

4-1

The Coordinate Plane

Warm Up

Problem of the Day

Lesson Presentation

4-1 The Coordinate Plane

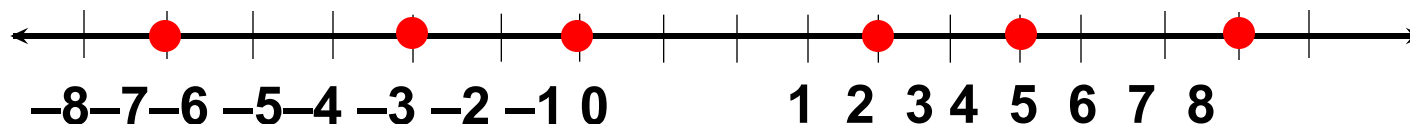
Warm Up

Graph each integer and its opposite on a number line.

1. 4

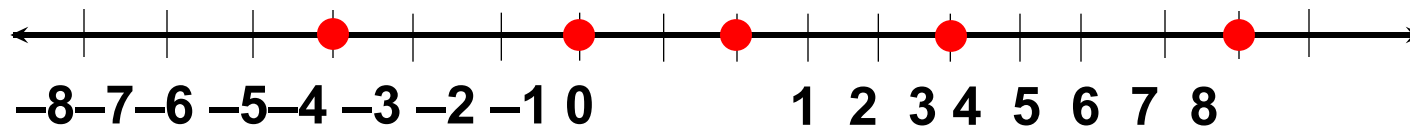
2. -7

3. -2



Graph the integers on a number line.

4. 7, -2, 0, 3, -5



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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.

4-1 The Coordinate Plane

Vocabulary

coordinate plane

x-axis

y-axis

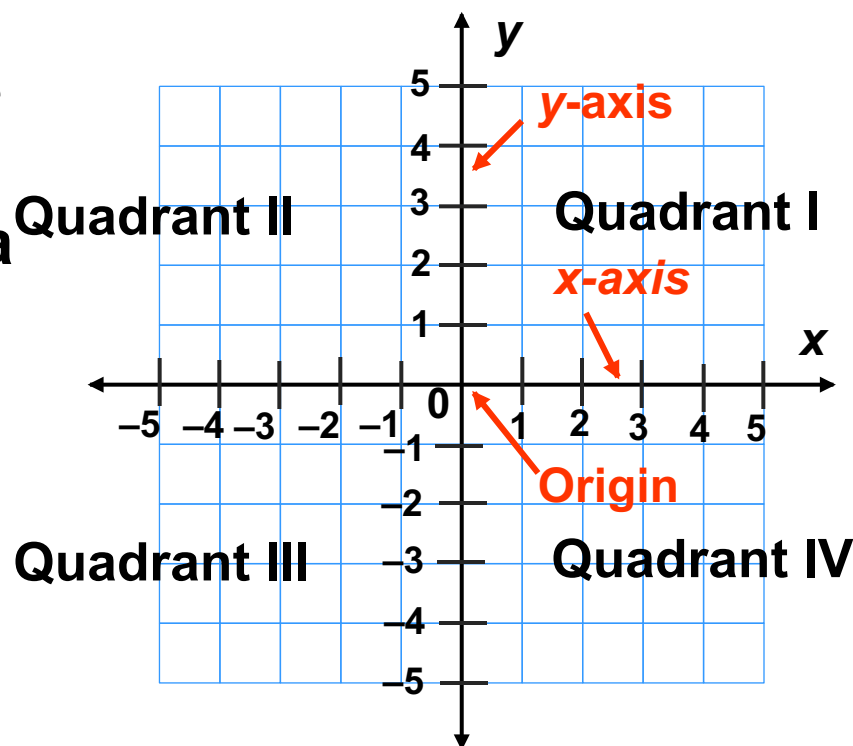
origin

quadrant

ordered pair

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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.

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Additional Example 1: Identifying Quadrants on a Coordinate Plane

Identify the quadrant that contains each point.

