Cartesian Plane

The **Cartesian plane** provides a visual representation for various mathematical concepts. It was created by French mathematician and philosopher, Rene Descartes (1596-1650).

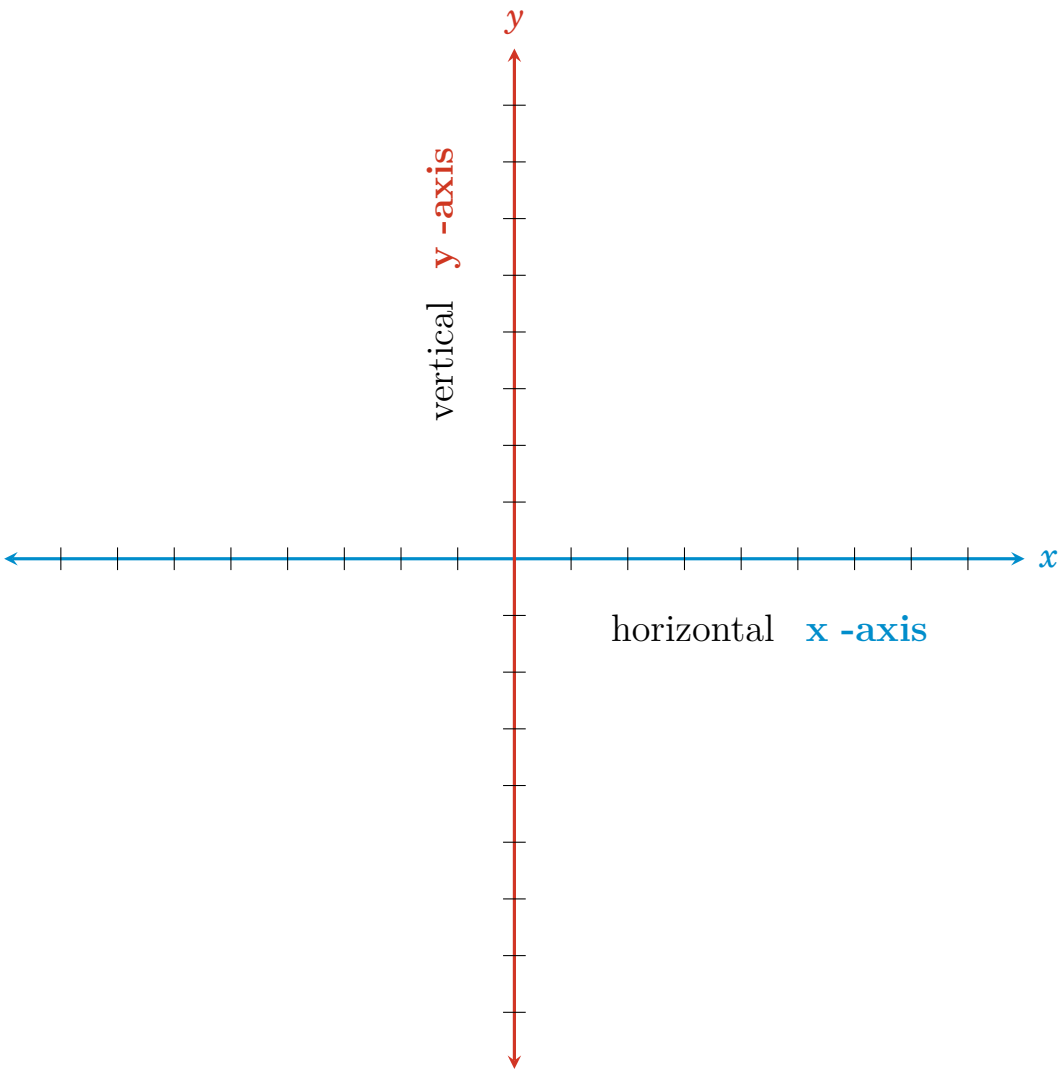
Axes

An **axis** is a number line which extends without end.

The **Cartesian plane** is made up of two axes known as the **x**-axis and the **y** axis.

