Unit Map 2012-2013

Monroe #2 - Orleans BOCES (Regional Collaboration)

Collaboration / Math 5* / Grade 5 (Math Regional Curriculum)

Wednesday, October 31, 2012, 11:30AM

Standard/Module: Proficiency in Geometry 5.G.2 (Week 34, 6 Weeks)

Stage 1: Desired Results

Standards Focus

- Additional (10%) Connects to 5.G.1, and 5.OA.3

5th Grade Map.pdf

Standards

NYS: CCLS:Mathematics, NYS: 5th Grade , Geometry

5.G Graph points on the coordinate plane to solve real-world and mathematical problems.

- 2. Represent real world and mathematical problems by graphing points in the first quadrant of the coordinate plane, and interpret coordinate values of points in the context of the situation.

Enduring Understandings

1. An object's location in space can be described quantitatively.
2. The coordinate system is a scheme that uses two perpendicular lines intersecting at 0 to name the location of points in the plane.
3. A graph of a rule contains all of the points on the coordinate grid whose x-and y-coordinates satisfy the rule.
4. Mathematical relationships represented by rules can also be represented by a graph of the rule.

Essential Questions

1. How are points graphed?
2. How can we show the relationship between sequences on a graph?
3. How do we use ordered pairs to find the length of line segments (or the distance between two points)?
4. How do you name a point on a coordinate grid?
5. Why are the pairs of numbers used to describe points on a coordinate grid called ordered pairs?
6. How can we use coordinate grids to show mathematical relationships?

Critical Content

Coordinate Geometry

- Plotting points
- Coordinate pairs
- Horizontal/vertical
- x/y axes
- coordinate plane
- graphing
- counting units

Problem Solving

- Using rules

Skills	Vocabulary
1. Students must understand the Cartesian coordinate system. 2. Students must understand ways to find the distance between points on the coordinate plane. 3. Students must be able to identify and graph points on a coordinate grid. 4. Students must be able to interpret ordered pairs. 5. Students must be able to use coordinate graphs to explore the relationship between two rules.	Tier 2- analyze, attributes, horizontal, vertical, rules, relationships Tier 3- quantitatively, coordinate system, perpendicular, intersecting, plane, line segments, ordered pair, coordinate grid, origin, x-coordinate, y-coordinate, x-axis, y-axis, graphing

Stage 2: Assessment Evidence

Assessments

Interpreting the Points on a Coordinate Plane
Formative: Performance: Skill Demonstration

Example:

Plot these points on a coordinate grid.

Point A: (2,6)

Point B: (4,6)

Point C: (6,3)

Point D: (2,3)

Connect the points in order. Make sure to connect Point D back to Point A.

1. What geometric figure is formed? What attributes did you use to identify it?

2. What line segments in this figure are parallel?

3. What line segments in this figure are perpendicular?

Solutions: trapezoid, line segments AB and DC are parallel, segments AD and DC are perpendicular

Stage 3: Learning Plan	
Learning Activities	**Resources**
These standards deal with only the first quadrant (positive numbers in the coordinate plane. **Example:** Connect these points in order on the coordinate grid below: (2, 2) (2, 4) (2, 6) (2, 8) (4, 5) (6, 8) (6, 6) (6, 4) and (6, 2). What letter is formed on the grid? Solution: "M" is formed **Example:** Plot these points on a coordinate grid. Point A: (2,6) Point B: (4,6) Point C: (6,3) Point D: (2,3) Connect the points in order. Make sure to connect Point D back to Point A. 1. What geometric figure is formed? What attributes did you use to identify it? 2. What line segments in this figure are parallel? 3. What line segments in this figure are	Grid/graph paper www.illustrativemathematics.org www.illuminations.nctm.org Nctm.org(Illuminations): *Finding Your Way Around* - Students explore two-dimensional space via an activity in which they navigate the coordinate plane. Nctm.org(Illuminations): *Describe the Way* – In this lesson, students will review plotting points and labeling axes. Students generate a set of random points all located in the first quadrant

perpendicular? *Solutions: trapezoid, line segments AB and DC are parallel, segments AD and DC are perpendicular* **Example:** Emanuel draws a line segment from (1, 3) to (8, 10). He then draws a line segment from (0, 2) to (7, 9). If he wants to draw another line segment that is parallel to those two segments what points will he use? Students need to understand the underlying structure of the coordinate system and see how axes make it possible to locate points anywhere on a coordinate plane. This is the first time students are working with coordinate planes, and only in the first quadrant. It is important that students create the coordinate grid themselves. This can be related to two number lines and reliance on previous experiences with moving along a number line. Multiple experiences with plotting points are needed. Provide points plotted on a grid and have students name and write the ordered pair. Have students **describe** how to get to the location. Encourage students to articulate directions, attending to precision as they plot points. Present real-world and mathematical problems and have students graph points in the first quadrant of the coordinate plane. Gathering and graphing data is a valuable experience for students. It helps them to develop an understanding of coordinates and what the overall graph represents. Students also need to analyze the graph by interpreting the coordinate values in the context of the situation. **Example**: Using the coordinate grid, which ordered pair represents the location of the School? Explain a possible path from the school to the library.	

Examples: Barb has saved $20. She earns $8 for each hour she works. o If Barb saves all of her money, how much will she have after working 3 hours? 5 hours? 10 hours? o Create a graph that shows the relationship between the hours Barb worked and the amount of money she has saved. o What other information do you know from analyzing the graph? Use the graph below to determine how much money Barb makes after working exactly 9 hours.	

Differentiation Opportunities

Students can use a classroom size coordinate system to physically locate the coordinate point (5, 3) by starting at the origin point (0,0), walking 5 units along the x axis to find the first number in the pair (5), and then walking up 3 units for

the second number in the pair (3). The ordered pair names a point in the plane.

When playing games with coordinates or looking at maps, students may think the order in plotting a coordinate point is not important. Have students plot points so that the position of the coordinates is switched. For example, have students plot (3, 4) and (4,

3) and discuss the order used to plot the points. Have students create directions for others to follow so that they become aware of the importance of direction and distance.

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