A. *S*

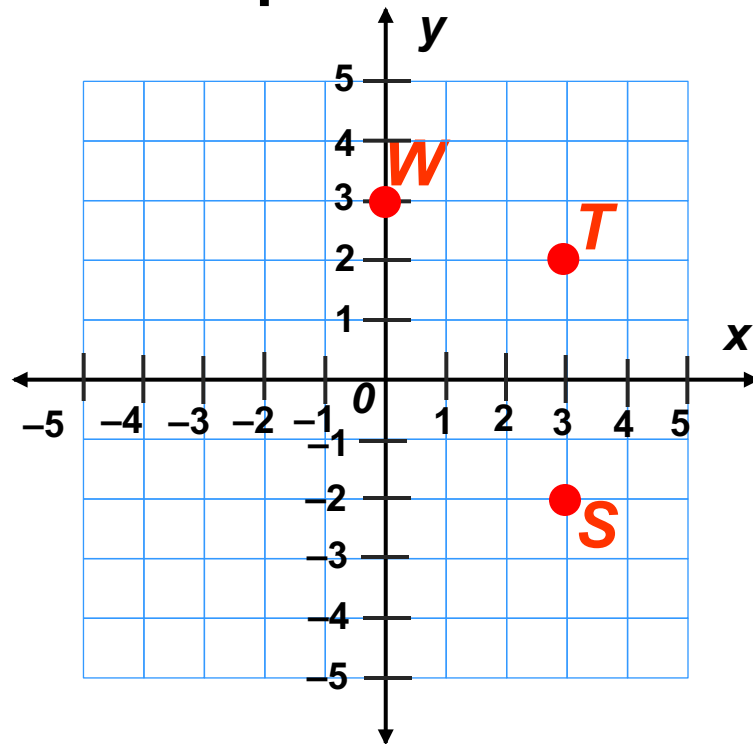
S lies in quadrant IV.

B. *T*

T lies in quadrant I.

C. *W*

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



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Check It Out: Example 1

Identify the quadrant that contains each point.

A. *N*

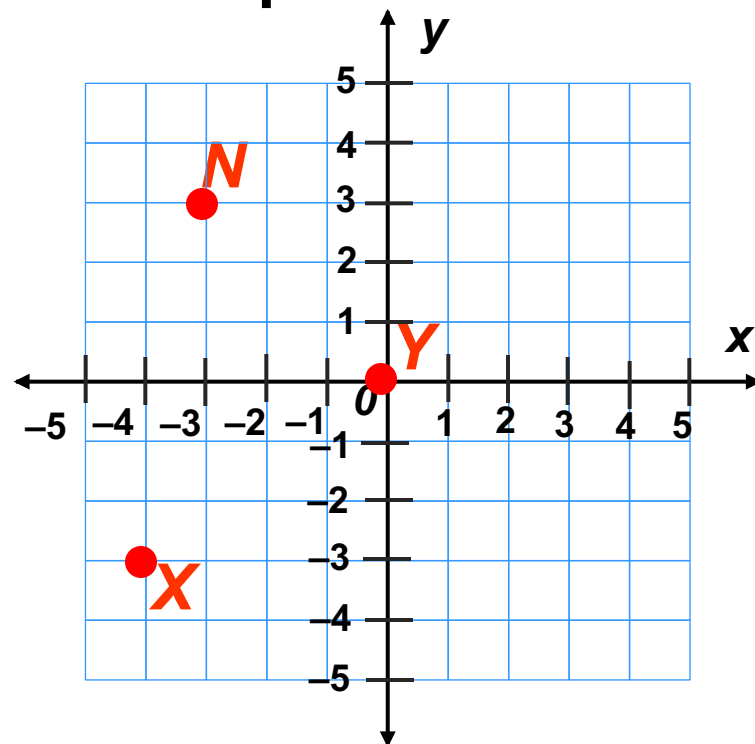
N lies in quadrant II.

B. *X*

X lies in quadrant III.

