Reflections

- Reflected images are mirror images of the pre-image
- Images of reflections are isometries (pre-image and image are congruent)

**Line Reflections:**

- The mirror line is called the **line of reflection**
- The image is a flip of the pre-image
- Reflections may occur in any line of reflection, but we will concentrate on reflections in these lines of reflection:

**Finding Images of Line Reflections:**

- Reflection in **x-axis**: \((x, y) \rightarrow (x, -y)\)
- Reflection in **y-axis**: \((x, y) \rightarrow (-x, y)\)
- Reflection in **y = x**: \((x, y) \rightarrow (y, x)\)
- Reflection in **y = -x**: \((x, y) \rightarrow (-y, -x)\)
- For other vertical or horizontal lines, easiest way is to count boxes or fold paper!!
Geometry Notes SOL G.3 Transformations: Reflections

Mrs. Grieser Page 2

Point Reflections:

- A **point reflection** exists when a figure is built around a single point called the center of the figure, or point of reflection.
- For every point in the figure, there is another point found directly opposite it on the other side of the center such that the point of reflection becomes the midpoint of the segment joining the point with its image.
- **Same as rotating figure 180°**.

Finding Images of Point Reflections in the Origin:

| Reflection in the origin: \((x, y) \rightarrow (-x, -y)\) |

You Try...

a) The vertices of \(\triangle ABC\) are \(A(2, 4), B(6, 3)\), and \(C(3, 2)\). Graph the reflection of \(\triangle ABC\) in the given line:
   1) x-axis  2) y-axis  3) \(x = -2\)  4) \(y = -1\)

b) Graph \(\triangle ABC\) with vertices \(A(4, -4), B(8, -3), C(10, -5)\). Reflect \(\triangle ABC\) in the line \(y = x\) and \(y = -x\).

c) The vertices of \(\triangle ABC\) are \(A(-2, 6), B(-2, 1), C(3, 1)\). Graph the reflection of \(\triangle ABC\) in the origin.