



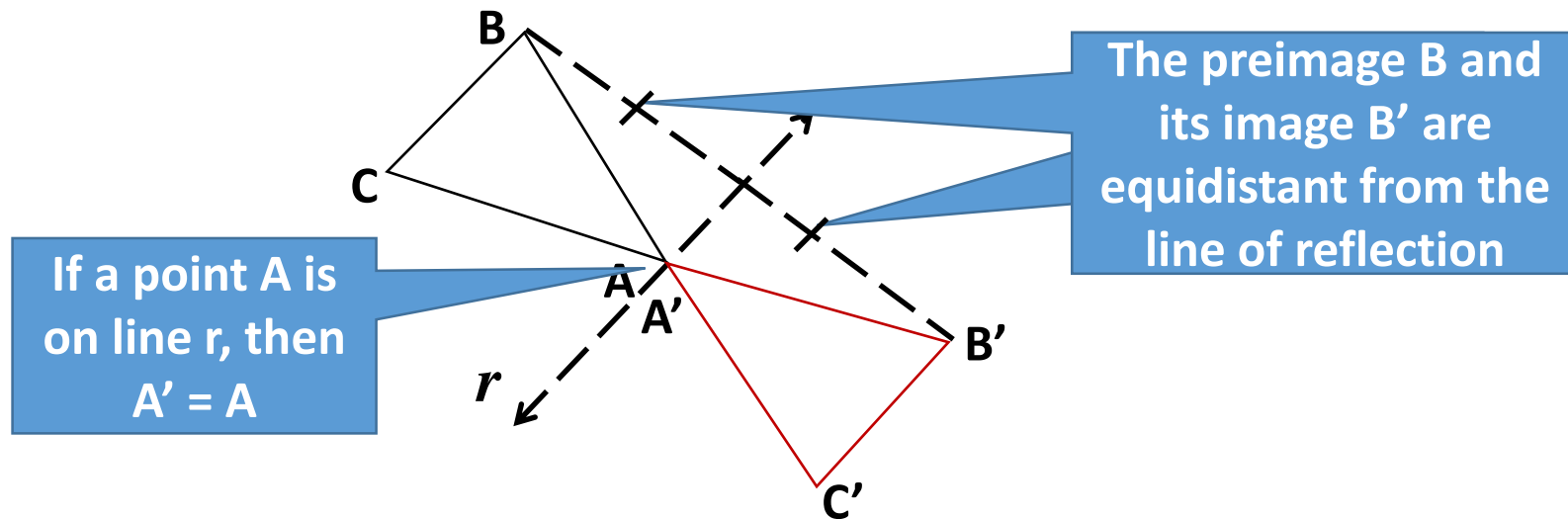
Reflections

Lesson 4.2

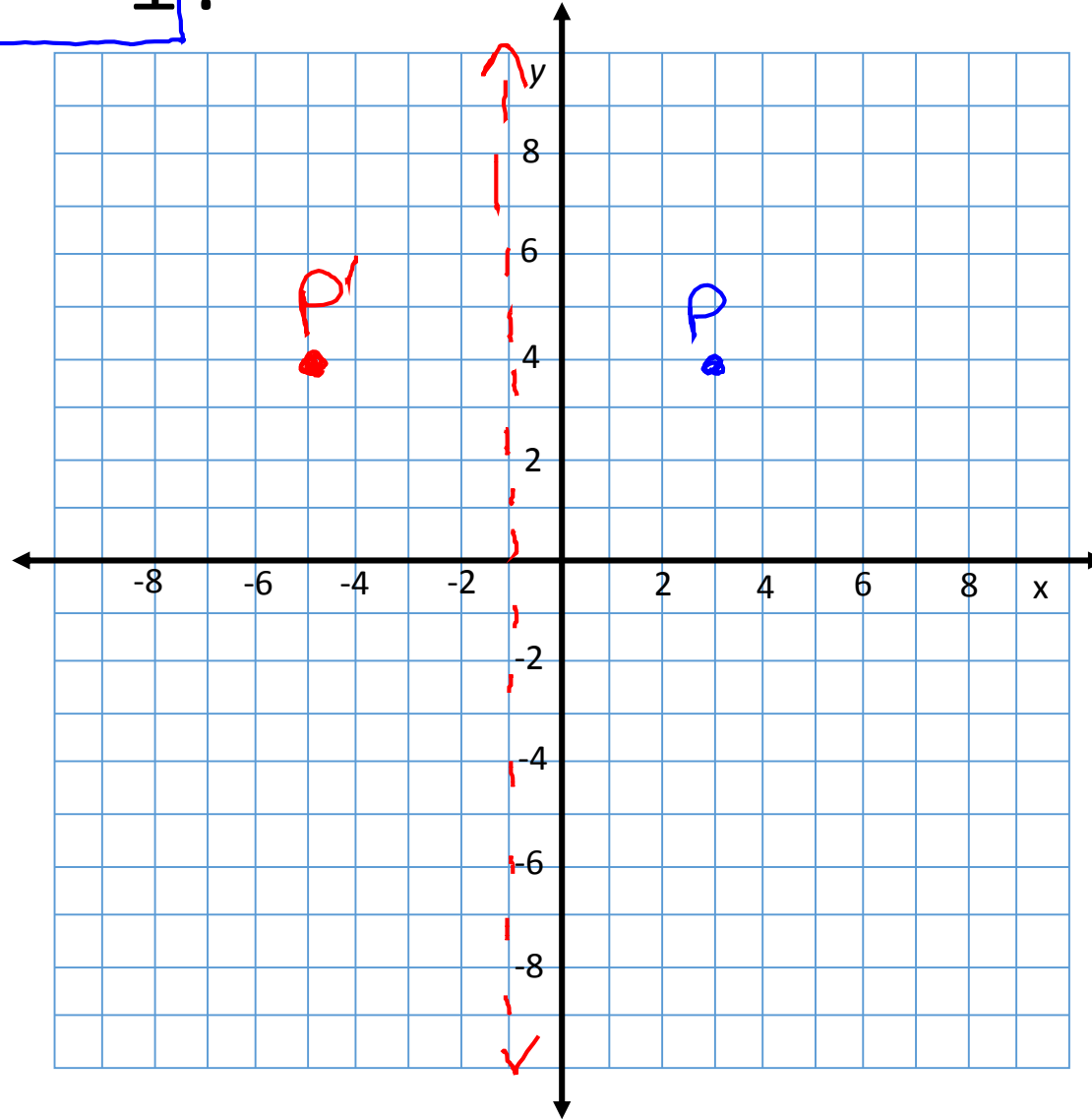
Reflection Across a Line

A **reflection** is a transformation that