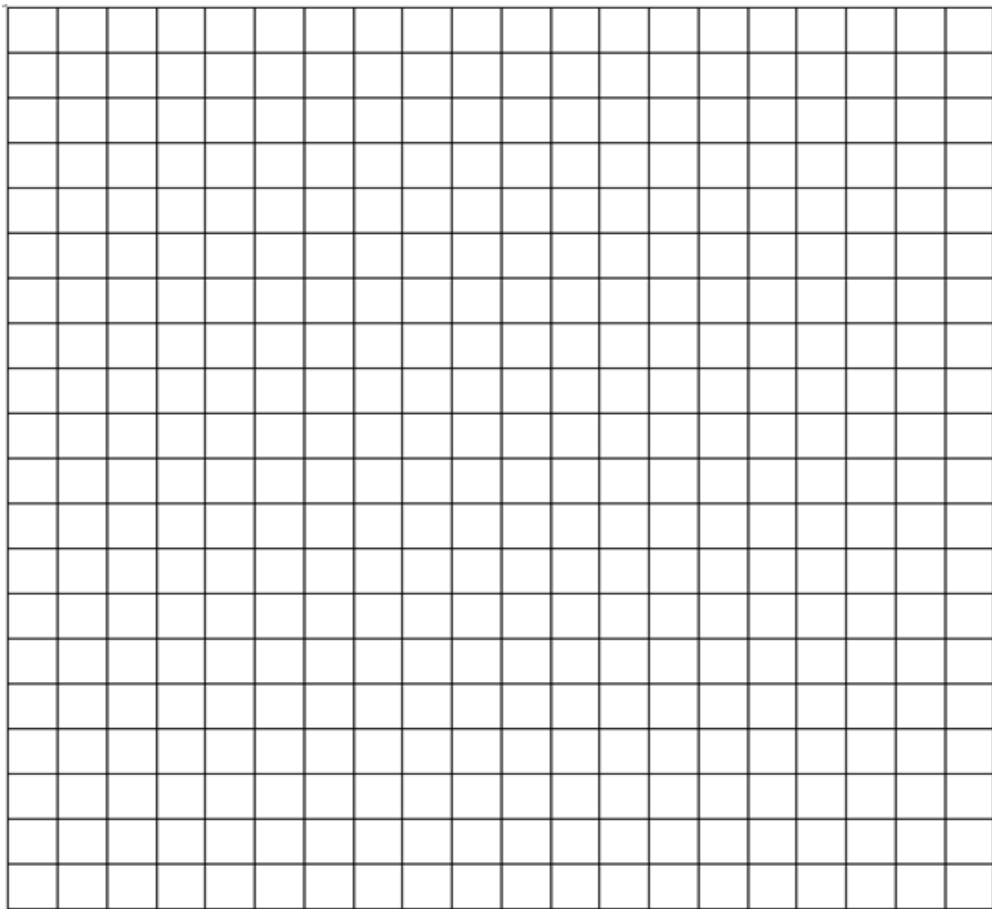


## Lesson 17: Drawing the Coordinate Plane and Points on the Plane

### Classwork

#### Opening Exercise

Draw all necessary components of the coordinate plane on the blank  $20 \times 20$  grid provided below, placing the origin at the center of the grid and letting each grid line represent 1 unit.



