



MATH NEWS



Grade 6, Module 3, Topic C

6th Grade Math

Module 3: Rational Numbers and the Coordinate Plane

Math Parent Letter

This document is created to give parents and students a better understanding of the math concepts found in Eureka Math (© 2013 Common Core, Inc.) that is also posted as the Engage New York material which is taught in the classroom. In Module 3 of Eureka Math (Engage New York), students extend the number line (both horizontally and vertically) to include the opposites of whole numbers. The number line serves as a model to relate integers and other rational numbers to statements of order in real-world contexts.



Focus Area Topic C:

Rational Numbers and the Coordinate Plane

Words to Know:

Quadrant - The four sections of the coordinate plane formed by the intersection of the axes.

Coordinate Plane – Formed by the intersection of a horizontal number line called the x-axis and a vertical number line called the y-axis.

Coordinate Pair- Points in a coordinate plane also referred to as an ordered pair such as, (2, 4). The first number (2) in the ordered pair is the **x-coordinate** and the second number (4) is the **y-coordinate**.

Line of Symmetry – A line drawn through a figure so that one side is a mirror image of the other.

x-axis- the horizontal number line in the coordinate plane.

y-axis – the vertical number line in the coordinate plane.



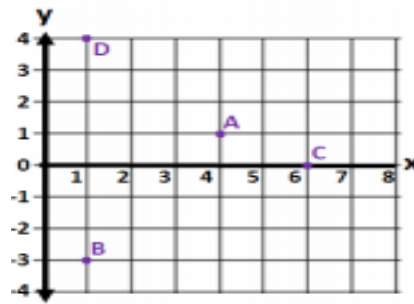
Focus Area Topic C:

Rational Numbers and the Coordinate Plane

Students begin the topic by using ordered pairs of rational numbers to name points on a grid. They identify the first number in the ordered pair as the first coordinate called the x-coordinate and the second number in the ordered pair as the second coordinate or the y-coordinate.

Example Problem and Solution:

Name the ordered pair that corresponds with each letter in the grid below.

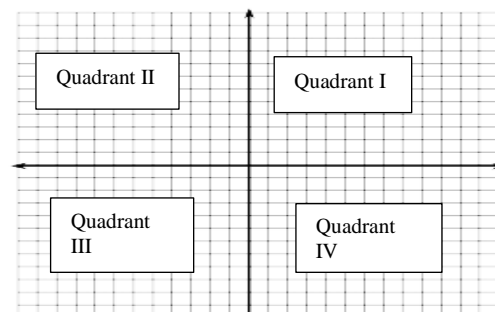


Answer:

A (4, 1), B (1,-3), C (6, 0), D (1, 4)

When plotting the numbers in an ordered pair, order matters because the ordered pair should describe **one and only one** location in the coordinate plane. The x-coordinate is always named first by counting the units from zero to the left or from zero to the right along the x-axes depending on the sign of the number. The y-coordinate is always named second by counting the units from the x-coordinate going up or from the x-coordinate going down depending on the sign of the number.

Students extend their understanding of the coordinate plane to include all four quadrants, and recognize that the axes (identified as the x-axis and y-axis) of the coordinate plane separate the plane into four regions called quadrants.



Focus Area Topic C:

Symmetry in the Coordinate Plane



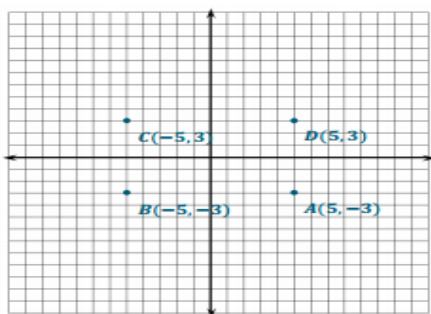
Students recognize that when two ordered pairs of numbers differ only by signs of one or both of the coordinates, then the locations of the points are related by reflections across one or both axes.

Example Problem and Solution:

Using the grid below, reflect point A over an axis so that its image is in Quadrant III. Label the image B and write its ordered pair next to it.

Which axis did you reflect over? **Answer:** It was reflected over the y-axis.

What is the only difference in the ordered pairs of points A and B? **Answer:** The ordered pairs differ only by the sign of their x-coordinates. A(5,-3); and B(-5,-3)



Reflect point B so that its image is in Quadrant II. Label the image C and write its ordered pair next to it.

Which axis did you reflect over? **Answer:** It was reflected over the x-axis. The ordered pairs differ only by the sign of the y-coordinates.

C (-5, 3)

Reflect point C over an axis so that its image is in Quadrant I.

Label the image D and write its ordered pair next to it. Which axis did you reflect over? **Answer:** It was reflected over the y-axis. D(5,3)

How does the point D compare to points A and B?

Answer:

Point D differs from point C by only the sign of its x-coordinate. D(5,3) and C(-5,3)

Point D differs from point B by the signs of both coordinates:

D(5,3) and B(-5,-3)

Point D differs from point A by only the sign of the y-coordinates : D(5,3) and A(5,-3)

Focus Area Topic C:

Drawing and Distance on the Coordinate Plane

Students draw a coordinate plane on graph paper and given some points as ordered pairs, students make reasonable choices for scales on both axes, and locate and label points. Students also compute the length of horizontal and vertical line segments with integer coordinates for endpoints in the coordinate plane by counting the number of units between end points and using absolute value.

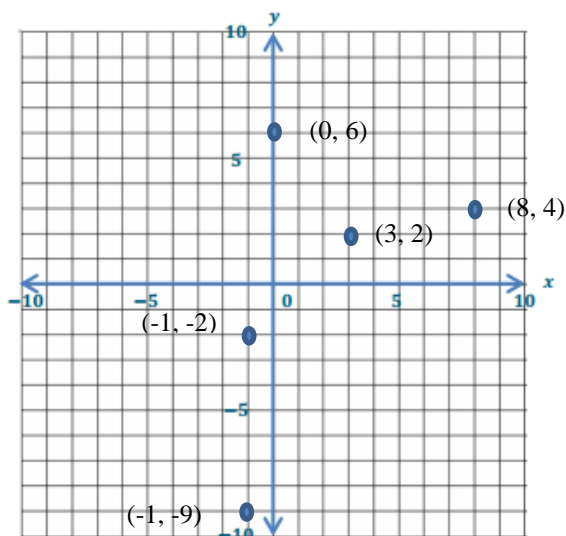
Example Problem and Solution:

Using the grid below locate and label the points

(3, 2), (8, 4), (-1,-2), (-1,-9), (0, 6)

Is the size of the grid below sufficient to graph the points below?

Answer: Yes. All x- and y-coordinates are between -10 and 10 on both axes on the grid.



Lafayette is located at point (-1,-2) and Youngsville is located at (-1, -9). If each unit represents 2 miles, how far is it from Lafayette to Youngsville?

Answer: It is fourteen miles from Lafayette to Youngsville.

If Carencro is located at point (0, 0), and Judice is located at point (0, 6), how far is it from Judice to Carencro in miles if each unit represents 2 miles?

Answer: It is twelve miles from Judice to Carencro.