uses a line like a mirror to reflect a figure.

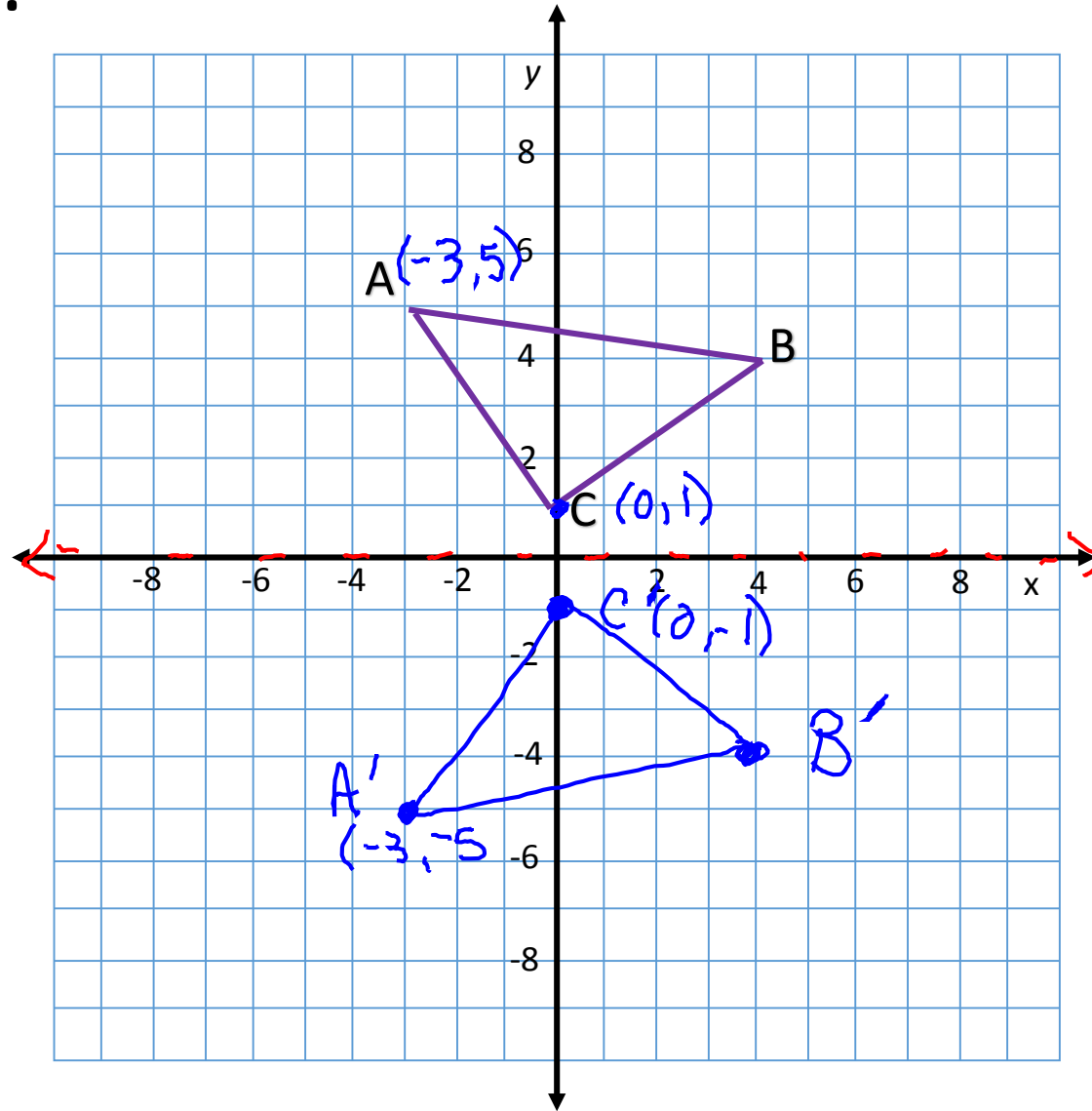
- The mirror line is called the **line of reflection**.
- A reflection is a rigid motion.