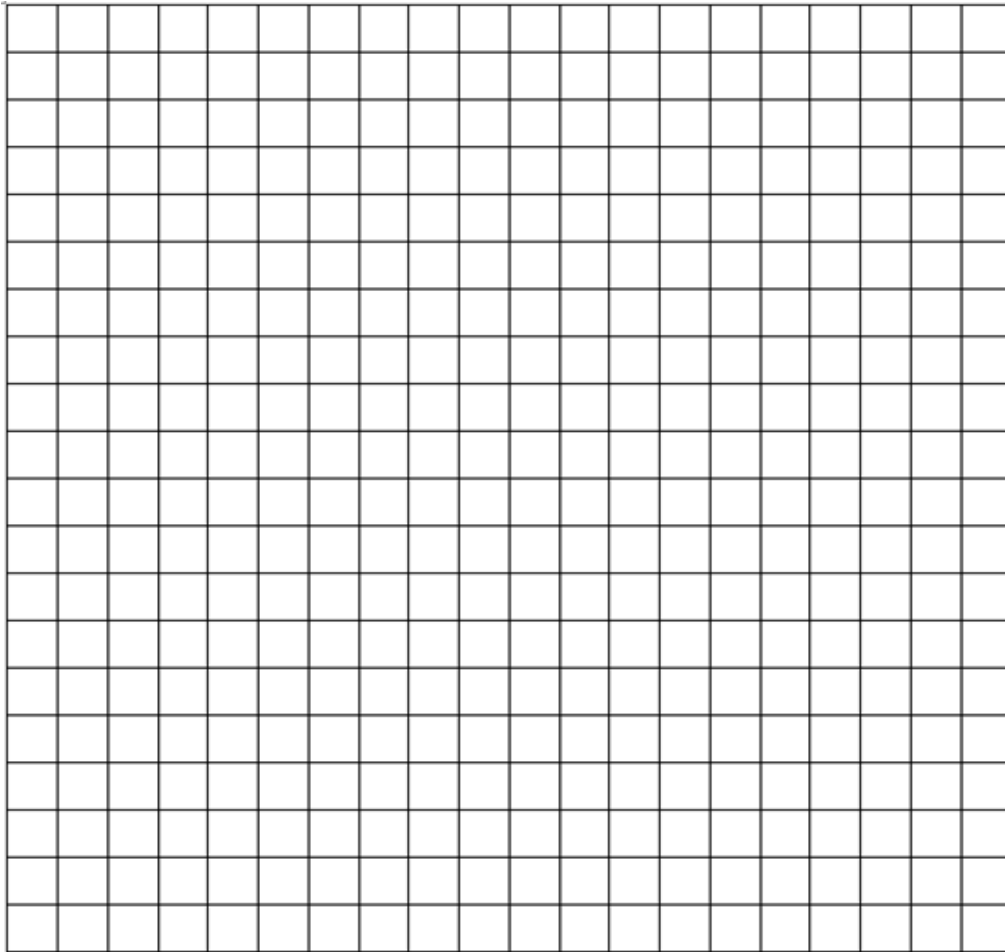
#### Example 1: Drawing the Coordinate Plane Using a 1: 1 Scale

Locate and label the points  $\{(3,2), (8,4), (-3, 8), (-2, -9), (0,6), (-1, -2), (10, -2)\}$  on the grid above.

**Example 2: Drawing the Coordinate Plane Using an Increased Number Scale for One Axis**

Draw a coordinate plane on the grid below, and then locate and label the following points:

