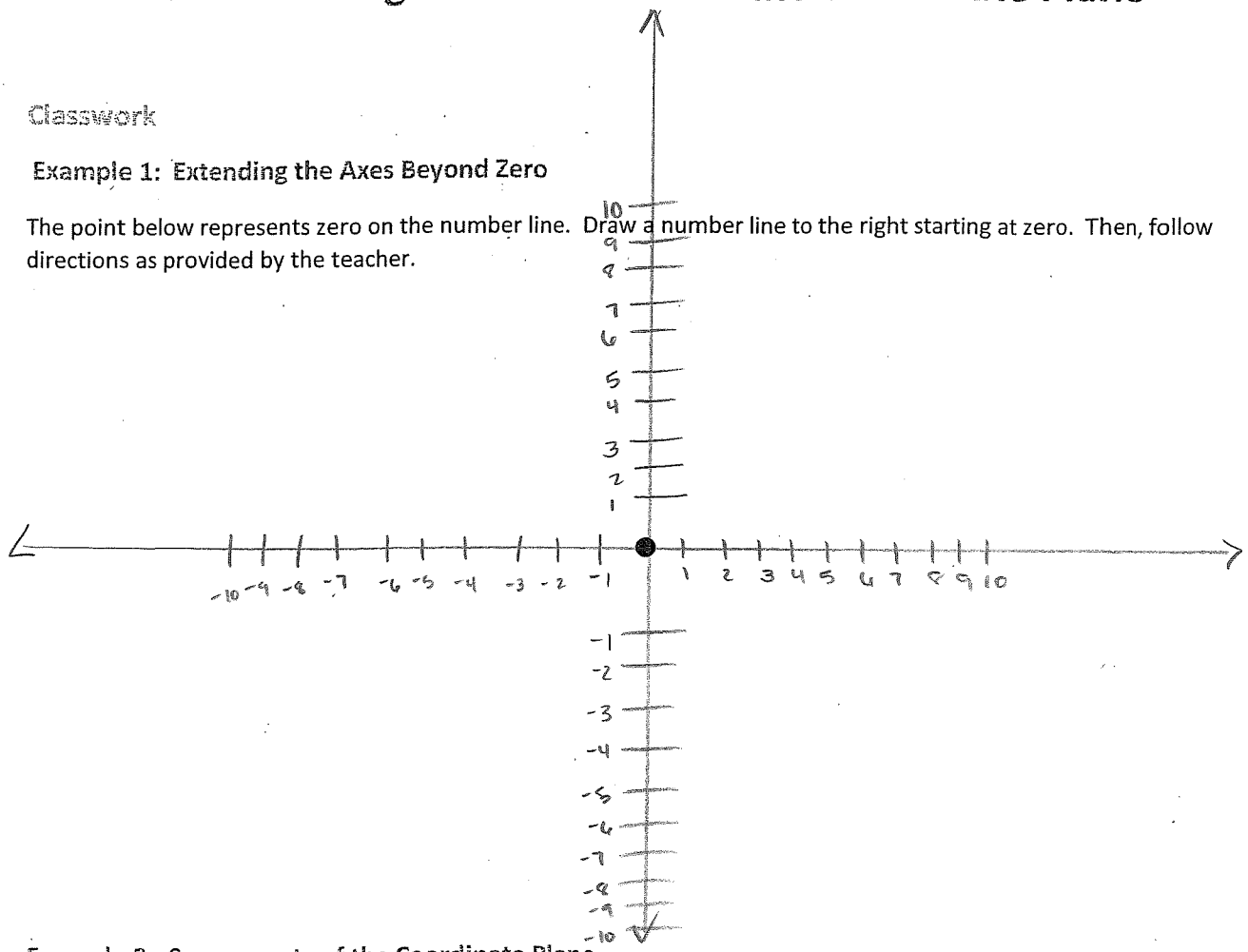
Teacher Notes.

Lesson 15: Locating Ordered Pairs on the Coordinate Plane

Classwork

Example 1: Extending the Axes Beyond Zero

The point below represents zero on the number line. Draw a number line to the right starting at zero. Then, follow directions as provided by the teacher.



Example 2: Components of the Coordinate Plane

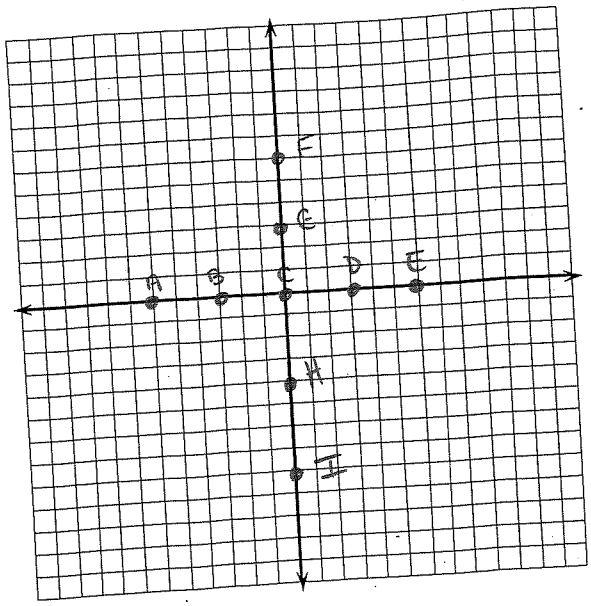
All points on the coordinate plane are described with reference to the origin. What is the origin, and what are its coordinates? The origin is the point where the x & the y axes intersect. The coordinates of the origin are (0,0).

