Unit Map 2012-2013

Monroe #2 - Orleans BOCES (Regional Collaboration)

Collaboration / Math 4* / Grade 4 (Math Regional Curriculum)

Wednesday, October 31, 2012, 10:38AM

Standard/Module: Proficiency in Measurement/Data - 4.MD.5 (Week 18, 5 Weeks)

Stage 1: Desired Results

Standards Focus

- Additional (10%) Connects with 4.MD.6, 4.MD.7, and 4.G.1

4th Grade Proficiency Map.pdf

Standards

NYS: CCLS:Mathematics, NYS: 4th Grade , Measurement & Data

4.MD Geometric measurement: understand concepts of angle and measure angles.

- 5. Recognize angles as geometric shapes that are formed wherever two rays share a common endpoint, and understand concepts of angle measurement:
- 5a. An angle is measured with reference to a circle with its center at the common endpoint of the rays, by considering the fraction of the circular arc between the points where the two rays intersect the circle. An angle that turns through 1/360 of a circle is called a "one-degree angle," and can be used to measure angles.
- 5b. An angle that turns through n one-degree angles is said to have an angle measure of n degrees.

Enduring Understandings

1. Angles are geometric shapes that are formed wherever two rays share a common endpoint.
2. An angle can be measured with reference to a circle with its center at the common endpoint of the rays, by considering the fraction of the circular arc between the points where the two rays intersect the circle.
3. An angle that turns through n one-degree angles has an angle measure of n degrees.

Essential Questions

1. What is an angle?
2. How is an angle created?
3. How is an angle measured with reference to a circle?
4. How many degrees are there in a circle?
5. What is a series of " one - degree turns"?

Critical Content

1. Ray

- A ray is a half - line. It has one endpoint and then extends in one direction infinitely

2. Angle

- Geometric shapes are formed with angles
- 2 rays that share a common endpoint (vertex) is an angle
- measured in degrees
- one - degree angle

3. Circle

- Center
- Circular arc
- an angle is measured with reference to a circle with its center at the common endpoint of the rays
- an angle is the fractional part of the circular arc that intercepts at the endpoints of the circle
- an angle that turns through 1/360 of a circle is called a "one-degree angle," and can be used to measure angles.
- n one-degree angles is said to have an angle measure of n degrees.

Skills	**Vocabulary**
1. Students will recognize angles as geometric shapes that are formed wherever two rays share a common endpoint. 2. Students will understand that an angle is measured with reference to a circle with its center at the common endpoint of the rays, by considering the fraction of the circular arc between the points where the two rays intersect the circle. 3. Students will realize that an angle that turns through n one-degree angles has an angle measure of n degrees.	Tier 2: measurement, fraction Tier 3: angle, geometric shape, ray, endpoint, common endpoint, concept, reference, circular arc, one-degree angle

Stage 2: Assessment Evidence

Assessments

Angles
Formative: Oral: Presentation

Students will have to present all there is to know about angles. Their presentation will have the following criteria:

a.) description of an angle

b.) what unit an angle is measured in

c.) how to compare angles

e.) how to estimate the measure of an angle

Stage 3: Learning Plan	
Learning Activities	**Resources**
Students can understand this concept by using two rulers held together near the ends. The rulers can represent the rays of an angle. As one ruler is rotated, the size of the angle is seen to get larger. Ask students what is created when one ruler makes a complete rotation? Students can also create an angle explorer (two strips of cardboard attached with a brass fastener) to learn about angles. Students can compare angles.	Instructional Resources/Tools Cardboard cut in strips to make an angle explorer Brass fasteners Angle ruler Straws Transparencies Angle explorers www.illustrativemathematics.org www.illuminations.nctm.org

Differentiation Opportunities

Provide students with four pieces of straw, two pieces of the same length to make one angle and another two pieces of the same length to make an angle with longer rays. Students can use the straws to help compare angles.

Another way to compare angles is to place one angle over the other angle. Provide students with a transparency to compare two angles to help them conceptualize the spread of the rays of an angle. Students can make this comparison by tracing one angle and placing it over another angle. The side lengths of the angles to be compared need to be different.

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