The **x -axis** runs horizontally.

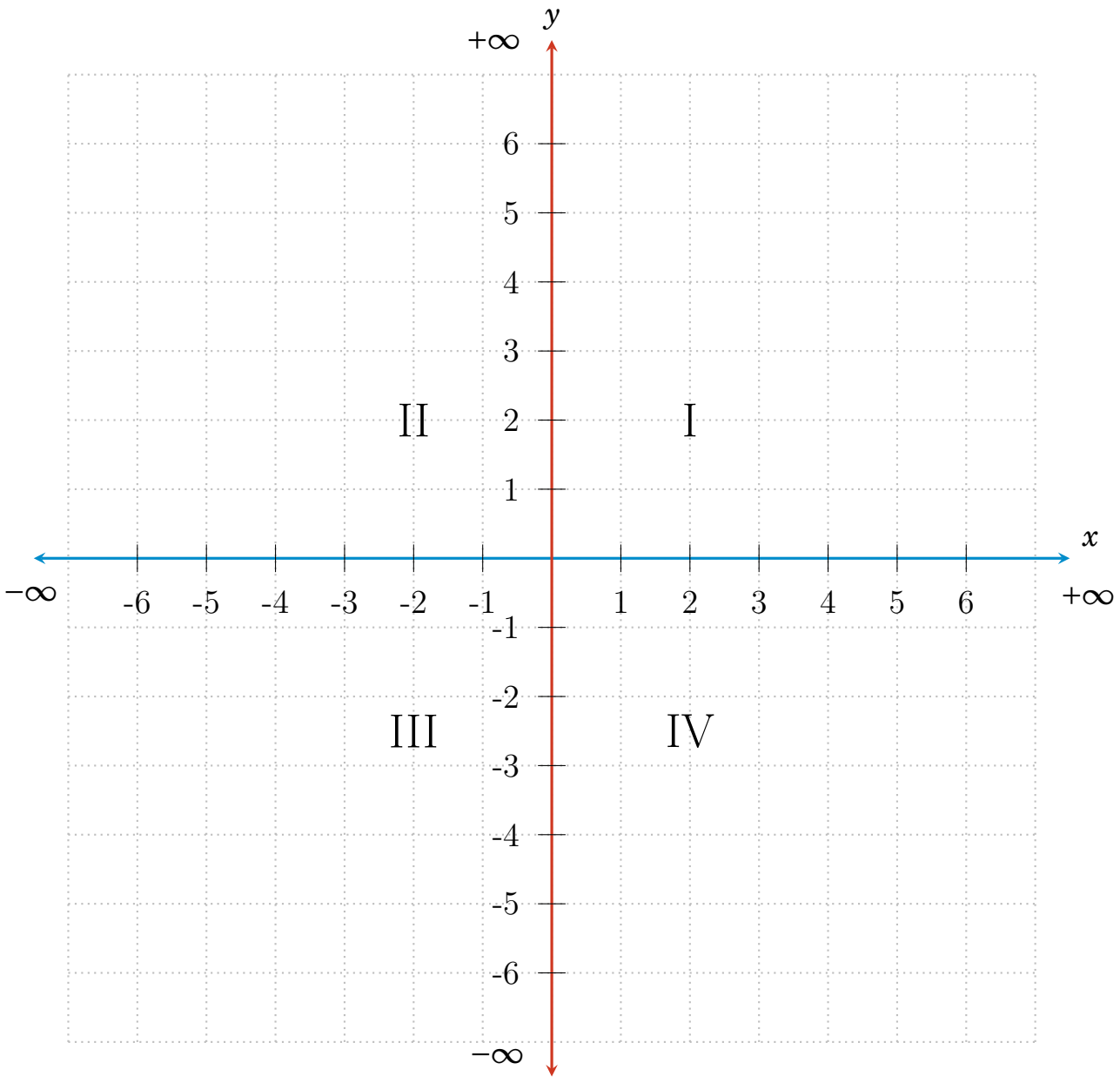
The **y -axis** runs vertically.



