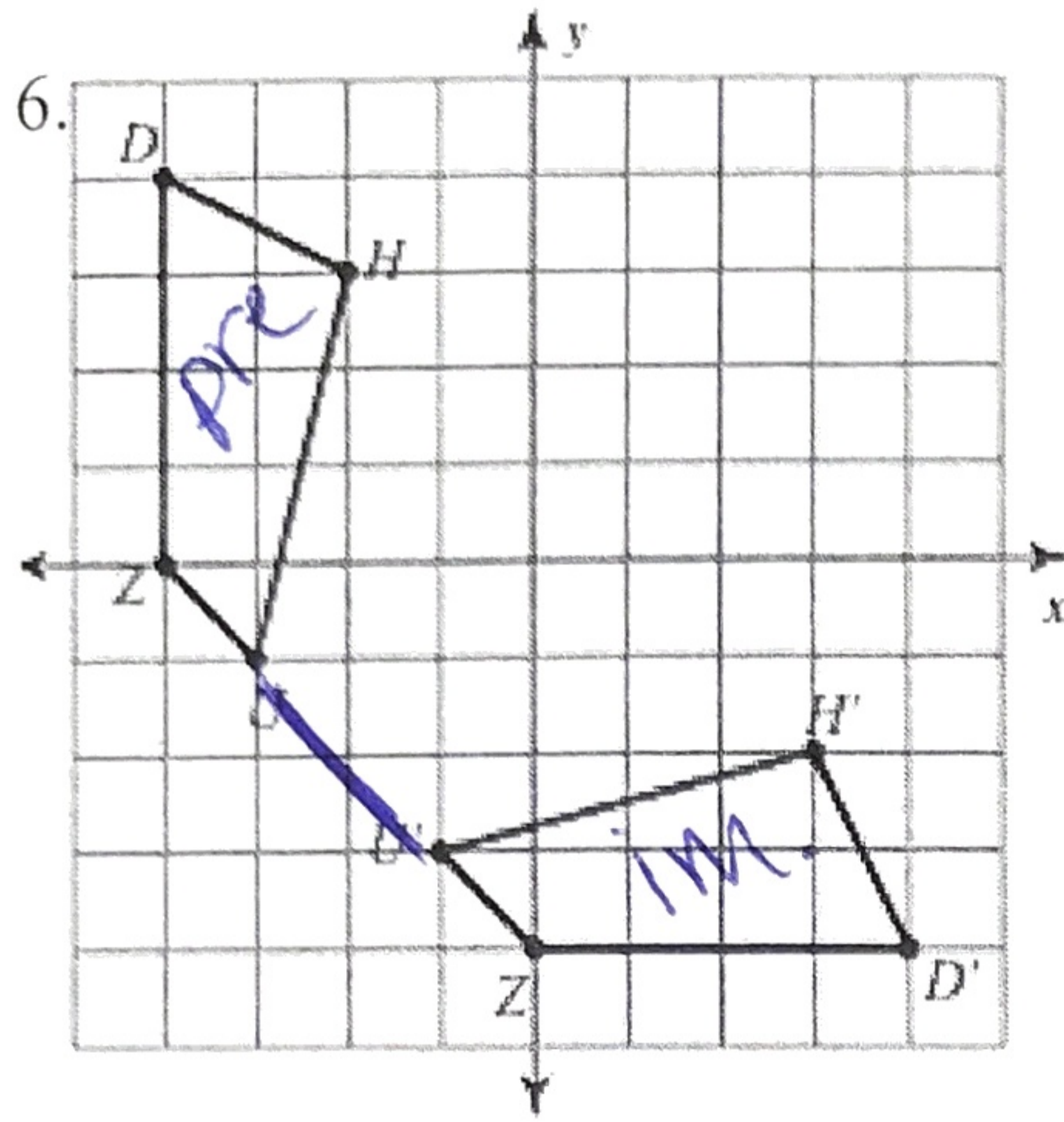

Points of the Image

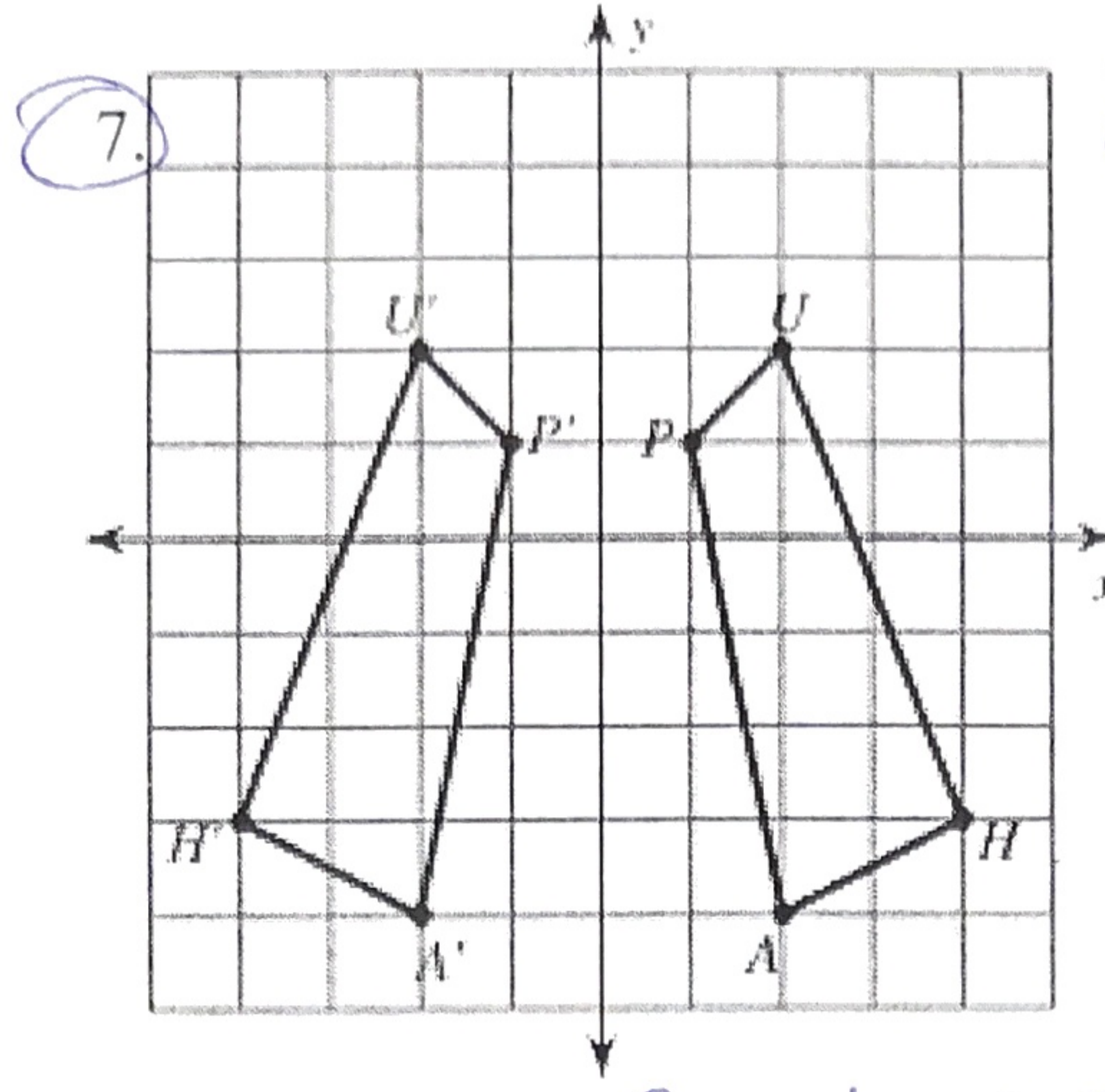W' (0,3)

L' (-3,-2)

B' (2,-3)

I' (2,2)

5. Reflect over the line y = x

Points of the Image

H' (3,-2)

Q' (1,-2)