To describe locations of points in the coordinate plane, we use ordered pairs of numbers.

Order is important, so on the coordinate plane, we use the form (x, y). The first coordinate represents the point's location from zero on the x-axis, and the second coordinate represents the point's location from zero on the y-axis.

Exercises 1–3

1. Use the coordinate plane below to answer parts (a)–(c).



   a. Graph at least five points on the x-axis, and label their coordinates.

   A(-4,0) B(-3,0) C(0,0) D(3,0) E.(6,0)

   b. What do the coordinates of your points have in common?

   Each point has a y-coordinate of 0.

   c. What must be true about any point that lies on the x-axis? Explain.

   Any point that is on the x-axis → its y coordinate will be zero.

2. Use the coordinate plane to answer parts (a)–(c).

   a. Graph at least five points on the y-axis, and label their coordinates.

   F(0,6) G(0,3) C(0,0) H(0,-4) I(0,-8)

   b. What do the coordinates of your points have in common?

   Each point has a x-coordinate of zero.

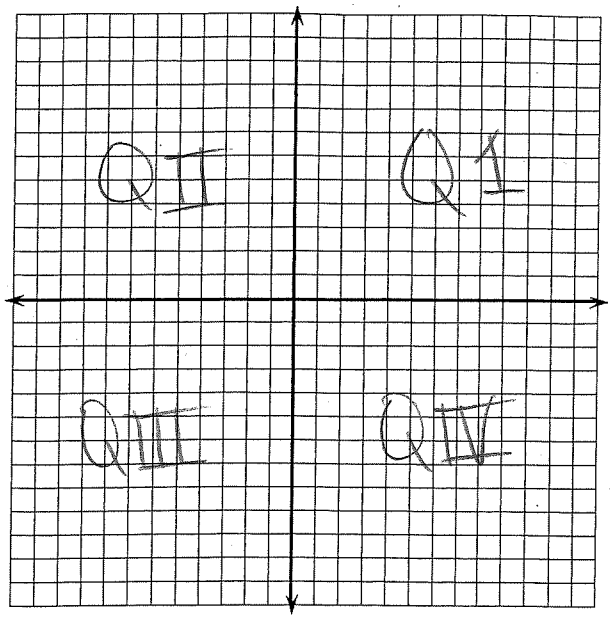
   c. What must be true about any point that lies on the y-axis? Explain.

   If a point lies on the y-axis, its x-coordinate must be zero because the point is located 0 units left or right of the y-axis. The y-axis intersects 0 on the x-axis.

3. If the origin is the only point with 0 for both coordinates, what must be true about the origin?

   The origin is the only point that is on both the x & y axis.

Example 3: Quadrants of the Coordinate Plane



Exercises 4–6

4. Locate and label each point described by the ordered pairs below. Indicate which of the quadrants the points lie in.

a. $(7, 2)$

QI

b. $(3, -4)$

QIV

c. $(1, -5)$

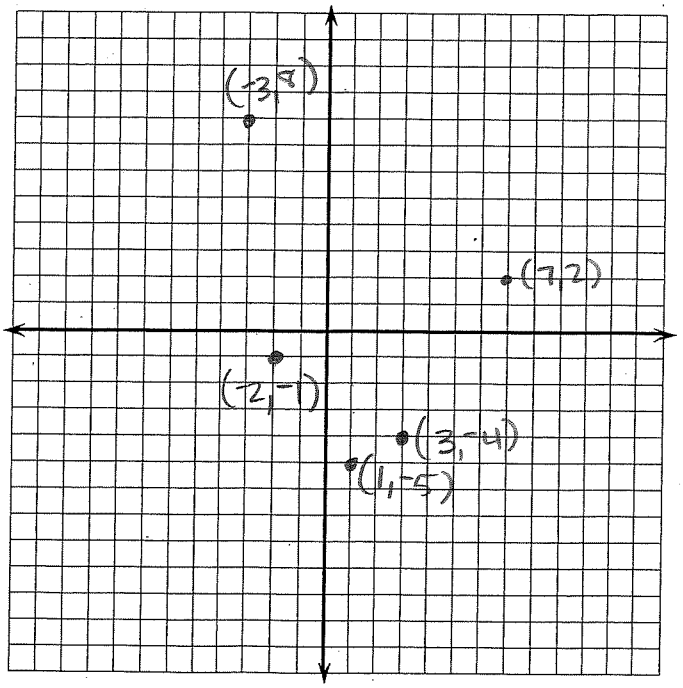
QIV

d. $(-3, 8)$

QII

e. $(-2, -1)$

QIII



5. Write the coordinates of at least one other point in each of the four quadrants.

a. Quadrant I

* Both numbers must be positive

b. Quadrant II

x - coordinate is negative
y - coordinate is positive.

c. Quadrant III

*. Both numbers must be negative.

d. Quadrant IV

* x-coordinate must be positive & y-coordinate must be negative.

VARY

6. Do you see any similarities in the points within each quadrant? Explain your reasoning.