4-1 The Coordinate Plane

Warm Up

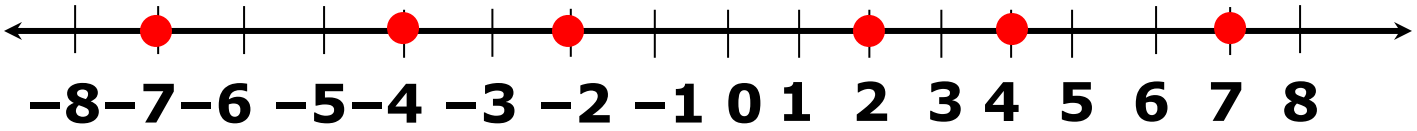
Problem of the Day

Lesson Presentation

Warm Up

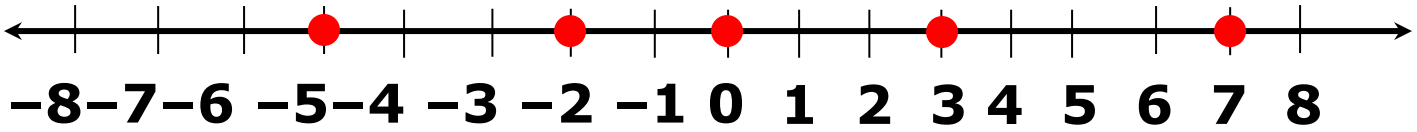
Graph each integer and its opposite on a number line.

1. 4 **2.** –7 **3.** –2



Graph the integers on a number line.

4. 7, –2, 0, 3, –5



Problem of the Day

What number am I? I am less than 50.
When divided by 5 my remainder is 4.
The sum of my digits is 11.

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4-1 The Coordinate Plane

Learn to plot and identify ordered pairs on a coordinate plane.

Vocabulary

coordinate plane

x-axis

y-axis

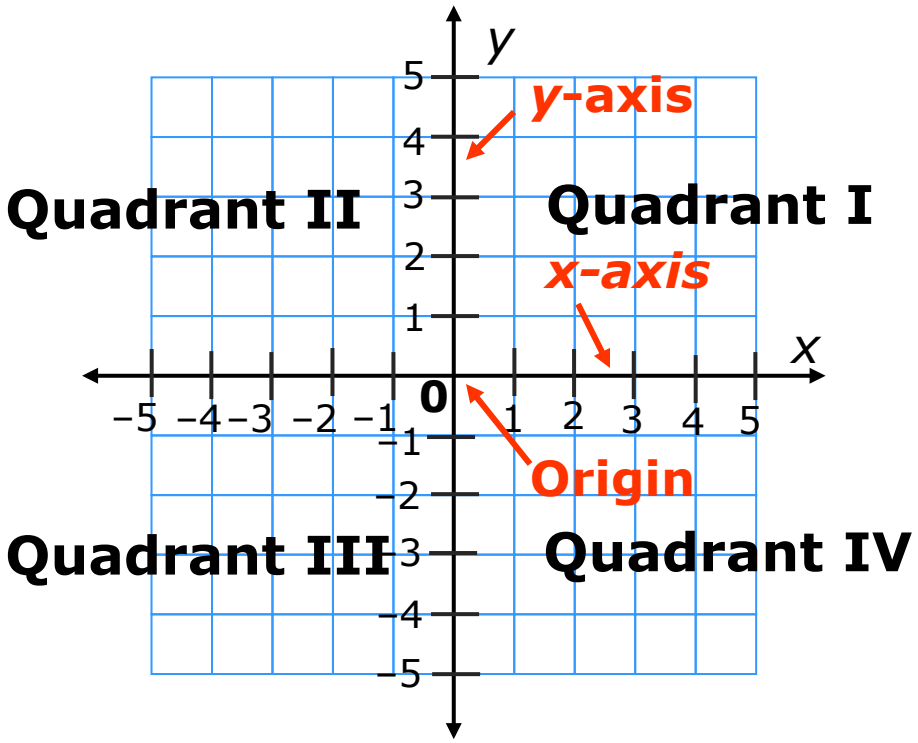
origin

quadrant

ordered pair

4-1 The Coordinate Plane

A **coordinate plane** is a plane containing a horizontal number line, the ***x*-axis**, and a vertical number line, the ***y*-axis**. The intersection of these axes is called the **origin**.



The axes divide the coordinate-plane into four regions called **quadrants**, which are numbered I, II, III, and IV.

