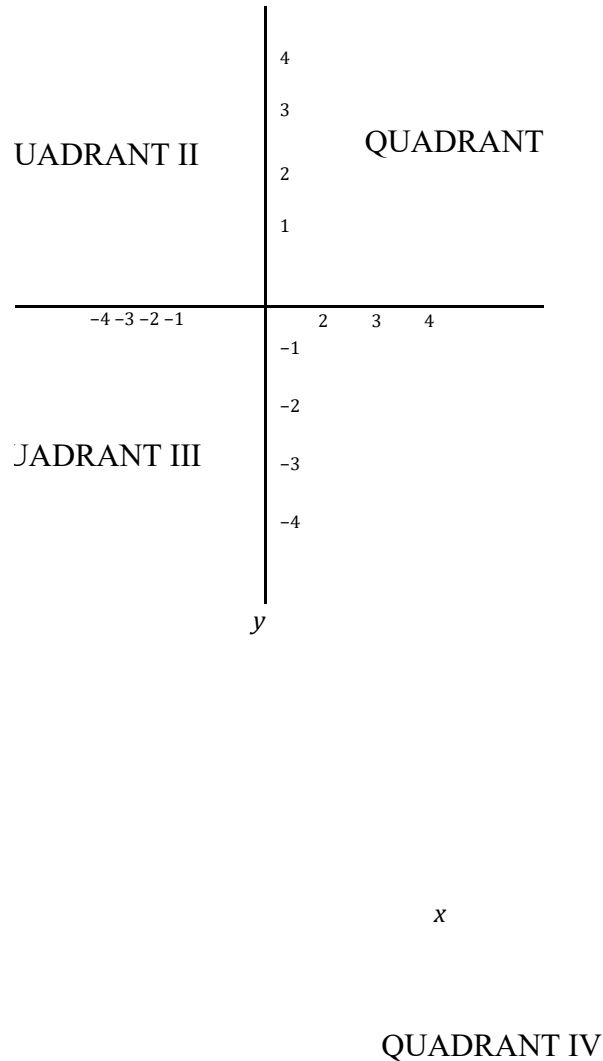


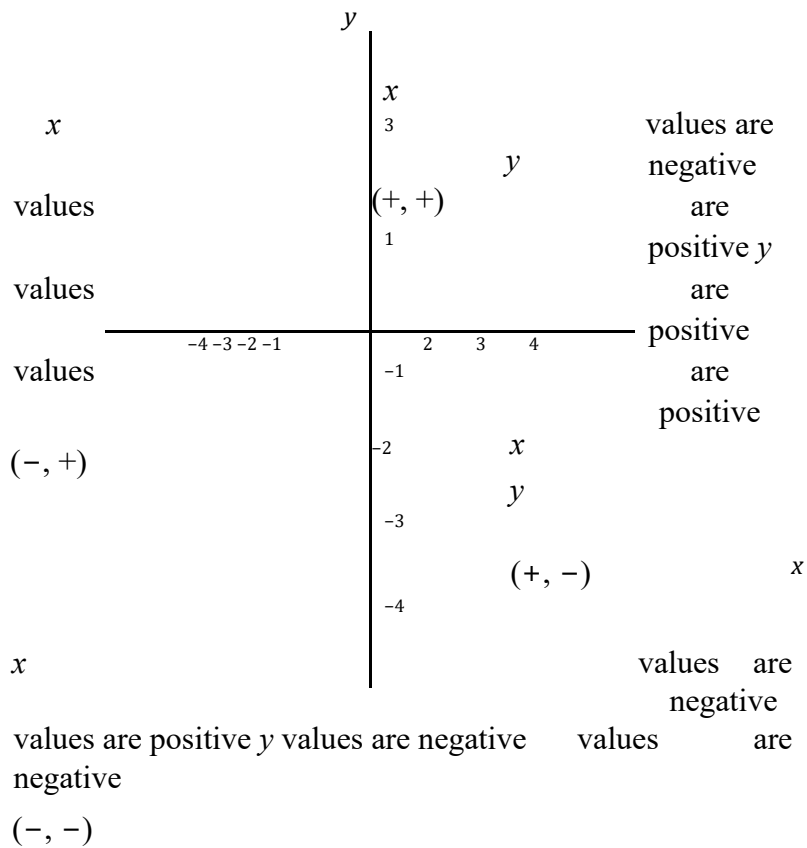
# The Rectangular Coordinate System

The rectangular coordinate system is formed by two number lines. These number lines are usually called the x-axis and the y-axis. The number lines are at right angles to each other and share one point where they cross. This point is called the origin.



