Unit 4c-Geometric Measurement: Understand Concepts Of Angles and Angle Measurement

Content Area: **Math**
Course(s): **Math 4**
Time Period: **Marking Period 4**
Length: **MP4 Topic 15 15-1 to 15-6**
Status: **Published**

Essential Questions

- What are some common geometric terms?
- How can you measure angles?

Big Ideas

- **Geometric Concepts:** Students will draw and identify points, line segments, lines, rays, and angles. Students will distinguish between right, acute, obtuse, and straight angles. Students will measure angles with a protractor while showing an understanding of identifying the vertex and using their knowledge of acute and obtuse angles to decide which scale to use.
- **Measure Angles:** Students will learn what a unit angle is and how to determine the measure of an angle from the fraction of a circle cut by the rays. Students will learn how to find the measure of an angle using known angles. Students will use their skill in measuring angles with a protractor to solve problems.
- **Add Angle Measures:** Students will use their understanding of angle measures to the additive nature of these measures. Students will solve problems by adding angle measures.

Cross-Curricular Integration

Integration Area: Science

Standards:

4-PS3-1 Use evidence to construct an explanation relating the speed of an object to the energy of that object.

4-PS3-4 Apply scientific ideas to design, test, and refine a device that converts energy from one form to another.

Activity:

Create a ramp to investigate how friction affects motion. Measure and record the angle of the ramp during each trial (Science text pages 68-69)

CSDT Technology Integration

8.1.5.A.1 Select and use the appropriate digital tools and resources to accomplish a variety of tasks including solving problems.

Activity:

Students will collaborate in groups to create a video using Flipgrid demonstrating how to use a protractor to measure an angle. Students will be able to view classmates' videos.

Enduring Understandings

Operations and Algebraic Thinking

4.OA.A.3 Solve multistep word problems posed with whole numbers and having whole-number answers using the four operations, including problems in which remainders must be interpreted. Represent these problems using equations with a letter standing for the unknown quantity. Assess the reasonableness of answers using mental computation and estimation strategies including rounding.

Number and Operations in Base Ten

4.NBT.B.4 Fluently add and subtract multi-digit whole numbers using the standard algorithm.

Number and Operations—Fractions

4.NF.A.1 Explain why a fraction a/b is equivalent to a fraction $(n \times a)/(n \times b)$ by using visual fraction models, with attention to how the number and size of the parts differ even though the two fractions themselves are the same size. Use this principle to recognize and generate equivalent fractions.

4.NF.B.3d Solve word problems involving addition and subtraction of fractions referring to the same whole and having like denominators, e.g., by using visual fraction models and equations to represent the problem.

Measurement and Data

4.MD.C.5 [M] Recognize angles as geometric shapes that are formed wherever two rays share a common endpoint, and understand concepts of angle measurement.

4.MD.C.5a [M] 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.

4.MD.C.5b [M] An angle that turns through n one-degree angles is said to have an angle measure of n degrees.

4.MD.C.6 [M] Measure angles in whole-number degrees using a protractor. Sketch angles of specified measure.

4.MD.C.7 [M] Recognize angle measure as additive. When an angle is decomposed into non-overlapping parts, the angle measure of the whole is the sum of the angle measures of the parts. Solve addition and subtraction problems to find unknown angles on a diagram in real world and mathematical problems, e.g., by using an equation with a symbol for the unknown angle measure.

Geometry

4.G.A.1 Draw points, lines, line segments, rays, angles (right, acute, obtuse), and perpendicular and parallel lines. Identify these in two-dimensional figures.

Mathematical Practices Focus

5. Use appropriate tools strategically.