

LESSON
14-1

Distance in the Coordinate Plane

Reteach

Reflecting a Point

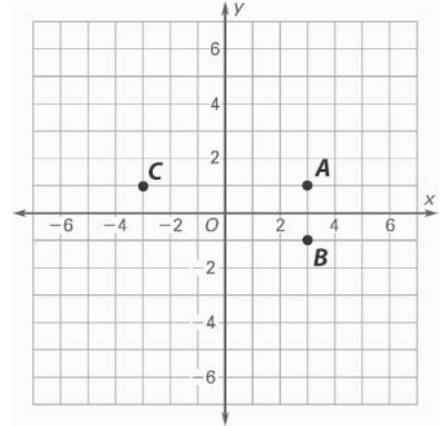
In this lesson, a point on a coordinate plane is reflected across the axes of the coordinate plane. The points *B* and *C* are reflections of point *A* across the *x*- and *y*-axes.

The coordinates of point *A* are (3, 1).

Point *B* is the reflection of point *A* across the *x*-axis.

Point *C* is the reflection of point *A* across the *y*-axis.

The following rules can help you find the coordinates of a reflected point by looking at the signs of the coordinates.



Reflecting across the *x*-axis

“Reflect across *x*. → Change the *y*.”

In this example, point *A*'s *x*-coordinate, +3, stays the same when point *A* is reflected across the *x*-axis to become point *B*. Point *A*'s *y*-coordinate, +1, switches to -1 to become point *B*.

So, point *B*'s coordinates are (3, -1).

Reflecting across the *y*-axis

“Reflect across *y*. → Change the *x*.”

In this example, point *A*'s *y*-coordinate, +1, stays the same when point *A* is reflected across the *y*-axis to become point *C*. Point *A*'s *x*-coordinate, +3, switches to -3 to become point *C*.

So, point *C*'s coordinates are (-3, 1).

Name the coordinates of each point after it is reflected across the given axis.

1. *A*(1, 3)

x-axis

(____, ____)

2. *B*(-4, 5)

y-axis

(____, ____)

3. *C*(6, -7)

y-axis

(____, ____)

4. *D*(-8, -9)

x-axis

(____, ____)

Distance between Points

The distance between two points on a coordinate plane depends on whether their *x*- or *y*-coordinates are different. Look at the points on the grid above to solve the problems.

The distance between points *A* and *B* is the absolute value of the difference of the *y*-coordinates of the points.

The distance between points *A* and *C* is the absolute value of the difference of the *x*-coordinates of the points.

Find the distance between the two points.

5. points *A* and *B*

_____ units

6. points *A* and *C*

_____ units