Additional Example 1: Identifying Quadrants on a Coordinate Plane

Identify the quadrant that contains each point.

A. *S*

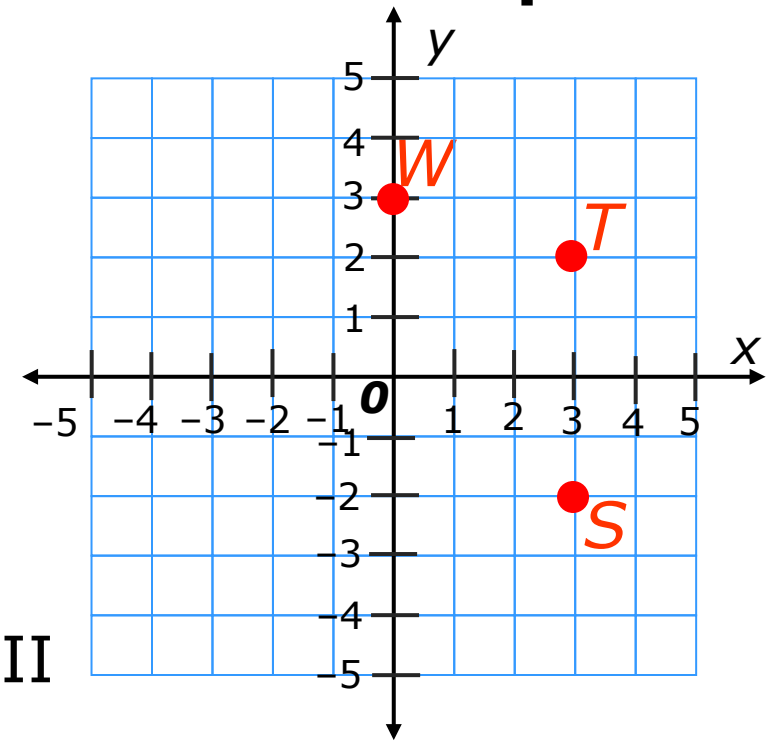
S lies in quadrant IV.

B. *T*

T lies in quadrant I.

C. *W*

W lies on the *y*-axis between Quadrants I and II



Check It Out: Example 1

Identify the quadrant that contains each point.

A. *N*

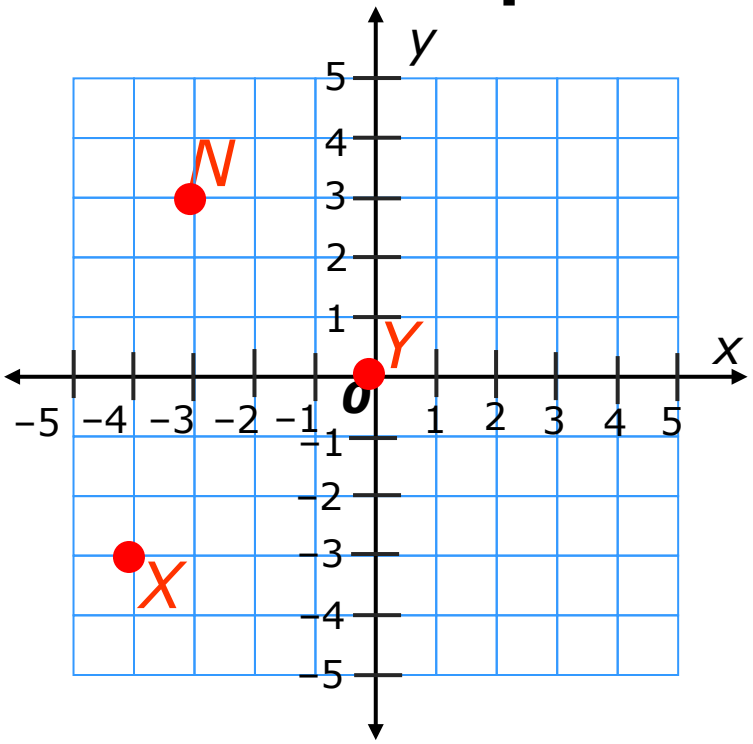
N lies in quadrant II.

B. *X*

X lies in quadrant III.

