MATH NEWS

Grade 5, Module 6, Topic A

5th Grade Math

Module 6: Problem Solving with the Coordinate Plane

Math Parent Letter

This document is created to give parents and students an 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. Grade 5 Module 6 of Eureka Math (Engage New York) covers Problem Solving with the Coordinate Plane. This newsletter will discuss Module 6, Topic A. In this topic students are introduced to the concept of a coordinate as describing the distance of a point on the line from zero. Students will also describe given points using coordinate pairs, and then use given coordinate pairs to plot points.

Topic A: Coordinate Systems

Words to Know:

- coordinate plane
- coordinate
- coordinate pair or ordered pair
- origin
- midpoint
- *x*-axis
- *y*-axis

Things to Remember!

Coordinate – the distance from zero to the point

Coordinate Plane – The plane determined by a horizontal number line, called the x-axis, and vertical number line, called the y-axis, intersecting at a point called the origin. Each point in the coordinate plane can be specified by an ordered pair or coordinate pair of numbers.

Coordinate Pair or Ordered Pair – two numbers that are used to identify a point on a plane; written (x, y) where x represents a distance from 0 on the x-axis and y represents a distance from 0 on the y-axis

Origin – the point at which the x-axis and y-axis intersect, labeled (0,0) on the coordinate plane

Midpoint – the half-way point on a line segment

OBJECTIVES OF TOPIC A

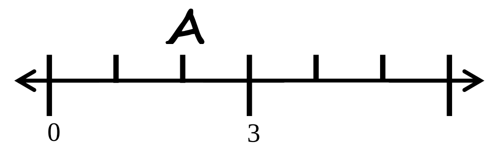
- ***Construct a coordinate system on a line.***
- ***Construct a coordinate system on a plane.***
- ***Name points using coordinate pairs, and use the coordinate pairs to plot points.***
- ***Investigate patterns in vertical and horizontal lines, and interpret points on the plane as distance from the axes***

Focus Area– Topic A

Module 6: Problem Solving with the Coordinate Plane

Directions: Plot A so its distance from the origin is 2.

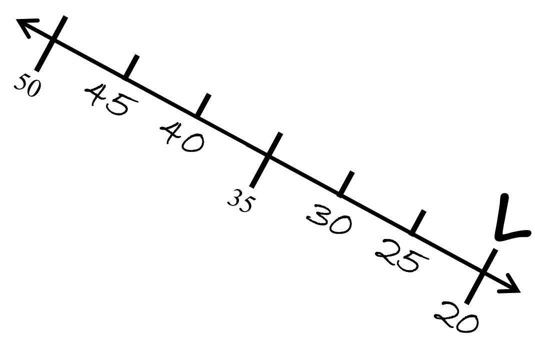
You need to figure out the value of each tic mark that is not labeled. You can determine that the value of each is 1. Start at zero and move 2 units to the right. Plot your point above the correct tic mark.



Example 2: Plot L so its distance from the origin is 20.

First you need to figure out the value of each tic mark that is not labeled. From 35 to 50 there is a difference of 15. Divide the 15 by 3 (3 sections between 35 and 50) and you get 5. So each tic mark changes by 5.

Once you find the value of each tic mark you can then place the letter L on the line.



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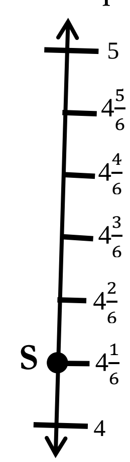
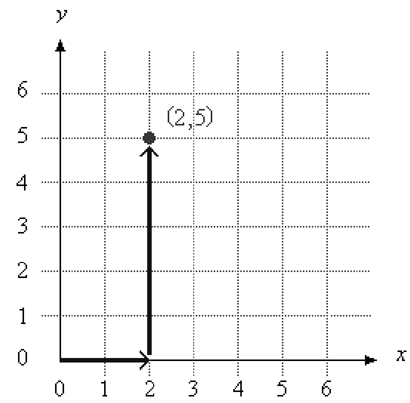
Example 3: What is the coordinate of point S?



First find the value of each tic mark. Since there are 6 spaces between 4 and 5, each tic mark would represent $\frac{1}{6}$.

When moving from the origin, the coordinate for point S is $4\frac{1}{6}$.

Plotting a Coordinate Pair



Directions: How would you plot the point (2,5) on the coordinate grid?

Start at the origin and move 2 units over on the x-axis.

