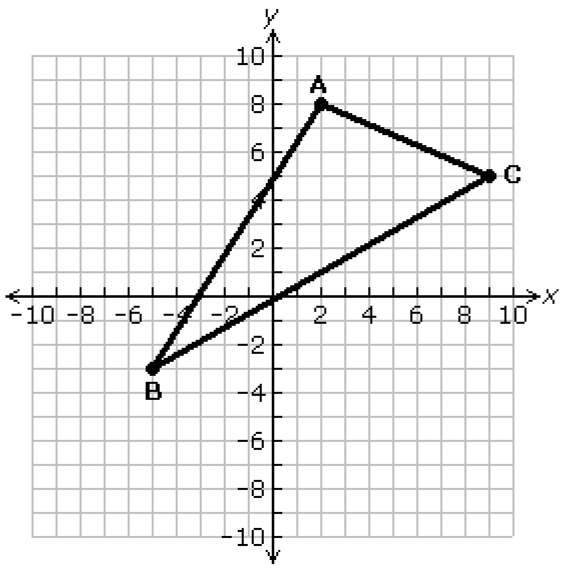
Reflections on a Coordinate Plane

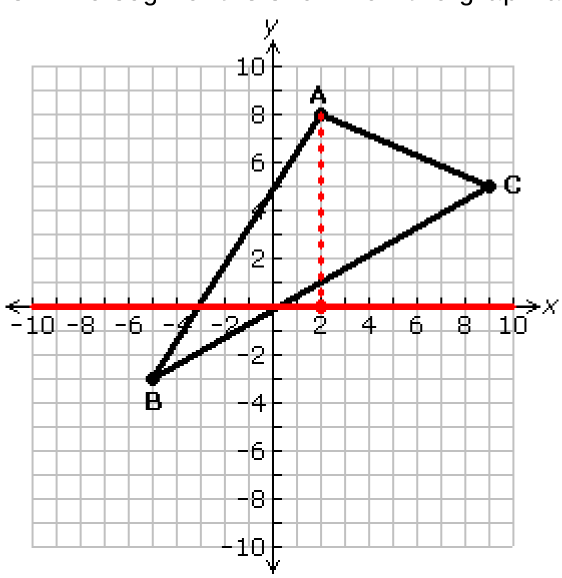
Flossville Park, Bring Your Own Food Task: Place five picnic tables.
Windjammer Center, Get Physically Fit Subtask 1: Place a 2nd set of tires.

When a figure is **reflected** over a given line, the resulting figure is called its **reflection**. The reflection is the mirror image of the original figure and the line of reflection is the mirror. If you were able to fold the picture along the line of reflection, the original figure and its reflection would align perfectly.

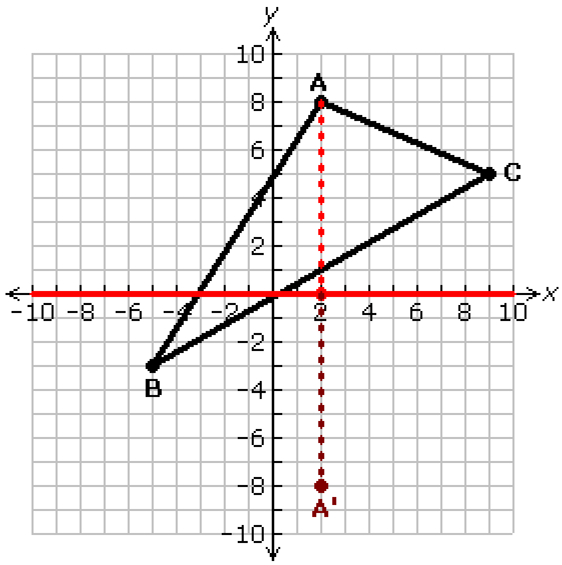
Example: A triangle has vertices at point A with coordinates (2, 8), B at (-5, -3), and C at (9, 5). After the triangle is reflected over the *x*-axis, what are the coordinates of its vertices?



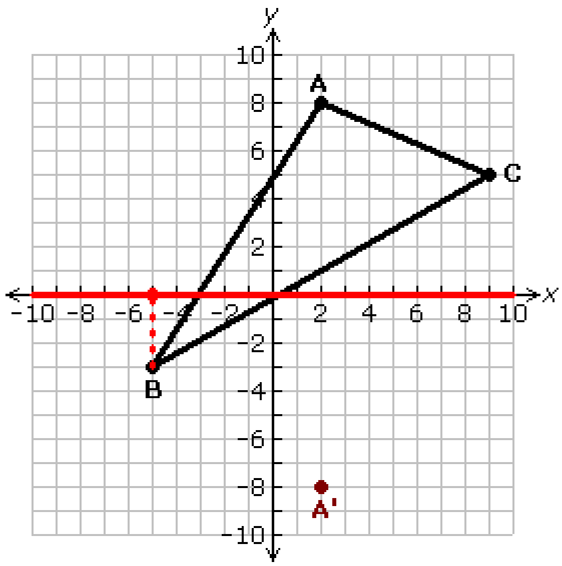
Begin by drawing a segment from point A perpendicular to the line of reflection, the *x*-axis. The segment is shown on the graph as a dotted line.