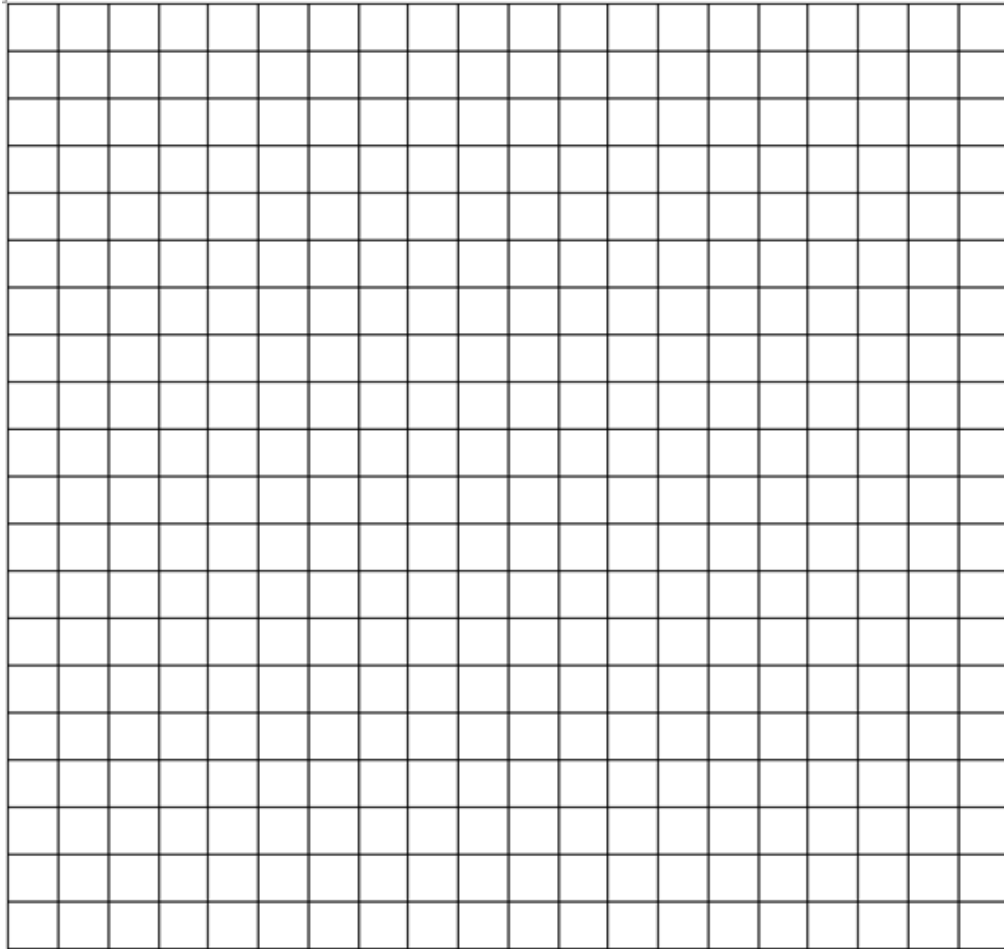
$$\{(-4, 20), (-3, 35), (1, -35), (6, 10), (9, -40)\}.$$



**Example 3: Drawing the Coordinate Plane Using a Decreased Number Scale for One Axis**

Draw a coordinate plane on the grid below, and then locate and label the following points:

$$\{(0.1, 4), (0.5, 7), (-0.7, -5), (-0.4, 3), (0.8, 1)\}.$$



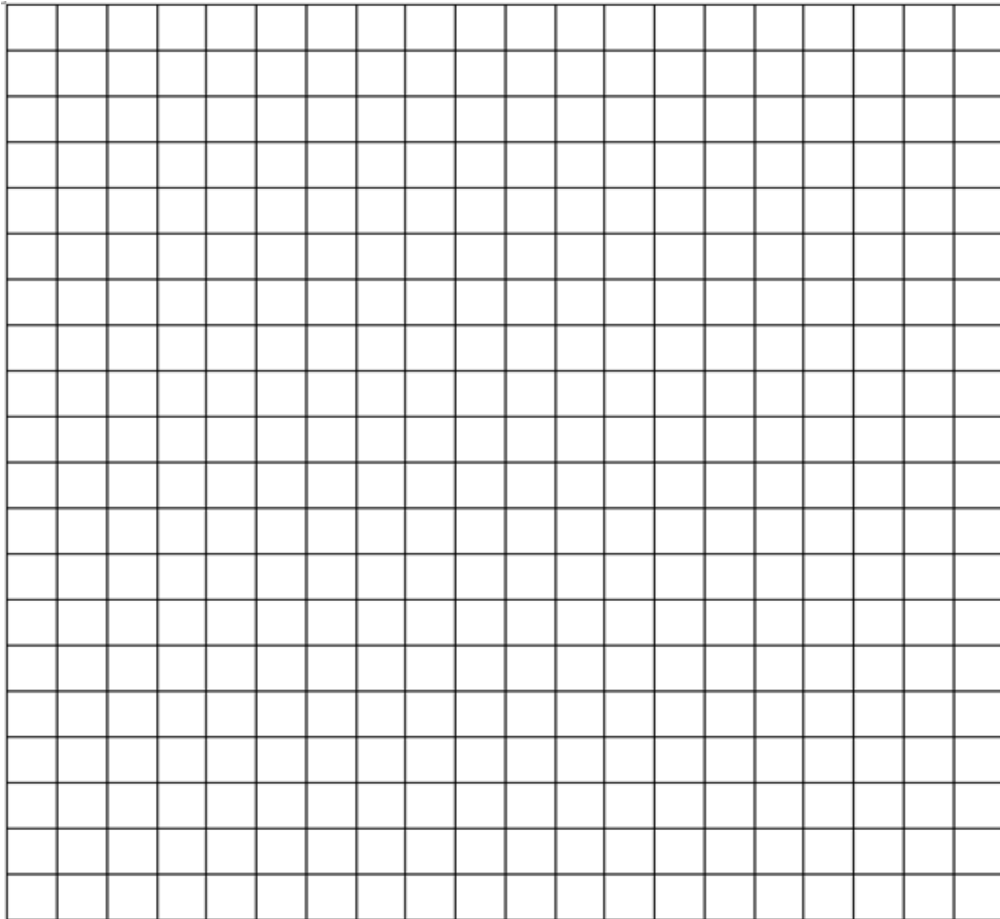
**Example 4: Drawing the Coordinate Plane Using a Different Number Scale for Both Axes**