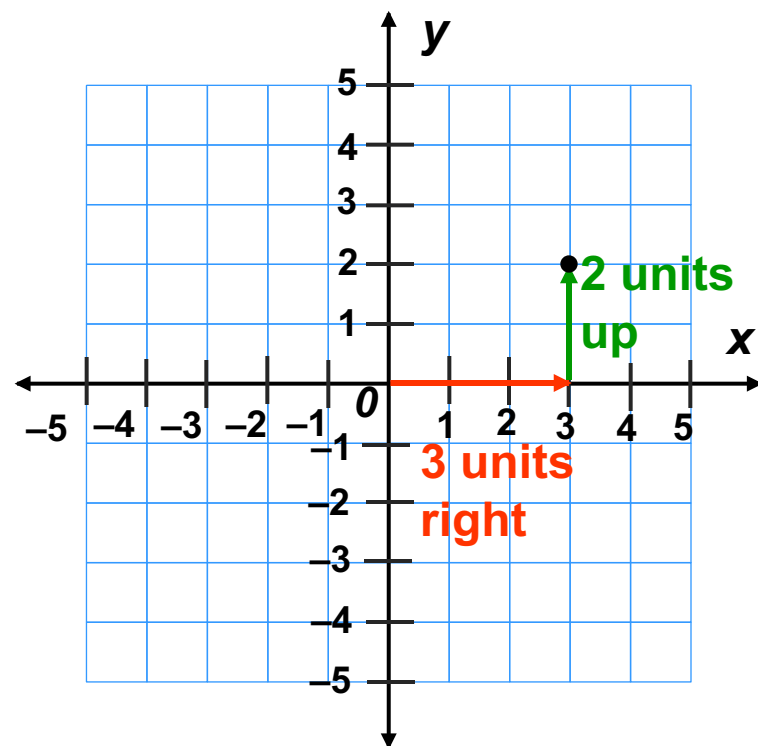
C. *Y*

Y lies on the origin.



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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

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Additional Example 2: Plotting Points on a Coordinate Plane

Plot each point on a coordinate plane.

A. $D (3, 3)$

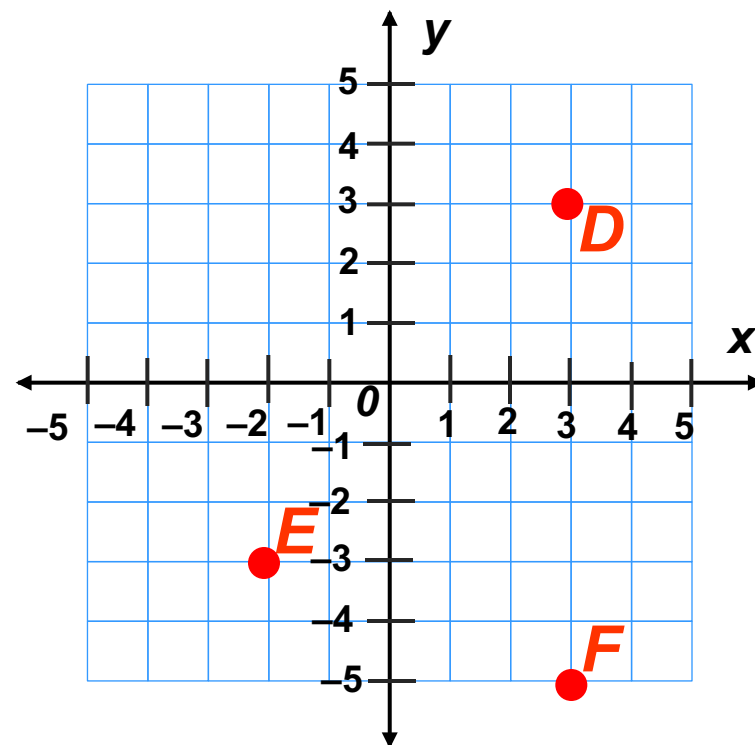
Start at the origin. Move 3 units right and 3 units up.

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.