Quadrants

The **x-axis** extends to **positive infinity** to the right and **negative infinity** to the left.

The **y-axis** extends upward to **positive infinity** and downward to **negative infinity**.



The two **axes** divide the plane into 4 **quadrants** labeled **I, II, III, IV**.

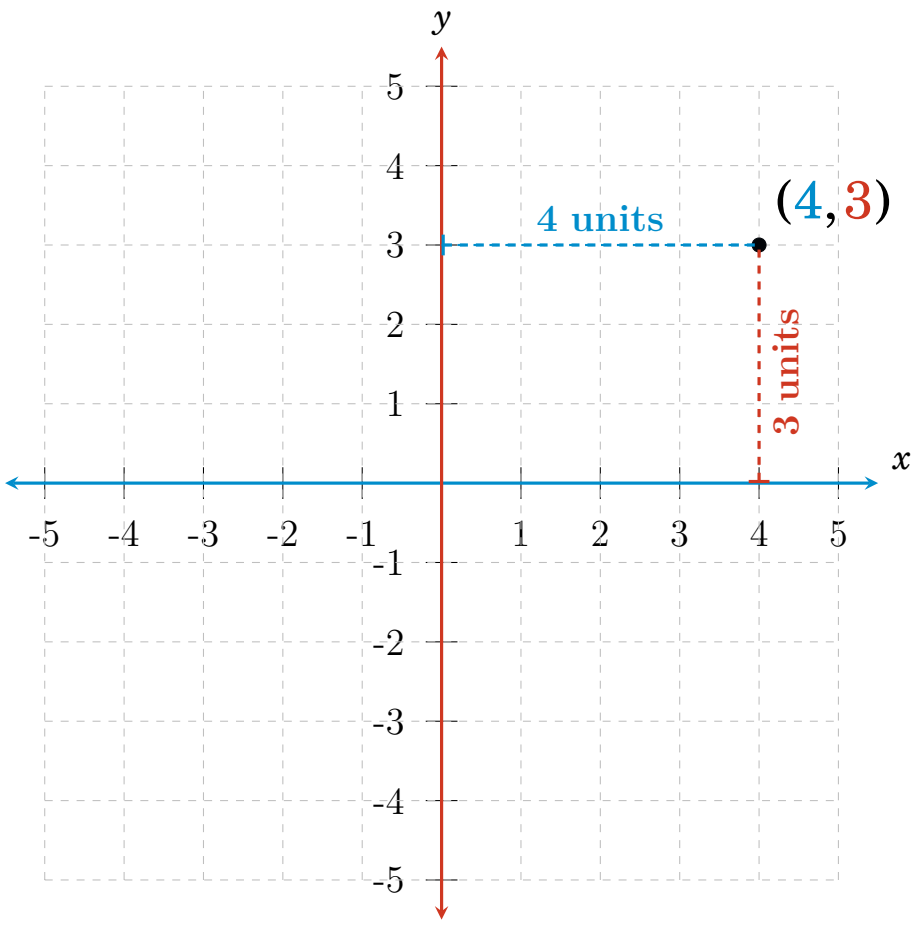
Coordinates

The location of a **point** P on the plane is described by two numerical values known as a **coordinate**.

Coordinates associate numbers with a spatial location on a plane and are given in the form (x, y)

The numbers represent the position of the points along the x-axis and the y-axis:

(position along x - axis, position along y -axis)



