Unit Map 2012-2013

Monroe #2 - Orleans BOCES (Regional Collaboration)

Collaboration / Math 6* / Grade 6 (Math Regional Curriculum)

Wednesday, October 31, 2012, 11:40AM

Standard/Module: Proficiency with Rational Numbers 6.NS.6 (Week 1, 39 Weeks)

Stage 1: Desired Results

Standards Focus

- Major (70%) 6.EE.8, 6.SP.4

6th Grade CCS Map.pdf

Standards

NYS: CCLS:Mathematics, NYS: 6th Grade , The Number System

6.NS Apply and extend previous understandings of numbers to the system of rational numbers.

- 6. Understand a rational number as a point on the number line. Extend number line diagrams and coordinate axes familiar from previous grades to represent points on the line and in the plane with negative number coordinates.
- 6a. Recognize opposite signs of numbers as indicating locations on opposite sides of 0 on the number line; recognize that the opposite of the opposite of a number is the number itself, e.g., –(–3) = 3, and that 0 is its own opposite.
- 6b. Understand signs of numbers in ordered pairs as indicating locations in quadrants of the coordinate plane; recognize that when two ordered pairs differ only by signs, the locations of the points are related by reflections across one or both axes.
- 6c. Find and position integers and other rational numbers on a horizontal or vertical number line diagram; find and position pairs of integers and other rational numbers on a coordinate plane.

Enduring Understandings	Essential Questions
1. Understand the meaning of the term opposite 2. Recognize that the opposite of the opposite of the number is its number itself. ex) –(-3) 3. Any rational number can be found or positioned on a number line 4. An ordered pair is the way of identifying the point on a plane 5. Coordinate plane is divided into 4 quadrants	1. Are there any places on a plane that are not in a quadrant? (Answer: If it is on the axis, it is not in a quadrant) 2. What is the meaning of the term opposite? 3. Why is the opposite of the opposite just the number? 4. How is a double negative in English similar to the opposite of an opposite? 5. When is appropriate to represent a number as a negative integer?

Critical Content

1. Vertical and horizontal number lines

    a. opposites

    b. positive integers

    c. negative integers

    d. whole numbers, integers, fractions,

        decimals, and other rational numbers

2. Coordinate planes (4 quadrants)

    a. point

    b. quadrant

    c. axis (x and y)

    d. coordinates

    e. origin

    f. reflection

    g. ordered pairs

    h. plane

3. Rational number

    a. whole numbers, integers, fractions,

        decimals, and other rational numbers

Skills	**Vocabulary**
1. Extend number line diagrams to include negative numbers 2. Extend coordinate axis to include negative numbers 3. Understand a rational number as a point on the number line (whole numbers, integers, fractions, decimals, and other rational numbers). 4. Recognize and place opposite signs of numbers indicating	Tier 2: Reflections Axes/Axis Point

location on opposite sides of 0 on the number line; coordinate plane; horizontal and vertical number line diagram. 5. Recognize that the opposite of the opposite of a number is the number itself 6. Zero is its own opposite 7. Place ordered pairs in the correct quadrant 8. Recognize two ordered pairs that differs only by signs, are related by reflections across one or both axes.	Quadrant Point Plane Origin Coordinates Signs (positive/negative) Tier 3: Rational number Ordered Pair
Make a number line on the floor. Have a student choose an integer to stand on then call on a student to come stand on the opposite integer. Repeat process asking students to stand on the opposite of an opposite. Have students use appropriate notation to record these integers.	Integers

Stage 2: Assessment Evidence

Assessments

Skill based (6a)
Formative: Performance: Skill Demonstration

Locate 4 and its opposite on a number line.

Problem task (6a)
Formative: Performance: Skill Demonstration

This is a skill-based standard. Therefore, no problem task is offered.

Skill based (6b)
Formative: Performance: Skill Demonstration

If you had a point graphed at (5, -3), what would be one ordered pair that is a reflection of the point? Students may use a coordinate plane to find a solution.

Problem task (6b)
Formative: Performance: Skill Demonstration

A town was laid out using a coordinate plane. On the city plans, the library is at (3, 2). Which of the following locations is a reflection across the *x*-axis of where the library is located? Prove your answer is correct using two different methods.
School (-3, -2) Gas Station (-3, 2) Post Office (3, -2)

Skill based (6c)
Formative: Performance: Skill Demonstration

Plot the following ordered pairs: (3, 2), (-4, 5), (-8, -3), (4, -6), (21/2 , -5), (-9.75, 0) (Note: Approximation is appropriate.)
Create a graph of several points and have students write the ordered pair for each point.

Stage 3: Learning Plan

Learning Activities	Resources
What Integer Am I? Draw a number line on a large sheet of paper. Including: -10, -8, -6, -4, -2, 0, 2, 4, 6, 8, and 10 Step 1 Player 1 places a token on a negative number on the number line. Step 2 Player 2 says, "What is my name?" "What is my opposite?" and "How many units am I away from 0?" Step 3 Player 1 then gives the name of the integer, its opposite, and tells its distance from 0. Step 4 Trade roles and play again. Here's an example: Player 1 places a token on -3. Player 2: "What is my name? What is my opposite? How many units am I away from 0?" Player 1: "Negative 3, positive 3, 3 units from 0."	http://engageny.org/common-core/ http://illustrativemathematics.org/ www.livebinders.com/play/play/52180 http://illuminations.nctm.org/
_____ Have students draw and label a coordinate plane, including quadrants and axes. Make a set of cards with ordered pairs that have a matching card that is a reflection of the point. Have students get in groups and pair the cards that are reflections. Given an ordered pair, have students identify in which quadrant the ordered pair is located.	http://www.mathsisfun.com/geometry/polyhedron.html http://www.korthalsaltes.com/

Play coordinate plane battleship as a whole class and then with partners.	http://www.lessonplanspage.com/MathBattleshipPlotCo ordinates79.htm (Note: Modify the lesson plan to include rational numbers within a limited range; for example, halves and fourths between -2 and 2.)

Differentiation Opportunities

Number lines can be used to show numbers and their opposites. Both 3 and -3 are 3 units from zero on the number line. Graphing points and reflecting across zero on a number line extends to graphing and reflecting points across axes on a coordinate grid. The use of both horizontal and vertical number line models facilitates the movement from number lines to coordinate grids.

Interactive Smart board activities and computer practice can provide extra support to students.

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