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Check It Out: Example 2

Plot each point on a coordinate plane.

A. $D (4, 4)$

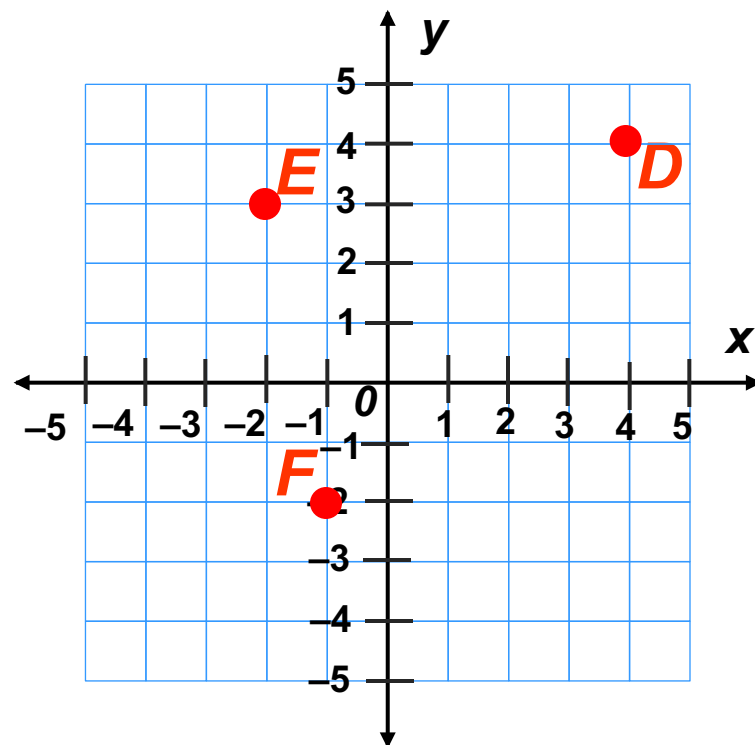
Start at the origin. Move 4 units right and 4 units up.

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.



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Additional Example 3: Identifying Points on a Coordinate Plane

Give the coordinates of each point.

A. X $(-2, 5)$

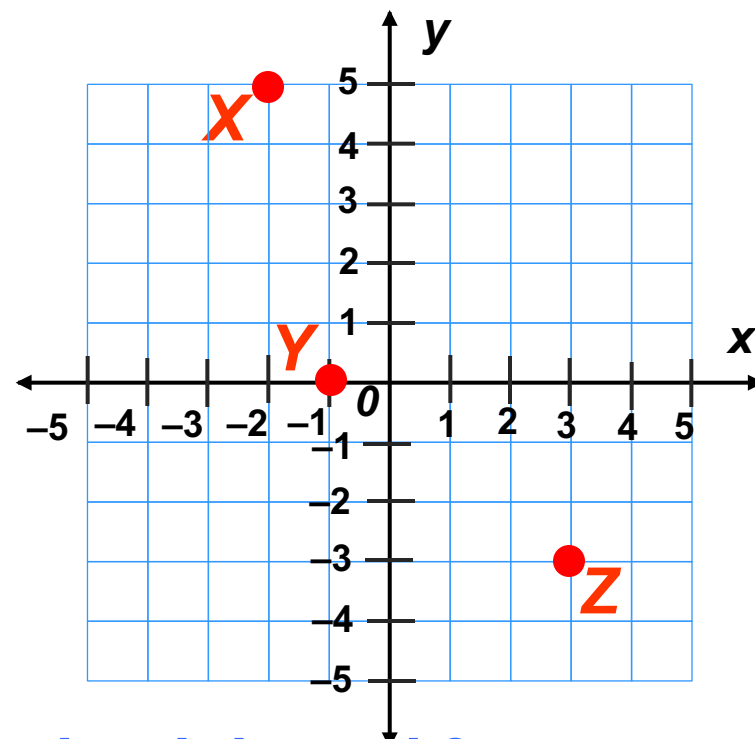
Start at the origin. Point X is 2 units left and 5 units up.