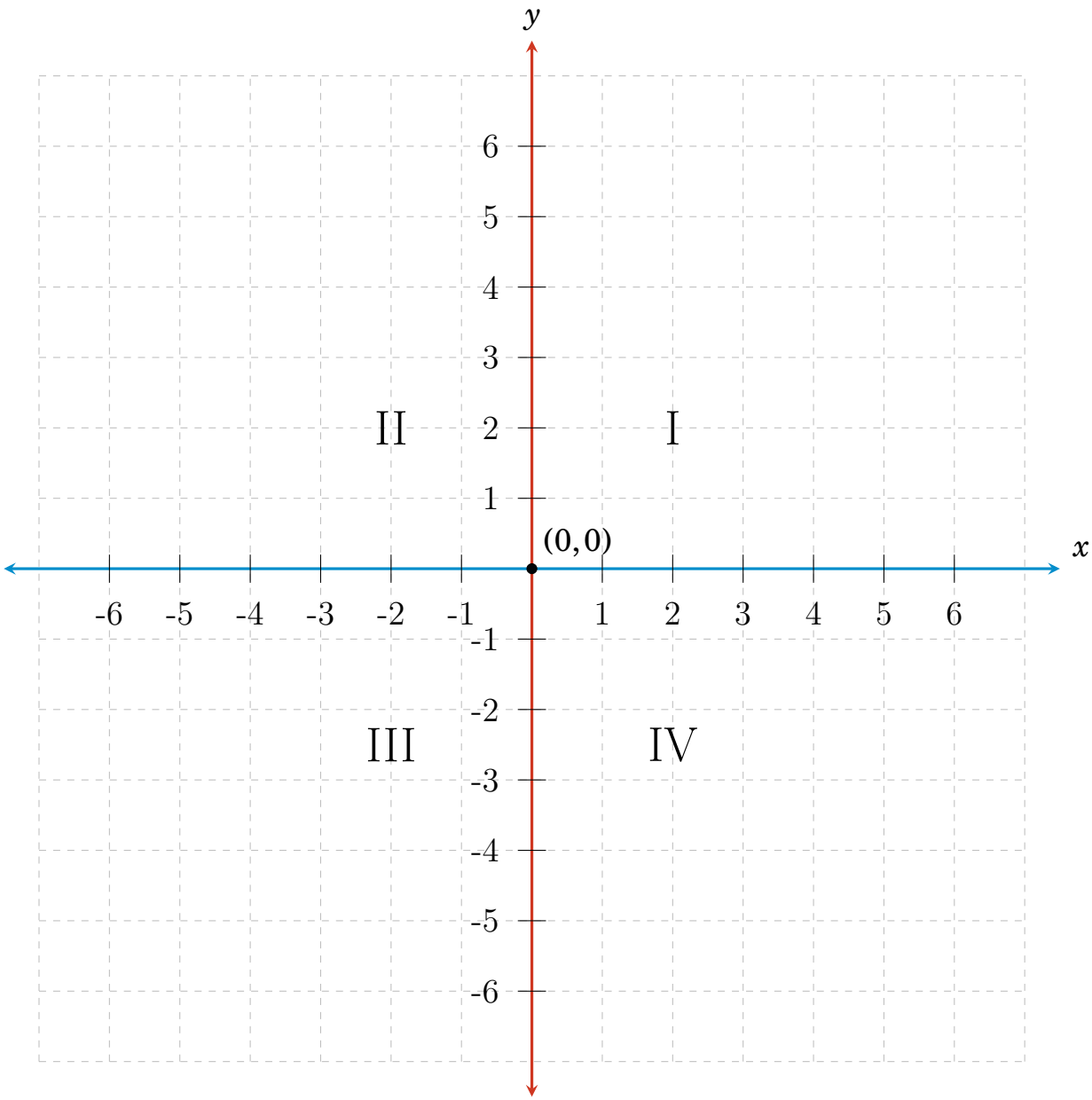
Ordered Pairs

Together, these two numbers form what is also called an **ordered pair**.

Note that the order of the numbers is significant. For example, **(3,2)** is *not the same* as **(2,3)**.

Origin

The point where the two axes cross is known as the **origin** with coordinates **(0,0)**.



Note the signs of the x and y coordinates of points in each quadrant.

