7.1 Rigid Motion

**Rigid Transformations** - transformations that do not alter the size or shape of a figure (ex: rotations, reflections, translations)

- **Preimage** - the original figure/image
- **Image** - the new figure/image

**Isometry** - a transformation that preserves lengths (also preserves angle measures, parallel lines, & distance between points)

7.2 Reflections

A **line of reflection** acts like a mirror, with an image reflected over the line.

**Theorem 7.1: Reflection Theorem**

A reflection is an isometry.
A figure has a **line of symmetry** if the figure can be mapped onto itself by a reflection over the line.

Draw a line of symmetry on each figure. Remember that some figures may have more than one!
Graph the image of the figure using the transformation given.

Reflection across the **y-axis**  

Reflection across the **x-axis**

Graph the image of the figure using the transformation given.

Reflection across the **y-axis**  

Reflection across the **x-axis**
Graph the image of the figure using the transformation given.

**Reflection across** $y = x$

Switch $x$ & $y$

$y = mx + b$

$m = 1, b = 0$

Graph the image of the figure using the transformation given.

**Reflection across** $y = -x$

Switch $x$ & $y$ AND change signs

Graph the image of the figure using the transformation given.
Graph the image of the figure using the transformation given.

Reflection across \( y = 2 \)

Reflection across \( x = -1 \)

Graph the image of the figure using the transformation given.

Reflection across \( y = -3 \)

Reflection across \( x = 1 \)