Geometry 5.8 Notes: Coordinate Proofs
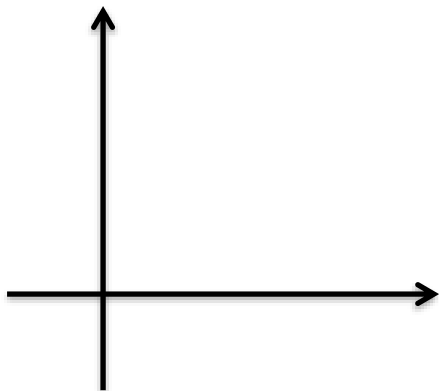
Lesson Objective

Coordinate Proof: A coordinate proof involves placing a geometric figure in a coordinate plane.
→ When you use variables to represent the coordinates of a figure in a coordinate proof, the results are true for ALL figures of that type.
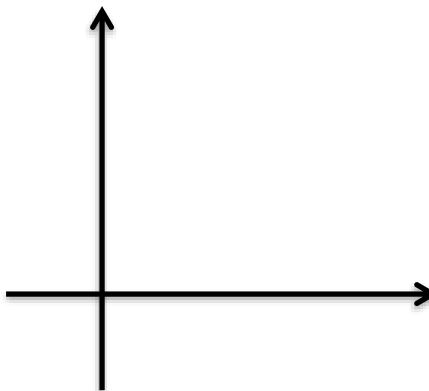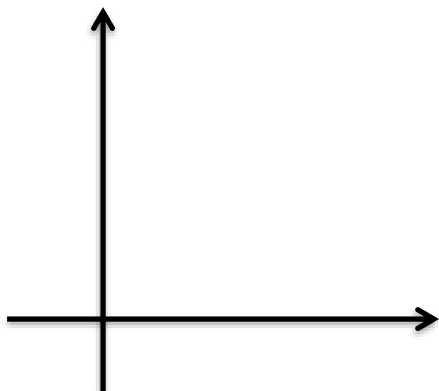
Placing Figures in the Coordinate Plane
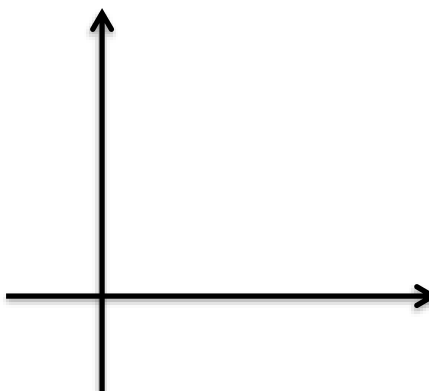
Examples:
1. a rectangle

2. a scalene triangle

3. Show another way to place the rectangle from #1 that is convenient for finding side lengths. Assign new coordinates.

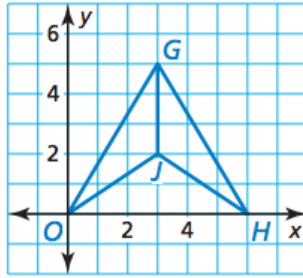4. A square has vertices at (0, 0), (m, 0), and (0, m). What are the coordinates of the fourth vertex?

Writing a Proof Using Coordinate Geometry

5. Write a two-column proof.
   Given: $\overrightarrow{GJ}$ bisects $\angle OGH$
   Prove: $\Delta GJO \cong \Delta GJH$

Statements	Reasons

6. How could we prove that $\angle O \cong \angle H$ from the figure above?

Writing a Coordinate Proof

7. Write a proof.
   Given: $\angle B$ is a right angle in ΔABC, D is the midpoint of $\overline{AC}$
   Prove: The area of ΔDBC is one-half the area of ΔABC

   Step 1: Place the figure in the coordinate plane. Assign coordinates to each of the vertices.

   Step 2: Write a rough-draft/plan for the proof.

   Step 3: Write the proof.