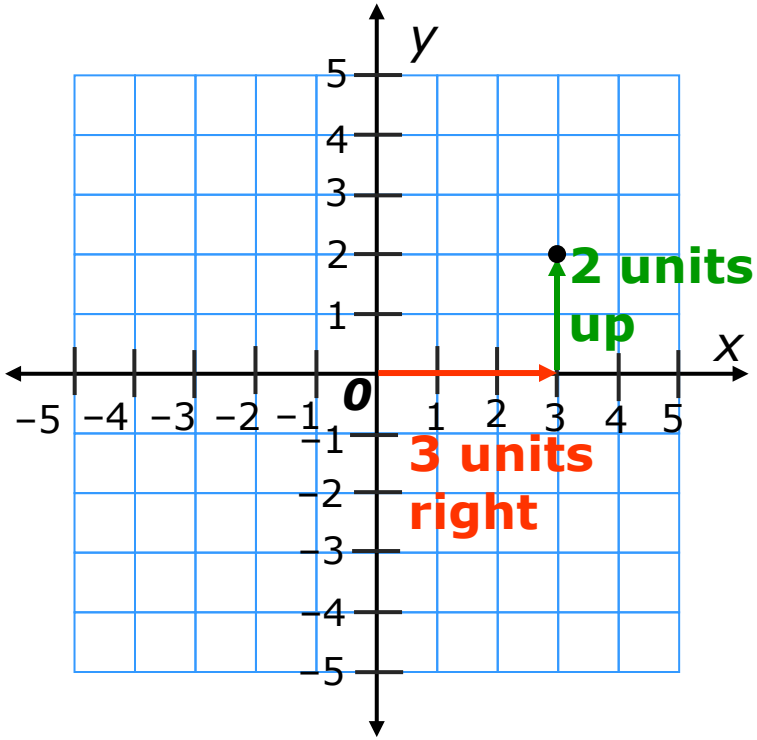
C. *Y*

Y lies on the origin.



4-1 The Coordinate Plane

Points on a coordinate plane are identified by *ordered pairs*. An **ordered pair** consists of two numbers in a certain order. The origin is the point (0,0).



Ordered pair

(3, 2)

***x*-coordinate**

Units right or left from 0

***y*-coordinate**

Units up or down from 0

Additional Example 2: Plotting Points on a Coordinate Plane

Plot each point on a coordinate plane.

A. *D* (3, 3)

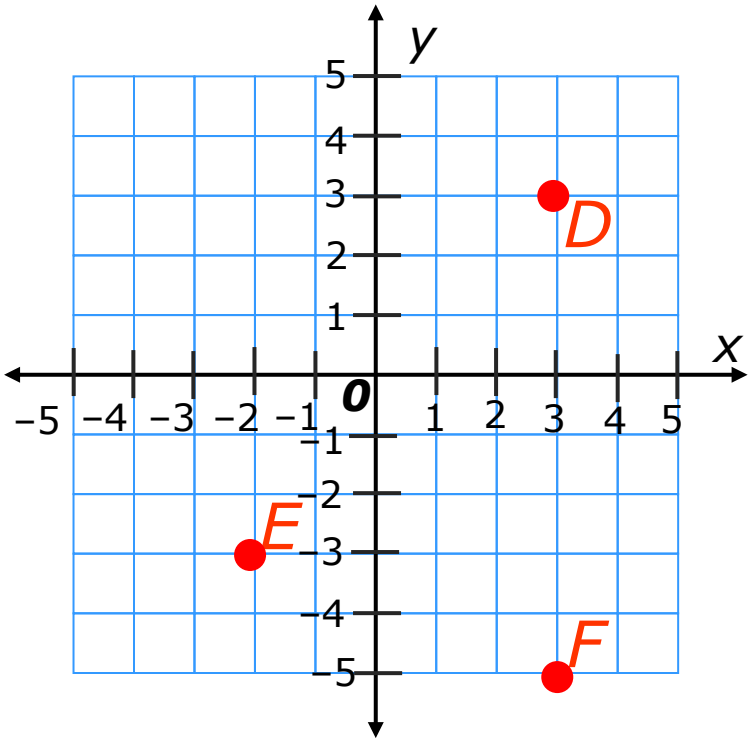
Start at the origin. Move 3 units right and 3 units up.

B. *E* (−2, −3)

Start at the origin. Move 2 units left and 3 units down.

C. *F* (3, −5)

Start at the origin. Move 3 units right and 5 units down.



Check It Out: Example 2

Plot each point on a coordinate plane.

