Oak Park Elementary School District 97

MATH NEWS

Grade 5 | Module 6 | Topic B | Problem Solving w/ Coordinate Plane

Welcome

This document is created to give parents and students a better understanding of the math concepts found in the Eureka Math (© 2013 Common Core, Inc.) that is also posted in the Engage New York material 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 B. In this topic, students plot points and use them to draw lines in the plane by investigating patterns relating the *x*- and *y*-coordinates of the points on the line and reason about the patterns in the ordered pairs. They will also use given rules to generate coordinate pairs, plot the points, and investigate relationships.

Words to Know

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

District Math Website

http://op97mathgrade5.weebly.com/module-6.html

Important Information

Objectives

- Plot points, use them to draw lines in the plane, and describe patterns within the coordinate pairs
- Generate a number pattern from a given rule, and plot the points
- Generate two number patterns from given rules, plot the points, and analyze the patterns
- Compare the lines and patterns generated by addition rules and multiplication rules
- Analyze number patterns created from mixed operations
- Create a rule to generate a number pattern, and plot the points

Things to Remember

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 came 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 the *y*-axis intersect, labeled (0, 0) on the coordinate plane

Patterns in the Coordinate Plane

Step 1:
Complete the chart.

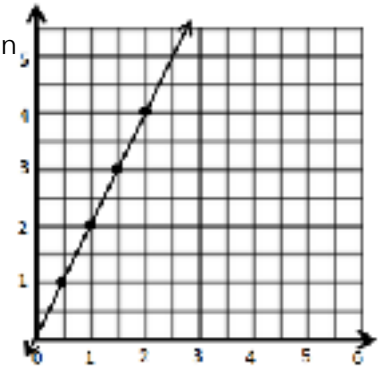
x	y	(x, y)
$\frac{1}{2}$	1	
1	2	
$1\frac{1}{2}$	3	
2	4	

x	y	(x, y)
$\frac{1}{2}$	1	$(\frac{1}{2}, 1)$
1	2	(1, 2)
$1\frac{1}{2}$	3	$(1\frac{1}{2}, 3)$
2	4	(2, 4)

(Cont.)

(Cont.)

Step 2: Plot the points on the coordinate plane below and then use a straight edge to draw a line connecting these points.



Step 3: Write a rule showing the relationship between the x- and y- coordinates of points on the line.

$(2\frac{1}{2}, 5)$ $(1\frac{1}{4}, 2\frac{1}{2})$

Each y- coordinate is 2x greater than its corresponding x-coordinate.

Step 4: Name two other points on this line.

Generate Two Number Patterns from Given Rule, Plot the Points, Analyze the Patterns

Step 1: Complete the tables for the given rules.

Line *l*

Rule: *y is 1 more than x*

x	y	(x, y)
1		
5		
9		
13		

Line *l*

Rule: *y is 1 more than x*

x	y	(x, y)
1	2	(1, 2)
5	6	(5, 6)
9	10	(9, 10)
13	14	(13, 14)

Line *m*

Rule: *y is 4 more than x*

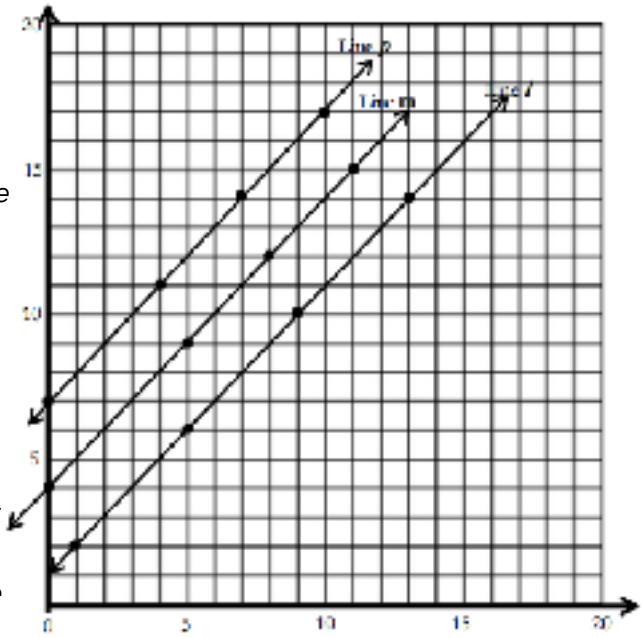
x	y	(x, y)
0		
5		
8		
11		

Line *m*

Rule: *y is 4 more than x*

x	y	(x, y)
0	4	(0, 4)
5	9	(5, 9)
8	12	(8, 12)
11	15	(11, 15)

Step 2: Plot the points and then construct lines ***l*** and ***m*** on the coordinate plane.



Compare and contrast these lines.

Lines l and m are parallel. I noticed that the y values on Line m are 3 units greater than the y values on Line l. Example: Line l has a point at (5, 6). The point above it on Line m has the coordinates of (5, 9). The y-coordinate of 9 on Line m is 3 units greater than y-coordinate of 6 on Line l. Another point on Line l is (9, 10). Three units above it is a point with coordinates (9, 13) on Line m. The y-coordinate of 13 on line m is 3 units greater that the y-coordinate of 10 on Line.

Based on the patterns you see, predict what line p, whose rule is 7 more than x, would look like. Draw your prediction on the plane above.

I think that Line p will be parallel to Lines l and m. These are the x- and y- coordinates I will plot and then construct line p. (o, 7) (4, 11) (7, 14) (10, 17) Once I constructed Line p, I noticed that the y values on Line p are 3 units greater than the y values on Line m and 6 units greater than Line l.