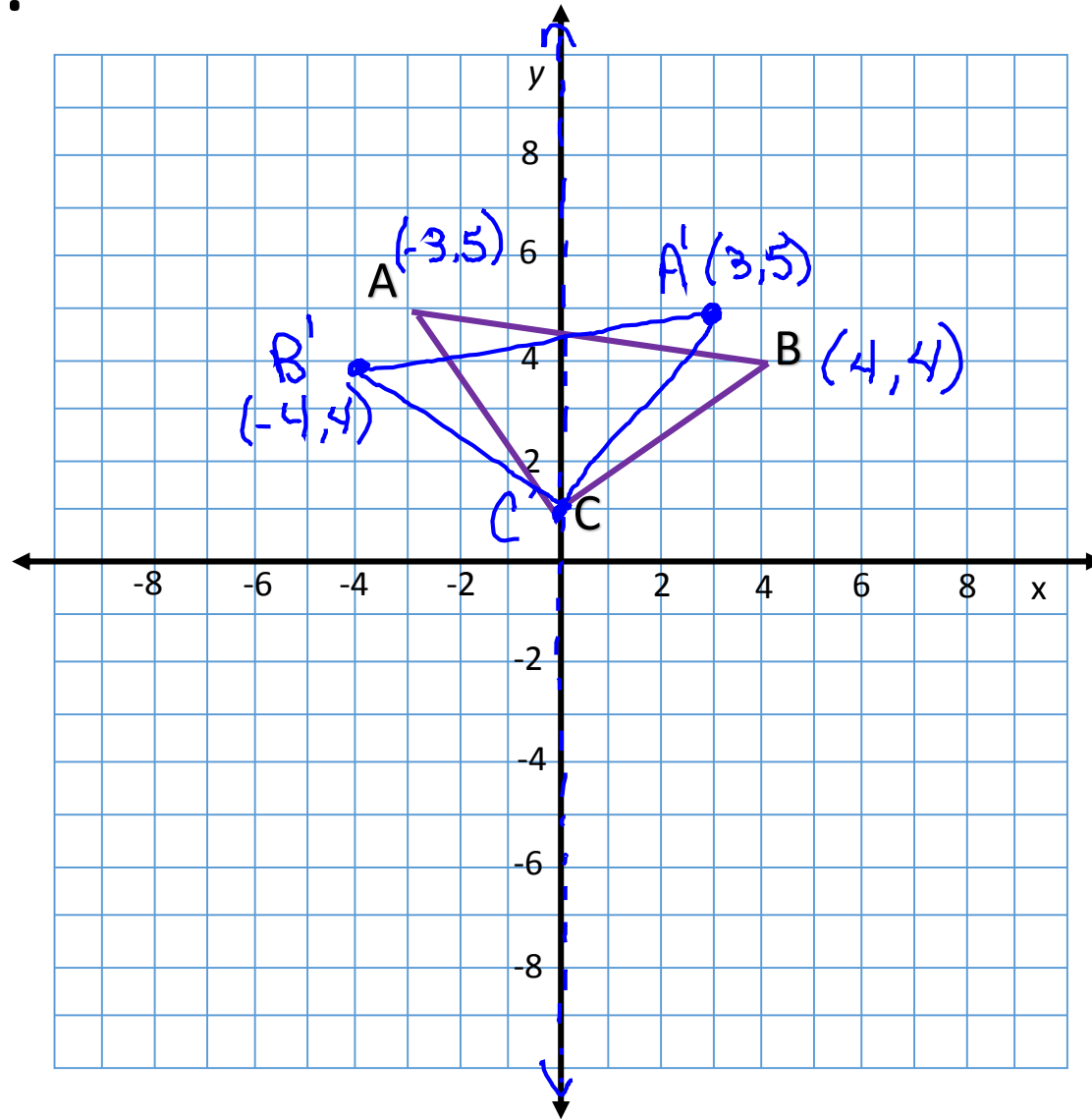
What is the image of $P(3, 4)$ reflected across the line $x = -1$?