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.



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Check It Out: Example 3

Give the coordinates of each point.

A. *L* $(-4, 3)$

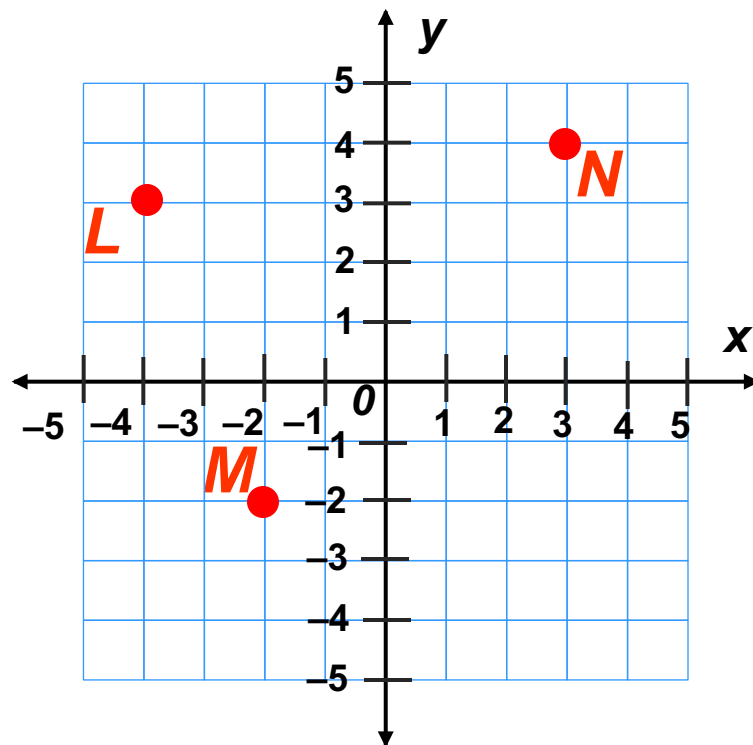
*Start at the origin. Point *L* is 4 units left and 3 units up.*

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.*



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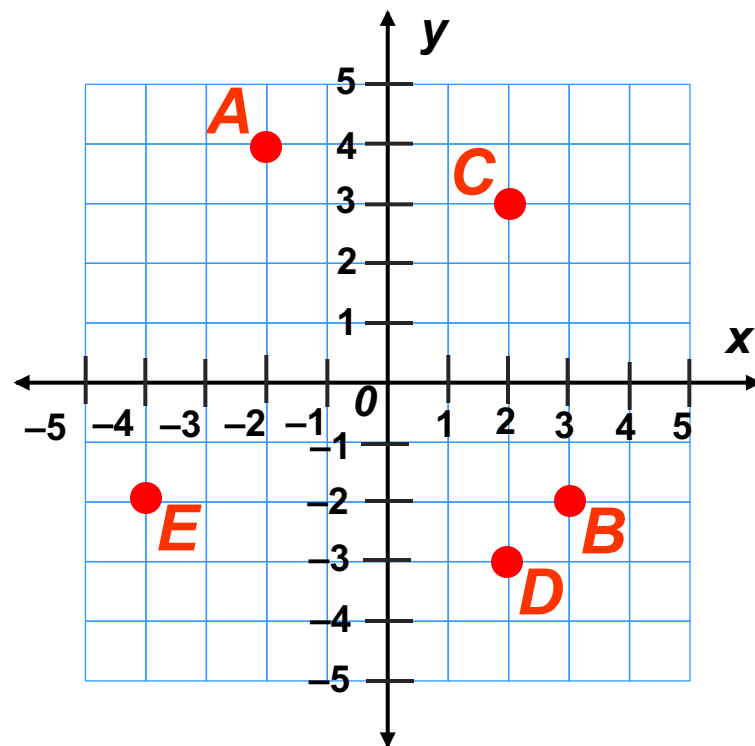
Lesson Quiz: Part I

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** $(-4, -2)$



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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.