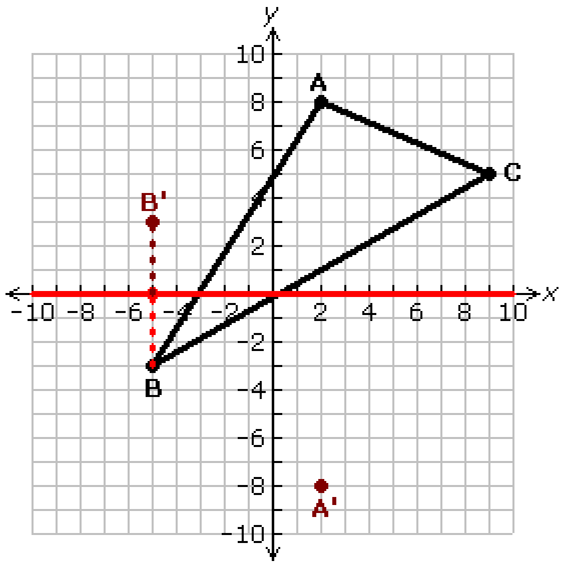
Extend the segment to a point on the other side of the *x*-axis that is the same distance from the *x*-axis as point A. This point, A', is the reflection of point A.



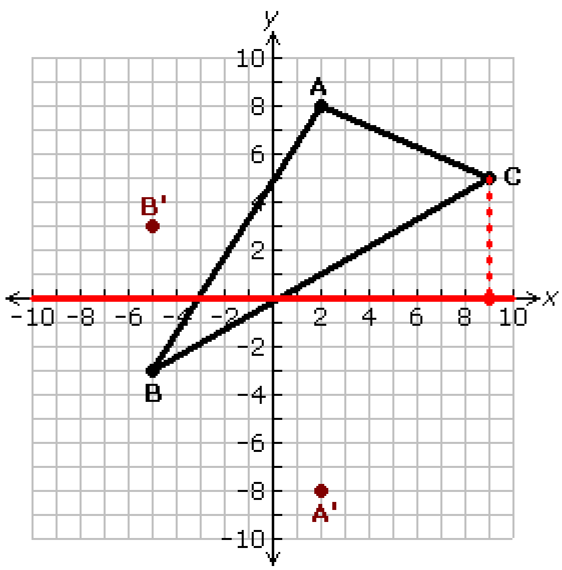
Repeat the process beginning at point B.



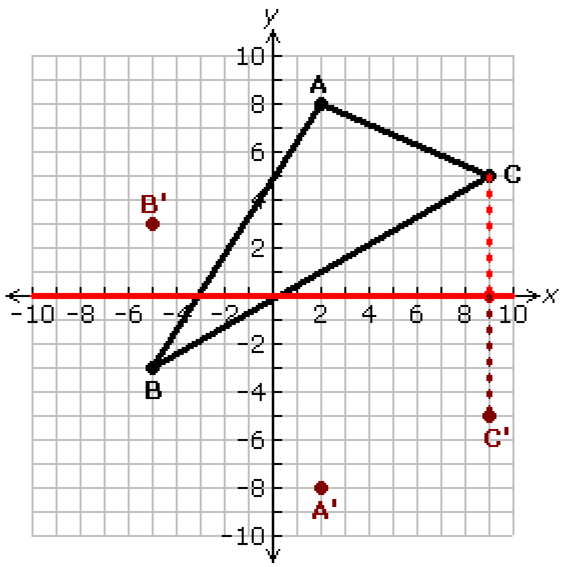
Locate the reflection of point B on the opposite side of the *x*-axis.



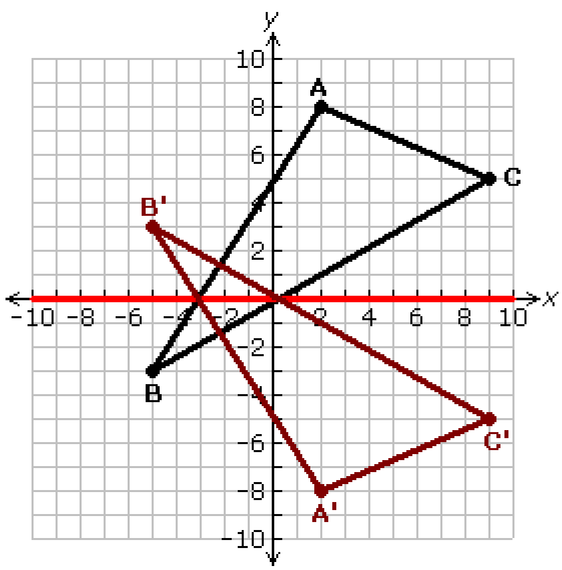
Repeat the process again beginning with point C.



Locate the reflection of point C.



Connect the points A', B', and C' to draw the reflection of triangle ABC.



Answer: After the triangle is reflected over the *x*-axis, the vertices of the reflected triangle will be at the points A' at (2, -8), B' at (-5, 3), and C' at (9, -5).

Notice the relationship between the original coordinates and those of the reflection.

A at (2, 8) → A' at (2, -8)
B at (-5, -3) → B' at (-5, 3)
C at (9, 5) → C' at (9, -5)

Folding the graph along the *x*-axis would result in the original figure landing on its reflection.