What is the image of $\triangle ABC$ reflected across the x-axis?

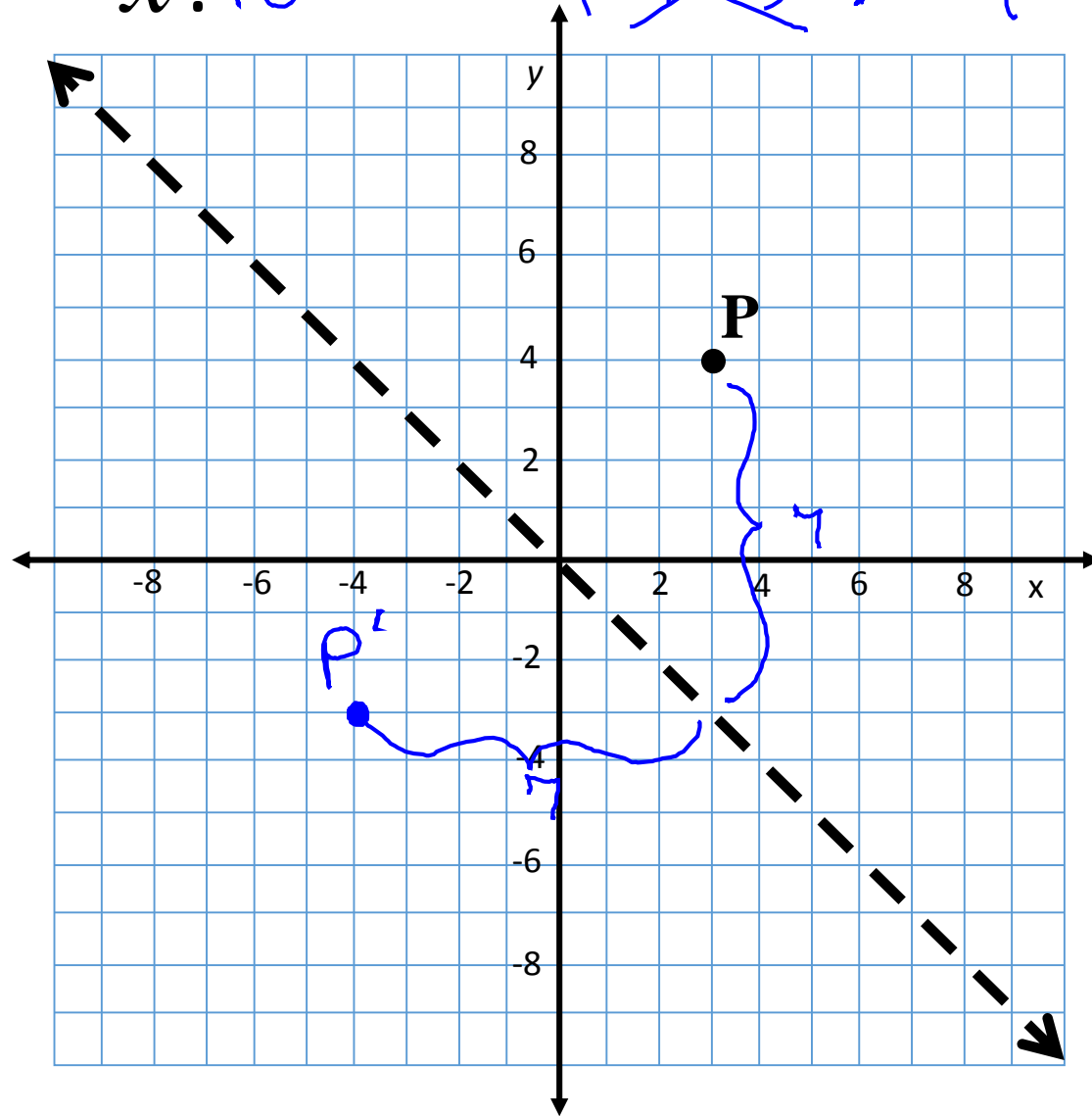


What is the image of $\triangle ABC$ reflected across the y -axis?

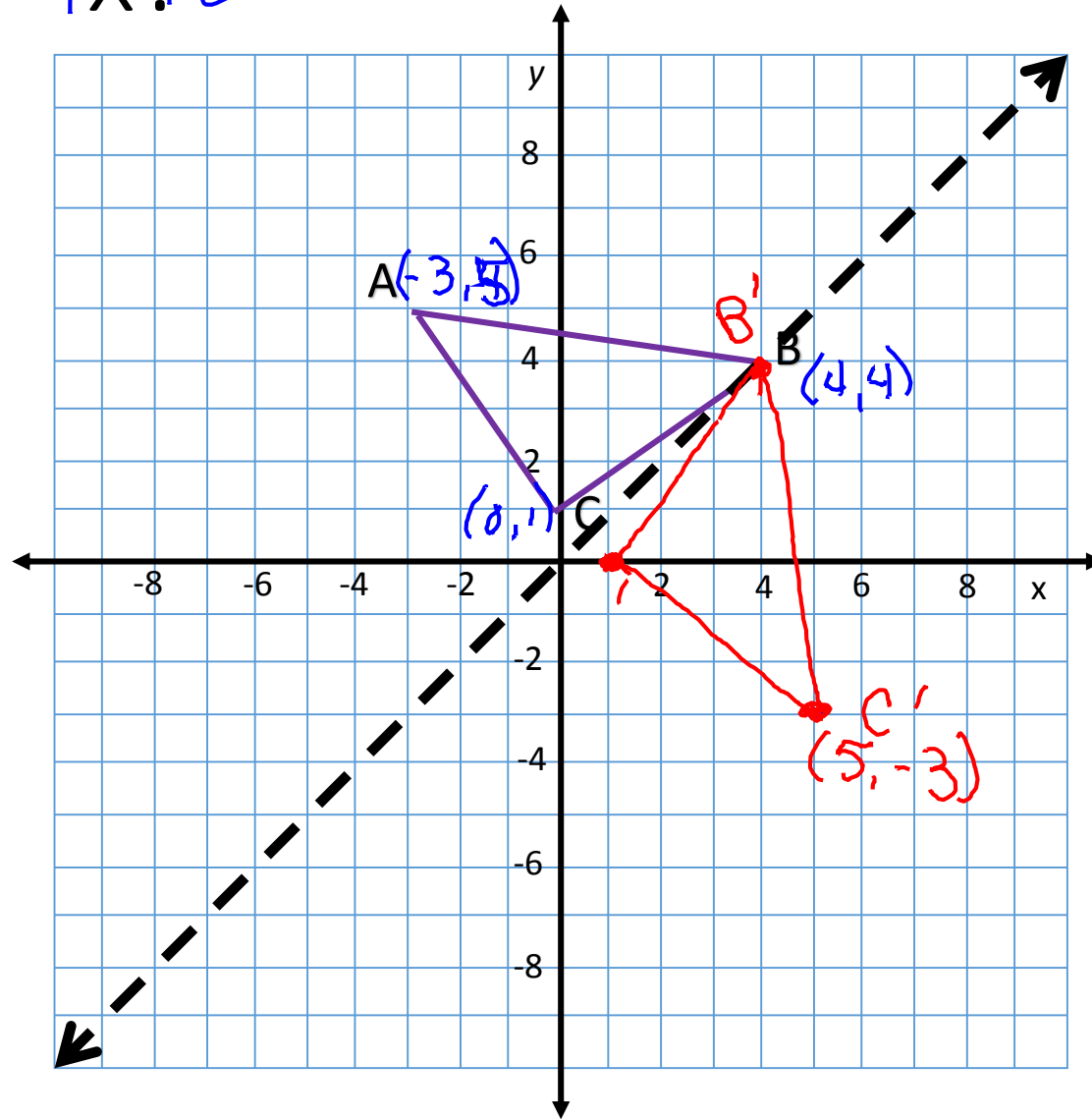


What is the image of $P(3, 4)$ reflected across the line $y = -x + 0$?