Determine a scale for the  $x$ -axis that will allow all  $x$ -coordinates to be shown on your grid.

Determine a scale for the  $y$ -axis that will allow all  $y$ -coordinates to be shown on your grid.

Draw and label the coordinate plane, and then locate and label the set of points.

$$\{(-14, 2), (-4, -0.5), (6, -3.5), (14, 2.5), (0, 3.5), (-8, -4)\}$$



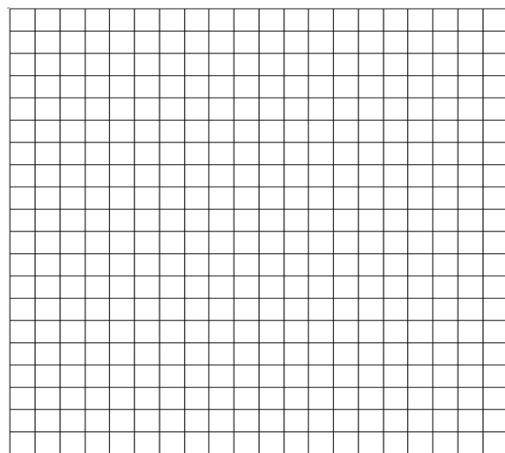
**Lesson Summary**

- The axes of the coordinate plane must be drawn using a straightedge and labeled  $x$  (horizontal axis) and  $y$  (vertical axis).
- Before assigning a scale to the axes, it is important to assess the range of values found in a set of points as well as the number of grid lines available. This allows you to determine an appropriate scale so all points can be represented on the coordinate plane that you construct.

**Problem Set**

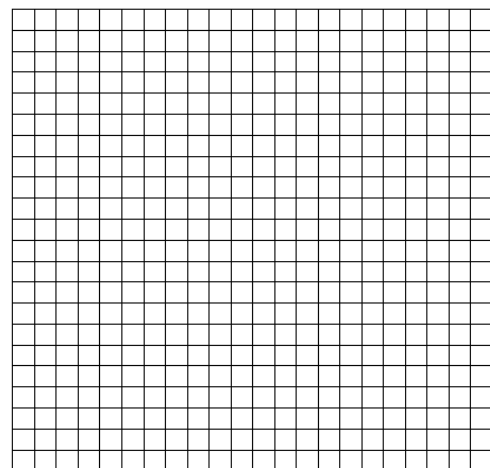
1. Label the coordinate plane, and then locate and label the set of points below.

$$\left\{ \begin{array}{l} (0.3, 0.9), (-0.1, 0.7), (-0.5, -0.1), \\ (-0.9, 0.3), (0, -0.4) \end{array} \right\}$$



2. Label the coordinate plane, and then locate and label the set of points below.

$$\left\{ \begin{array}{l} (90, 9), (-110, -11), (40, 4), \\ (-60, -6), (-80, -8) \end{array} \right\}$$



Extension:

3. Describe the pattern you see in the coordinates in Problem 2 and the pattern you see in the points. Are these patterns consistent for other points too?