Quadrant I $(+,+)$

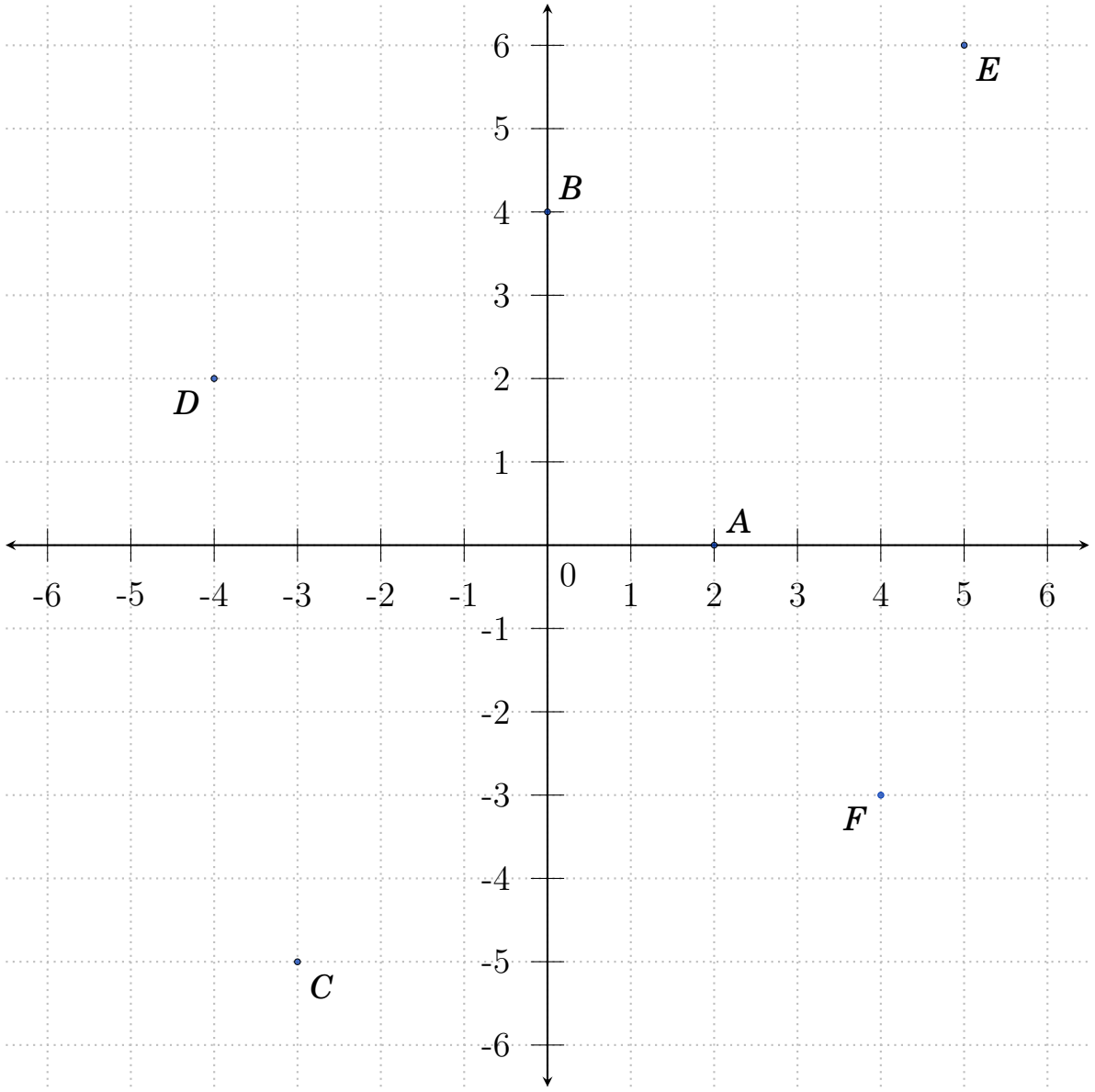
Quadrant II $(-,+)$

Quadrant III $(-,-)$

Quadrant IV $(+,-)$

Plot each point using the ordered pair.

Write an ordered pair for each point.



A	( )	D	( )
B	( )	E	( )
C	( )	F	( )

G	$\left(-1,-\frac{5}{2}\right)$	J	$\left(\frac{7}{2},-2\right)$
H	$(-3,0)$	K	$(-5,0)$
I	$-4,-4)$	L	$(0,-6)$