~~$(-3, 4)$~~ ? $(-4, -3)$



What is the image of $\triangle ABC$ reflected across the line $y = x$?



Coordinate Rules for Reflections

If (a, b) is reflected in the **x-axis**, then its image is $(a, -b)$.

If (a, b) is reflected in the **y-axis**, then its image is $(-a, b)$.

If (a, b) is reflected in the line **$y = x$** , then its image is (b, a) .

If (a, b) is reflected in the line **$y = -x$** , then its image is $(-b, -a)$.

Glide Reflections

A **glide reflection** is a transformation that involves a translation followed by a reflection.

- The line of reflection *must be parallel* to the direction of the translation to be a glide reflection.

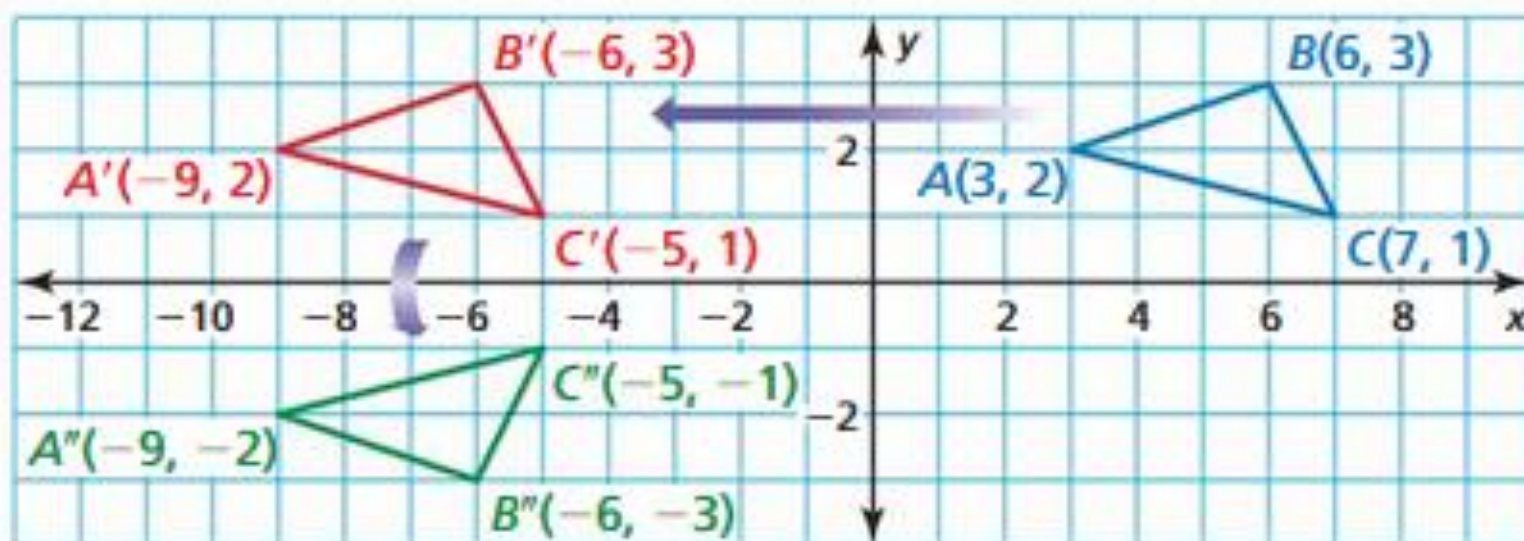
Graph $\triangle ABC$ with vertices $A(3, 2)$, $B(6, 3)$, and $C(7, 1)$ and its image after the glide reflection.

Translation: $(x, y) \rightarrow (x - 12, y)$

Reflection: in the x -axis

SOLUTION

Begin by graphing $\triangle ABC$. Then graph $\triangle A'B'C'$ after a translation 12 units left. Finally, graph $\triangle A''B''C''$ after a reflection in the x -axis.



How many lines of symmetry does each hexagon have?