A. *D* (4, 4)

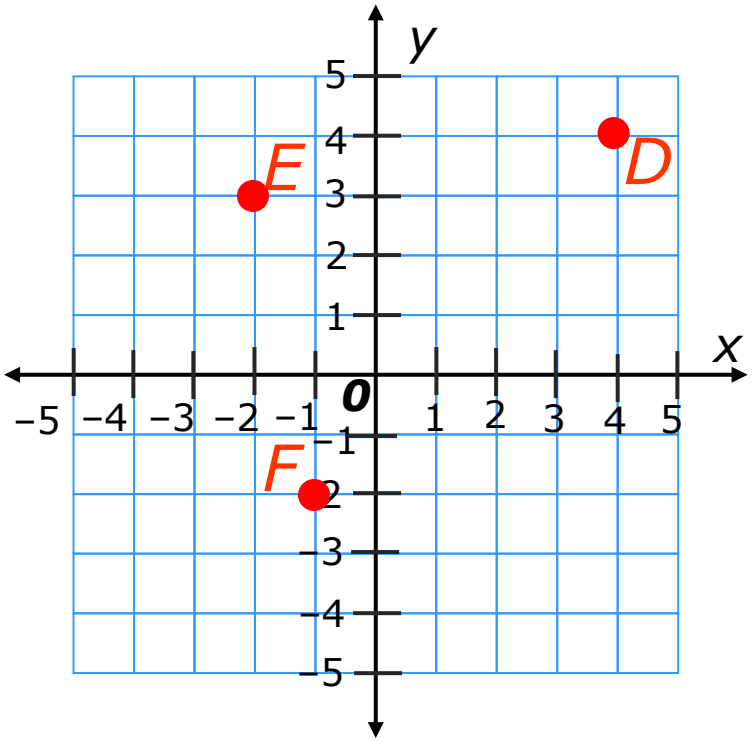
Start at the origin. Move 4 units right and 4 units up.

B. *E* (–2, 3)

Start at the origin. Move 2 units left and 3 units up.

C. *F* (–1, –2)

Start at the origin. Move 1 unit left and 2 units down.



Additional Example 3: Identifying Points on a Coordinate Plane

Give the coordinates of each point.

A. *X* (−2, 5)

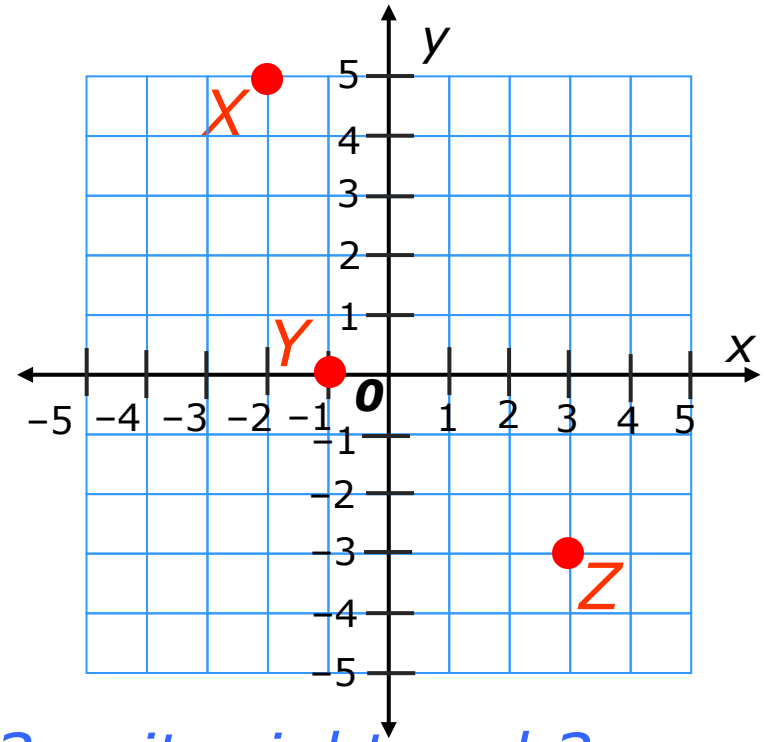
Start at the origin. Point X is 2 units left and 5 units up.

B. *Y* (−1, 0)

Start at the origin. Point Y is one unit left on the x-axis.

C. *Z* (3, −3)

Start at the origin. Point Z is 3 units right and 3 units down.



Check It Out: Example 3

Give the coordinates of each point.

