Domain: Geometry   Grade: 5

Core Content

Cluster Title: Graph points on the coordinate plane to solve real-world and mathematical problems.
Standard 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.
MASTERY Patterns of Reasoning:

Conceptual:
    Students can interpret coordinate points in the context of real-world situations (points on a map, or data on a line graph).
    Students can interpret what the axes represent in different situations (in a line graph the *x*-axis may represent time while the *y*-axis may represent temperature).
 	
Procedural:
    Students can correctly interpret real-world data and plot that data in the first quadrant of a coordinate grid.
 	
Representational:
    Students can represent real-world data on a coordinate grid. For example, graph the time (*x*-coordinate) and temperature (*y*-coordinate) during a day at the amusement park.

Code: 5.G.2

Supports for Teachers

Critical Background Knowledge
Conceptual: 　　Students understand how to construct and move along a coordinate grid. 　　Students have basic map reading skills. **Procedural:** 　　Students can take an ordered pair, start at the origin, and move correctly along the *x*-axis and *y*-axis. 　　Students correctly construct the coordinate grid using perpendicular lines as the axes. **Representational:** 　　Students can create number lines using varying intervals. 　　Students can organize and represent data in a variety of ways.

Academic Vocabulary and Notation
perpendicular, right angle, intersect, vertical, horizontal, coordinates, *x*-axis, *y*-axis, coordinate plane/grid, origin, *x*-coordinate, *y*-coordinate, ordered pair, line graph

Instructional Strategies Used	Resources Used
Have students take relevant real-world data (sports stats, stock market, sales, temperatures) and plot it in a line graph. Discuss how that data relates to coordinate grids, and how that representation helps them to better understand the data. Have students overlay a coordinate grid on a real map. They should use their knowledge of coordinate geometry and ordered pairs to find locations and travel along the map.	Newspapers (e.g., *Scholastic News*) and maps as a means of gathering current real-world data: http://www.mathwire.com/archives/geometry.html http://www.pbs.org/parents/cyberchase/lessons/lessonplans/lesson1.html http://nces.ed.gov/nceskids/createagraph/ Note: Spreadsheet software such as Excel, often has a way to quickly turn numerical data into a graph.

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Assessment Tasks Used	
Skill-Based Task: Give students a map that has a coordinate grid overlaid. Ask students to find the coordinates of specific landmarks, and have them find landmarks at given ordered pairs.	**Problem Task:** The local department store has recently released its information regarding video game sales over the last nine months. In the first month they sold 75 games. In the next month they sold 72. In the third month they sold 60, and in the fourth they sold 42. In the fifth month they sold 45, in the sixth they sold 38, in the seventh they sold 56, in the eighth they sold 62, and in the ninth they sold 79. Organize this data in a chart and then plot it on a coordinate grid to help the store understand their video game sales.

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