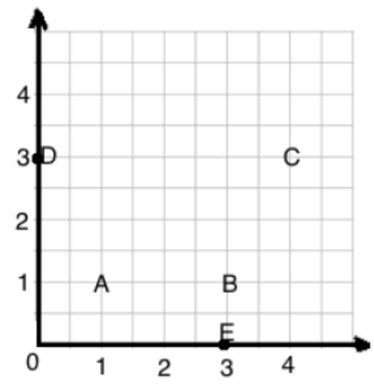
Then move 5 units up on the y-axis .

(2, 5)

↓ ↓

(x, y)

Identifying a point on a Coordinate Grid



Point B is at (3,1)

Directions: Find the coordinate pair for point B.

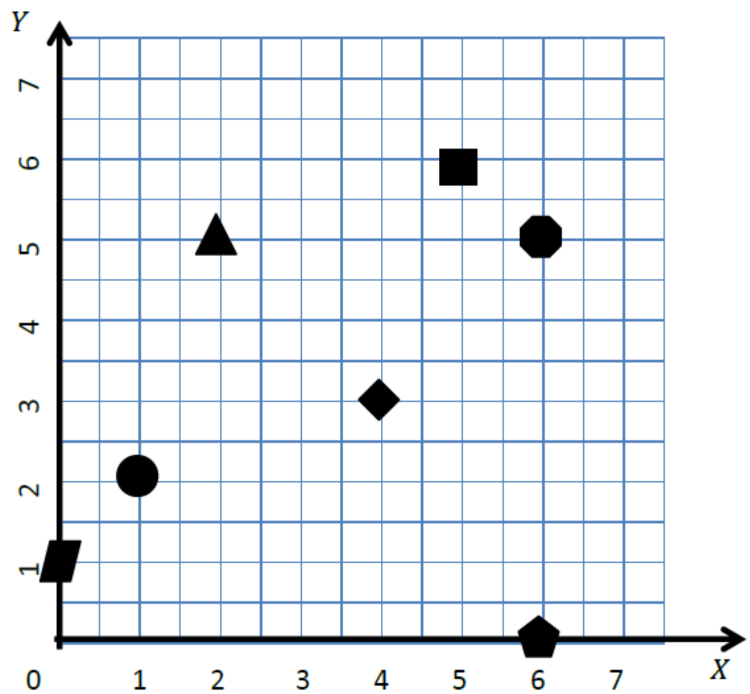
Start at the origin and move along the x-axis. You will move 6 spaces on the x-axis to get to 3 units.

(Each space equals $\frac{1}{2}$ unit.)

Then move up 2 spaces on the y-axis to get to the 1 unit.

(Each space equals $\frac{1}{2}$ unit.)

Use the coordinate plane to answer.



Directions: Tell the shape at each location.

a. What shape is 2 units from the y-axis and explain how you determined your answer?

I determined that each space is $\frac{1}{2}$ unit from y-axis so I had to move 4 spaces to equal 2 units and the triangle is at that location.

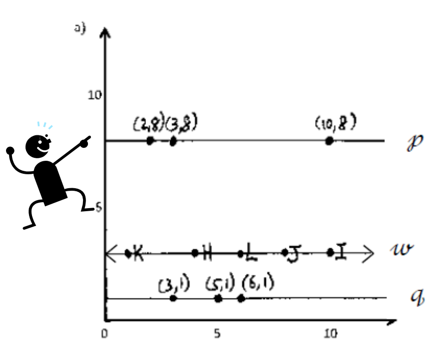
b. Which shape has an *x*-coordinate of 0?

The parallelogram has an x-coordinate of 0.

c. Which shape is 4 units from the *y*-axis and 3 units from the *x*-axis?

The rhombus has the coordinate pair of (4,3) since it is 4 units from the y-axis and 3 units from the x-axis.

Patterns in Coordinate Pairs
Horizontal lines

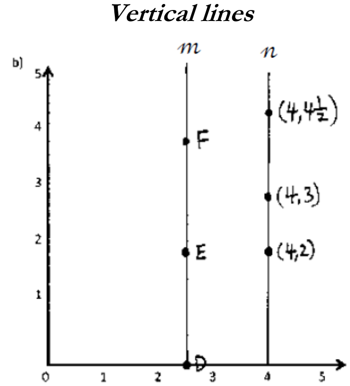


Look at line *p*, what do you notice about the 3 points and their coordinates?

They have different x coordinates but the y coordinates are all 8.

*****Any time the *y*- coordinates are the same in a set of coordinate pairs, the line created will always be horizontal.**

Patterns in Coordinate Pairs
Vertical lines



Look at line *n*, what do you notice about the 3 points and their coordinates?

They have different y coordinates but the x coordinates are all 4.

*****Any time the *x* -coordinates are the same in a set of coordinate pairs, the line created will always be vertical.**