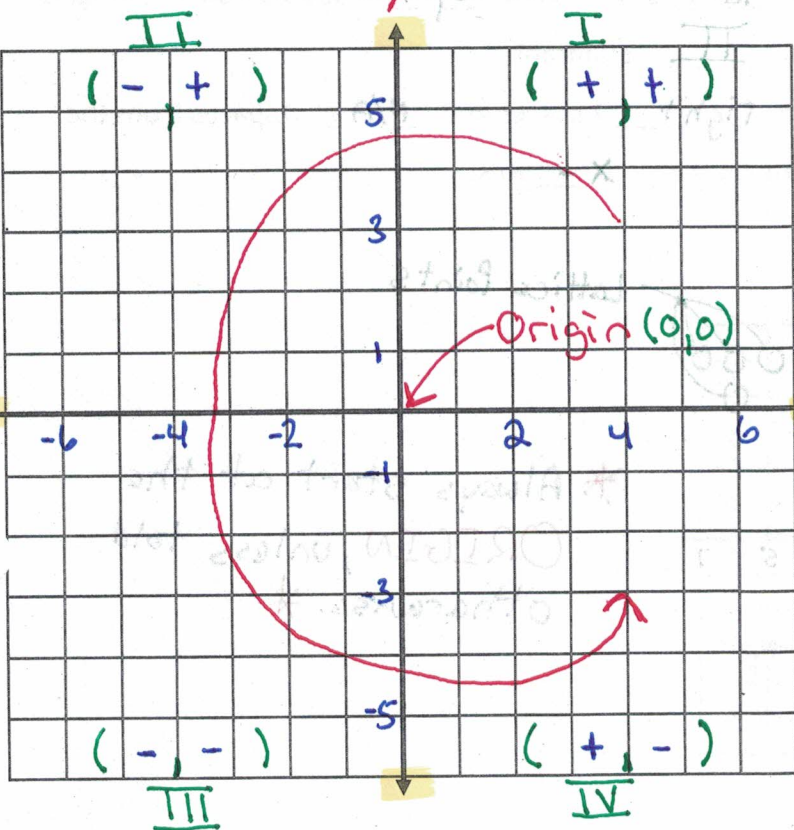


### 3.1 Graphing on the Coordinate Plane

\* Coordinate Plane consists of a horizontal axis and a vertical axis. These axes are number lines that intersect at right angles. (They are perpendicular to each other.) The formal name of the coordinate plane is called the Cartesian Coordinate System.

\* The vertical axis is called the y-axis.

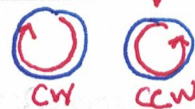
\* The point at which the two axes intersect is called the Origin. The origin is at 0 on the x-axis and 0 on the y-axis.



When you draw your x- and y-axis, you **MUST HAVE** arrowheads on the ends.

\* The horizontal axis is called the x-axis.

The intersecting x- and y-axes divide the coordinate plane into 4 sections. These four sections are called Quadrants. Quadrants are named using the Roman numerals I, II, III, and IV beginning with the top right quadrant and moving Counter Clockwise.



Locations or Points on the coordinate plane are described as ordered pairs (x, y).

- An ordered pair tells you the location of a point. A point is defined on the coordinate plane by ONE, and **ONLY ONE** ordered pair.
- \*- The x-coordinate is the first value in the ordered pair; the horizontal location.
- \*- The y-coordinate is the second value in the ordered pair; the vertical location.
- The origin has the ordered pair of (0,0). \* **Must use (x, y)** when writing an ordered pair.

The Cartesian coordinate system was developed by the French mathematician **Rene Descartes** during an illness. As he lay in bed sick, he saw a fly buzzing around on the ceiling, which was made of square tiles. As he watched he realized that he could describe the position of the fly by the ceiling tile he was on. After this experience he developed the coordinate plane to make it

To Graph an ordered pair means to draw a dot at the point on the coordinate plane that

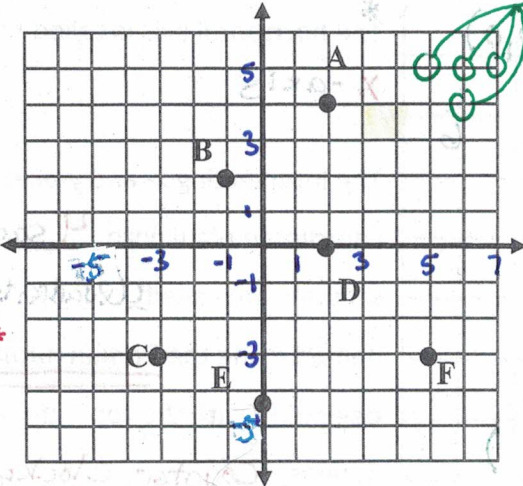
corresponds to the ordered pair. \* When you label a point on a graph, you

In an ordered pair: must use a CAPITOL LETTER.\*

- The x-coordinate tells you to move left (if it is negative) or right (if it is positive) from the origin (center).
- The y-coordinate tells you to move up (if it is positive) or down (if it is negative).
- In the ordered pair (-3, 4) you would move left 3 spaces and up 4 spaces from the origin. The resulting ordered pair would be in the II quadrant.
- In the ordered pair (2, 0) you would move right 2 spaces and N/A 0 spaces from the origin. The resulting ordered pair would be on the X- axis.

Example 1: Write the ordered pair of each point.

- a. A (2,4)
- b. B (-1,2)
- c. C (-3,-3)
- d. D (2,0)
- \* e. E (0,-4.3) \*
- f. F (5,-3)



Lattice Points

\* Always start at the ORIGIN, unless told otherwise. \*

Example 2: Label the quadrants, then state the quadrant in which the point is located, and then graph the point and label it.

- a. (5, 2) I
- b. (-3, -1) III
- c. (-2, 3) II
- d. (6, 0) X-axis
- e. (0, -2) Y-axis
- f. (4, -3) IV
- g. (5, -2) IV
- h. (3, 5) I
- i. (-3, 0) X-axis
- k. (0, 0) Origin

