**Lesson 5 Summary**

We can use coordinates to describe points and find patterns in the coordinates of transformed points.

We can describe a translation by expressing it as a sequence of horizontal and vertical translations. For example, segment $AB$ is translated right 3 and down 2.

Reflecting a point across an axis changes the sign of one coordinate. For example, reflecting the point $A$ whose coordinates are $(2, -1)$ across the $x$-axis changes the sign of the $y$-coordinate, making its image the point $A'$ whose coordinates are $(2, 1)$.

Reflecting the point $A$ across the $y$-axis changes the sign of the $x$-coordinate, making the image the point $A''$ whose coordinates are $(-2, -1)$.

★ This only works if line of reflection is x or y axis ★

Reflections across other lines are more complex to describe. ★

We don’t have the tools yet to describe rotations in terms of coordinates in general. Here is an example of a $90^\circ$ rotation with center $(0, 0)$ in a counterclockwise direction.

Point $A$ has coordinates $(0, 0)$. Segment $AB$ was rotated $90^\circ$ counterclockwise around $A$.

Point $B$ with coordinates $(2, 3)$ rotates to point $B'$ whose coordinates are $(-3, 2)$. 