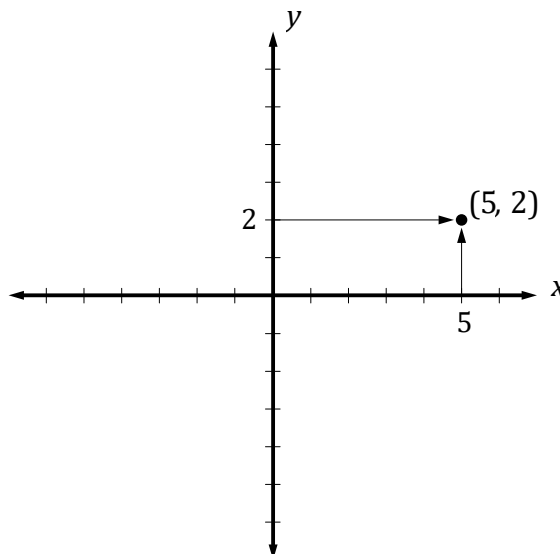
**NOTE** that the axes divide the plane into four sections called **QUADRANTS**, and that the  $y$  values are positive above the  $x$ -axis and negative below the  $x$ -axis. The  $x$  values are positive to the right of the  $y$ -axis and negative to the left of the  $y$ -axis.

Any point in the plane can be described by an ordered pair of numbers. The first number in the ordered pair is the  $x$  value and the second number is the  $y$  value. These values are called the  $x$  and  $y$  coordinates. The  $x$ -coordinate is also called the **ABSCISSA**, and the  $y$ -coordinate is also the **ORDINATE**.



The graph of an ordered pair is a point in the plane. The location of that point is given by its position relative to the  $y$ -axis ( $x$  value) and its position relative to the  $x$ -axis ( $y$  value).

To plot  $(5, 2)$  draw a vertical line through 5 on the  $x$  axis. Draw a horizontal line through 2 on the  $y$  axis. The point is where the lines intersect.

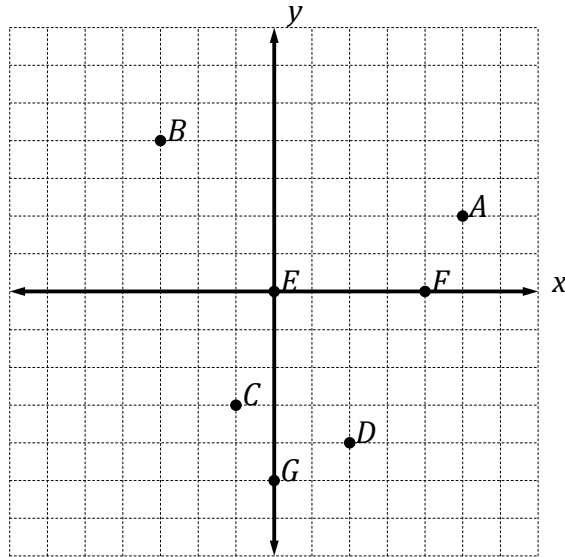


**NOTE** that where  $x$  and  $y$  both equal zero, the point is the origin. Where the  $x$  value is zero, the point is on the  $y$ -axis and where the  $y$  value is zero, the point is on the  $x$ -axis. Each point can be plotted by drawing a vertical line from the  $x$  value on the  $x$  axis and a horizontal line from

the  $y$  value on the  $y$  axis. The point with the coordinates corresponding to the points on the axes is at the intersection of the two lines.

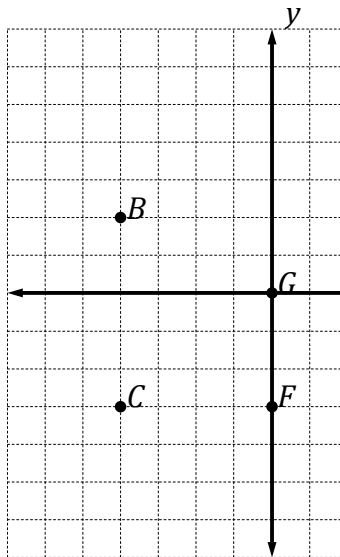
We will graph the following ordered pairs:

$(x, y)$	$(x, y)$
A (5, 2)	E (0, 0)
B (-3, 4)	F (4, 0)
C (-1, -3)	G (0, -5)
D (2, -4)	



To find the coordinates of a point we must draw a vertical line from the point to the  $x$ -axis and a horizontal line from the point to the  $y$ -axis. The  $x$  and  $y$  values where the lines cross the axes give the coordinates of the point.