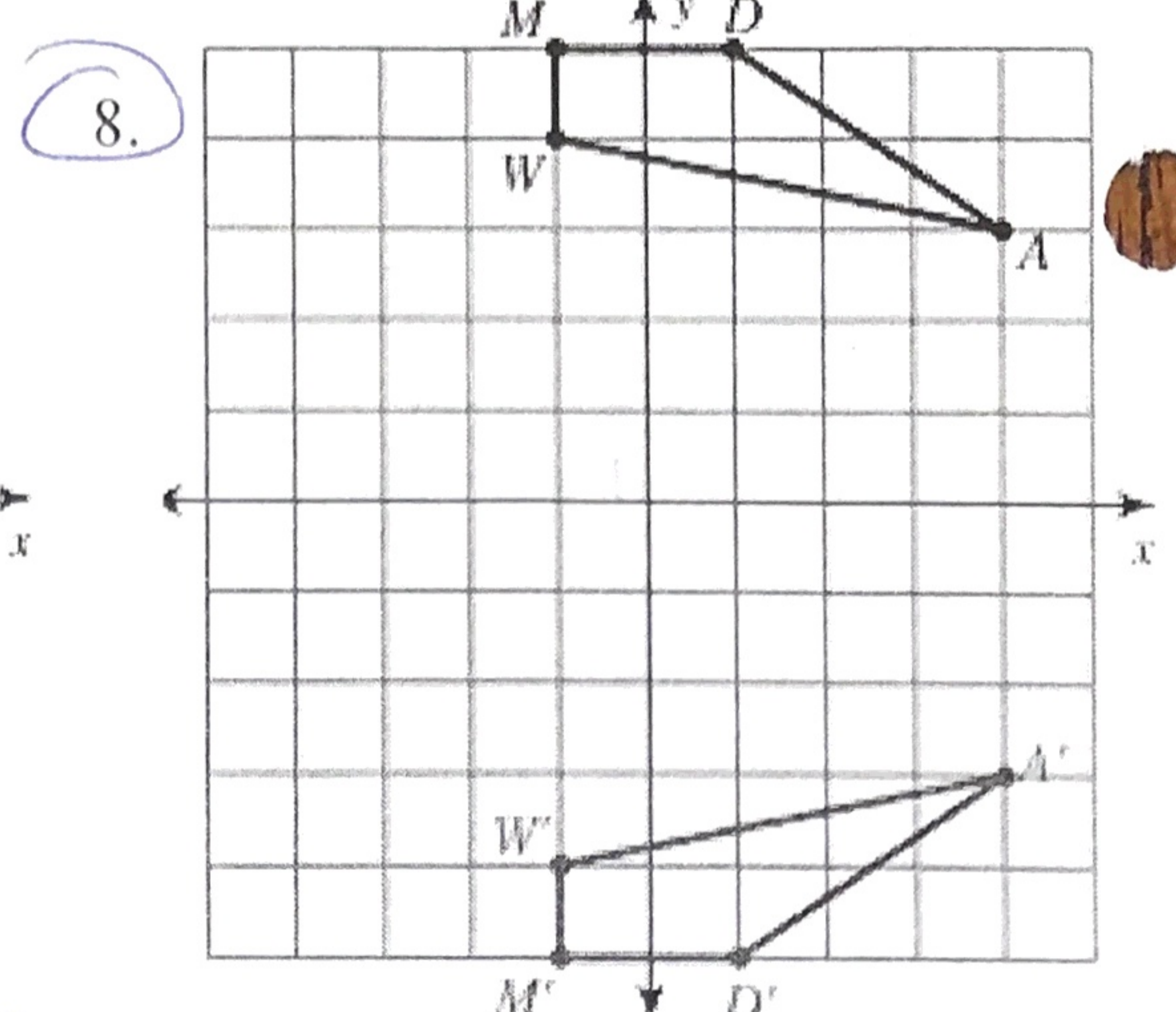P' (-2,-3)

L' (2,0)

Describe each reflection

6.

Reflection of the preimage over y=x

7.

Reflect over y-axis

8.

Reflect over x-axis

9-14 Reflect each point as directed.

You may use the graph if needed.