A. *L* (–4, 3)

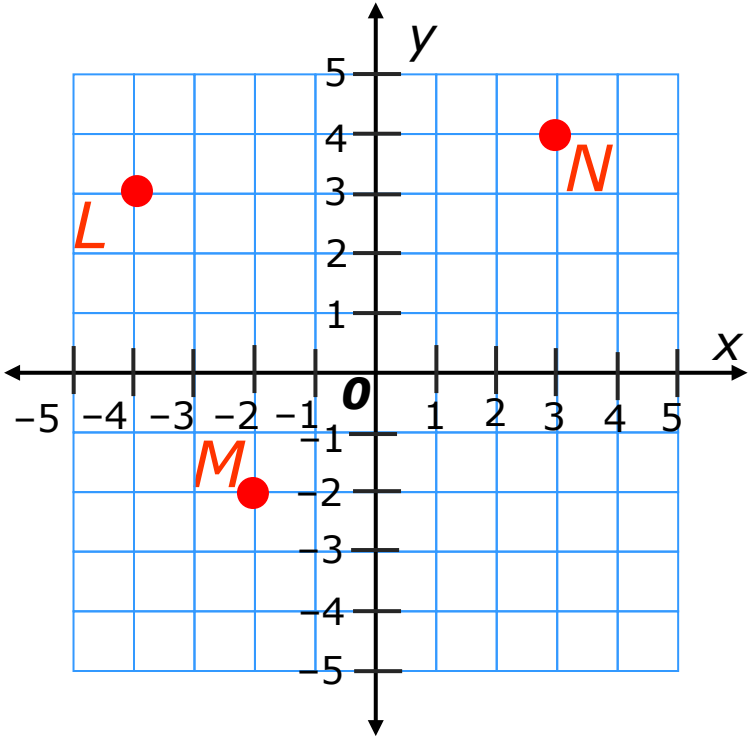
Start at the origin. Point L is 4 units left and 3 units up.

B. *M* (–2, –2)

Start at the origin. Point M is 2 units left and 2 units down.

C. *N* (3, 4)

Start at the origin. Point N is 3 units right and 4 units up.



Lesson Quiz: Part I

Give the coordinates of each point and identify the quadrant that contains each point

1. *A* (–2, 4); II

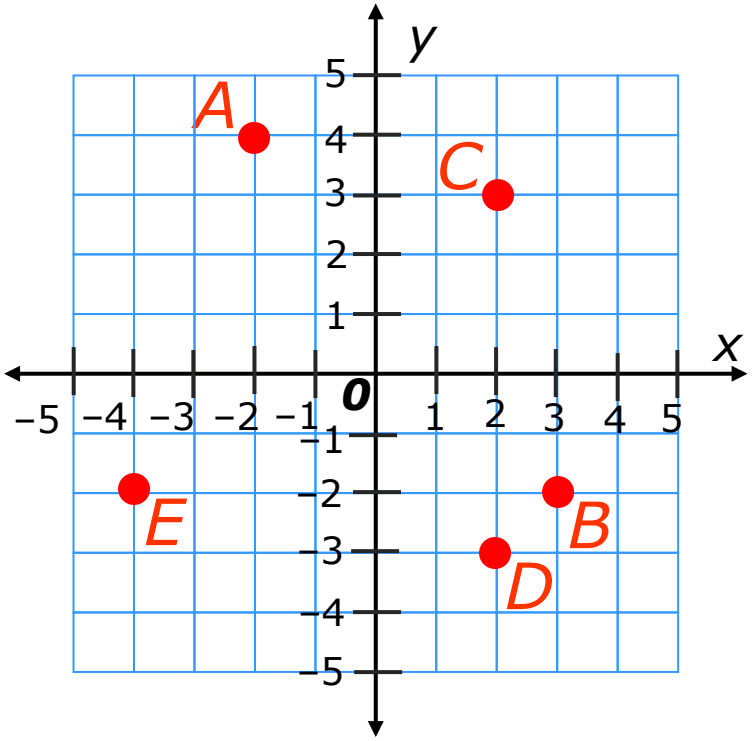
2. *B* (3, –2); IV

3. *C* (2, 3); I

Plot each point on a coordinate plane.

4. *D* (2, –3)

5. *E* (–4, –2)



Lesson Quiz: Part II

6. To plot (7, –2) a student started at (0, 0) and moved 7 units left and 2 units down. What did the student do wrong?

He should have moved 7 units right.