We will give the coordinates of the following points:



$(x, y)$	$(x, y)$
A (2, 1)	E (5, 0)
B (-4, 2)	F (0, -2)
C (-4, -3)	G (0, 0)
D (4, -1)	

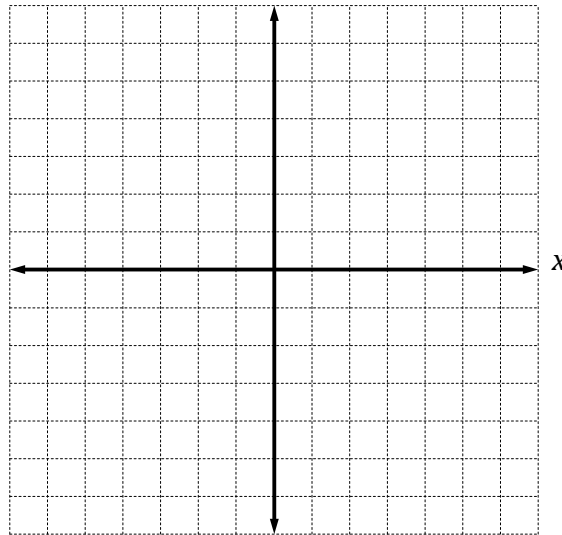
**NOTE** that point E is on the  $x$ -axis and the  $y$ -coordinate is zero. The point F is on the  $y$ -axis and the  $x$ -coordinate is zero. Point G is at the origin and both the  $x$  and  $y$  coordinates are zero.

### EXERCISES:

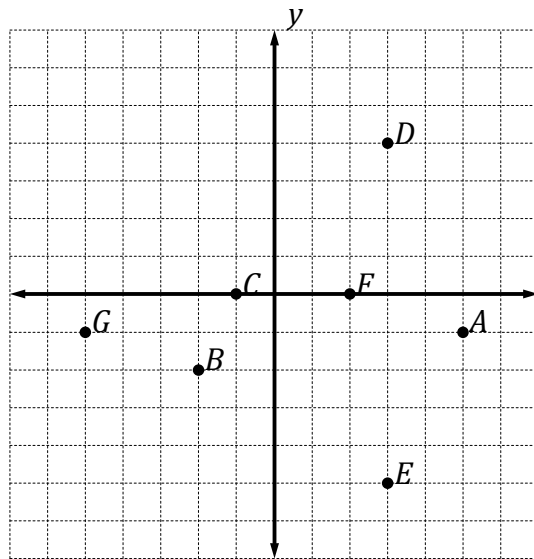
- Graph the following ordered pairs.

A (3, 2)  $\mathcal{Y}$

- B (-4, 1)
- C (-5, -1)
- D (2, -4)
- E (0, -1)
- F (3, 0)
- G (0, 0)



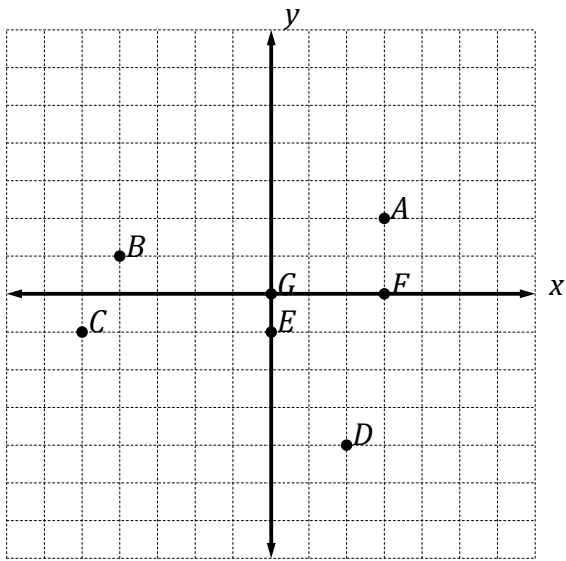
2. Give the coordinates of the following points:



- A ( , )
- B ( , )
- C ( , )
- D ( , ) E ( , )
- F ( , ) G ( , )

**KEY:**

1.



2.    A (5, -1)  
      B (-2, -2)  
      C (0, -1)  
      D (3, 4)  
      E (3, -5)  
      F (2, 0)  
      G (-5, -1)