9. Reflect A (5, -2) over the x axis. $A'(5,2)$
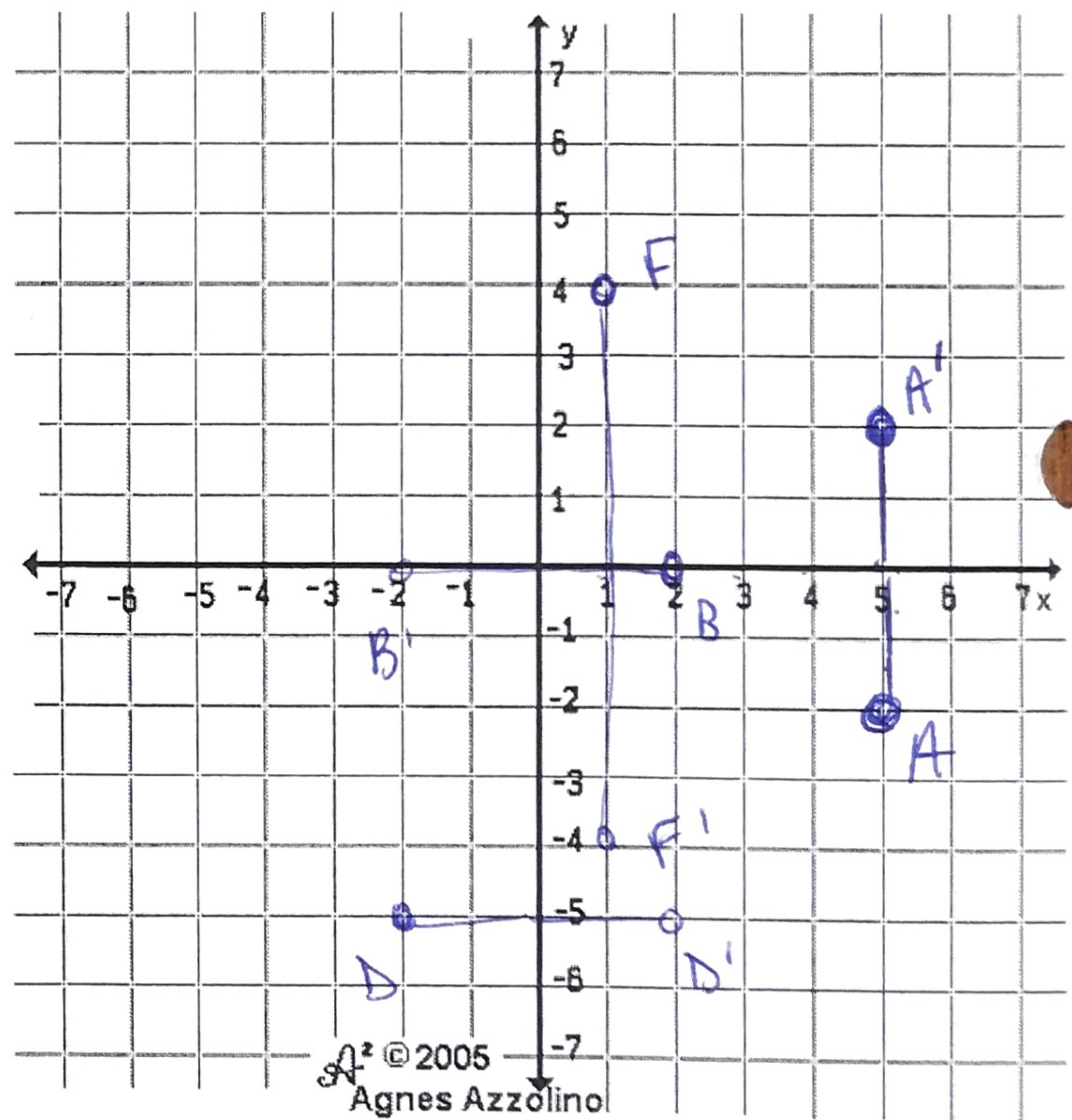
10. Reflect B (2, 0) over the y axis. $(-2,0)$
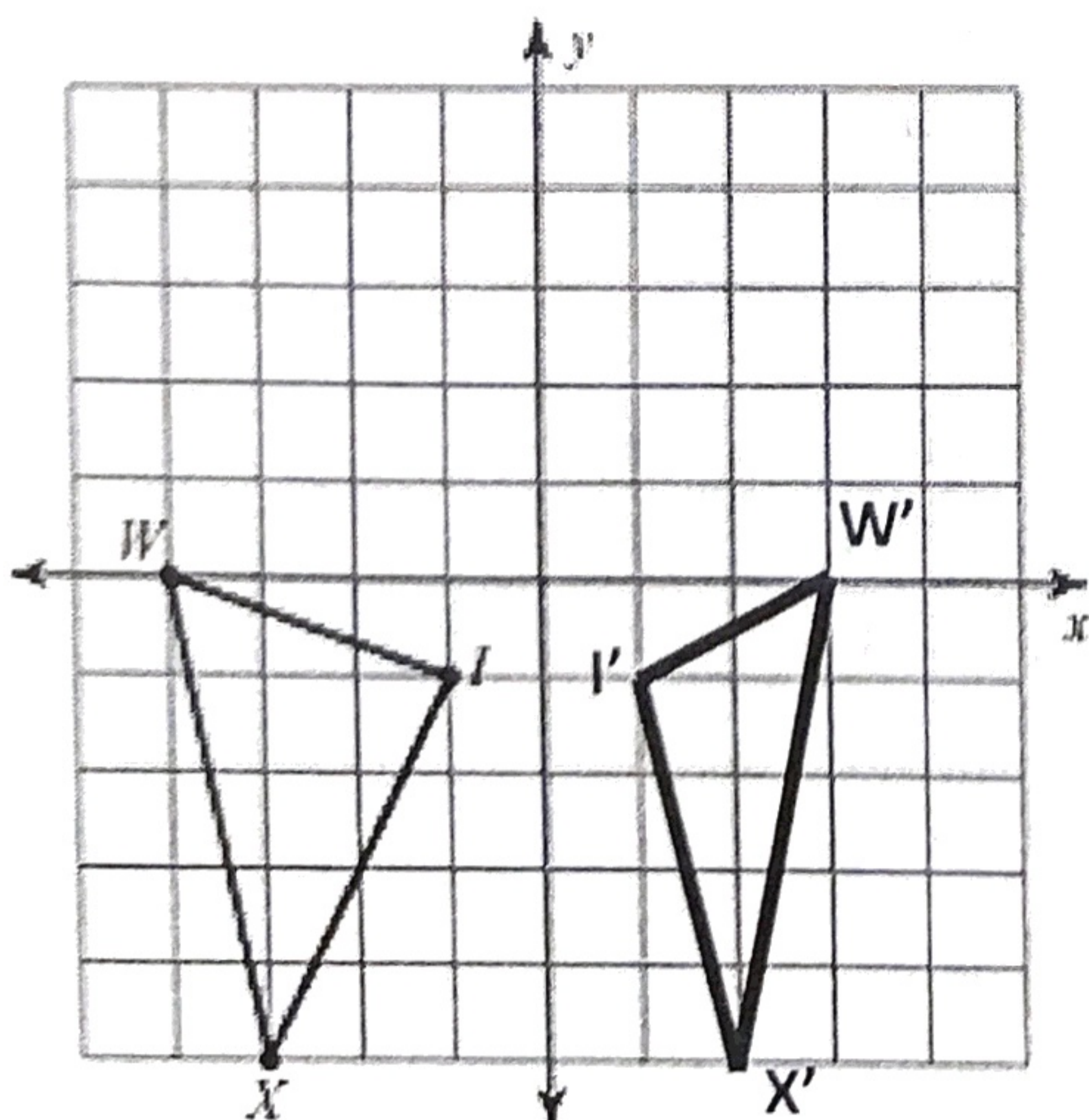
11. Reflect C (-4, 1) over the line y = x. $(1,-4)$

12. Reflect D (-2, -5) over the y axis. $(2,-5)$

13. Reflect E (0, -3) over the line y = x. $(-3,0)$

14. Reflect F (1, 4) over the x axis. $(1,-4)$

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15. Marshall was asked to reflect the figure over the y – axis. His answer is shown below. Explain Marshall's error in reasoning.