

Unit 5 - Geometry and Measurement: We Believe in Angles

Overview

The work within this unit gives students opportunities to compare, analyze, classify, and measure polygons and angles. They develop understanding of numerous properties of shapes, including symmetry, congruence, parallel and perpendicular sides. Determining measurements such as perimeter, area, and angle measurement are introduced. The purpose of this unit is to deepen their thinking from visualization and analysis stages to that of informal deduction, or “if-then” reasoning.

21st Century Capacities: Analyzing

Stage 1 - Desired Results

ESTABLISHED GOALS/ STANDARDS

MP 3 Construct viable arguments and critique the reasoning of others.
 MP 4 Model with mathematics
 MP 7 Look for and make use of structure.

CCSS.MATH.CONTENT.4.OA.C.5 Generate a number or shape pattern that follows a given rule. Identify apparent features of the pattern that were not explicit in the rule itself.
 CCSS.MATH.CONTENT.4.MD.A.3 Apply the area and perimeter formulas for rectangles in real world and mathematical problems.
 CCSS.MATH.CONTENT.4.MD.C.5 Recognize angles as geometric shapes that are formed wherever two rays share a common endpoint, and understand concepts of angle measurement:
 CCSS.MATH.CONTENT.4.MD.C.5.A 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

Transfer:

Students will be able to independently use their learning in new situations to...

1. Draw conclusions about shapes or objects (analyzing).
2. Use appropriate tools to make reaching solutions more efficient, accessible and accurate.
3. Justify reasoning using clear and appropriate mathematical language

Meaning:

UNDERSTANDINGS: *Students will understand that:*

1. Geometry can be used to explain the world around me.
2. A variety of attributes/characteristics help us to categorize, compare, and differentiate between shapes
3. Angles can be classified by their measurement.

ESSENTIAL QUESTIONS: *Students will explore & address these recurring questions:*

- A. How does geometry help me understand the world around me?
- B. What are the attributes of this shape? How are they alike and different from another shape?
- C. How does what we measure affect how we measure?
- D. How can I find a measurement without actually measuring?

Grade 4 Math Curriculum

<p>the points where the two rays intersect the circle. An angle that turns through $\frac{1}{360}$ of a circle is called a "one-degree angle," and can be used to measure angles.</p> <p>CCSS.MATH.CONTENT.4.MD.C.5.B An angle that turns through n one-degree angles is said to have an angle measure of n degrees.</p> <p>CCSS.MATH.CONTENT.4.MD.C.6 Measure angles in whole-number degrees using a protractor. Sketch angles of specified measure.</p> <p>CCSS.MATH.CONTENT.4.MD.C.7 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.</p> <p>CCSS.MATH.CONTENT.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.</p> <p>CCSS.MATH.CONTENT.4.G.A.2 Classify two-dimensional figures based on the presence or absence of parallel or perpendicular lines, or the presence or absence of angles of a specified size. Recognize right triangles as a category, and identify right triangles.</p> <p>CCSS.MATH.CONTENT.4.G.A.3 Recognize a line of symmetry for a two-dimensional figure as a line across the figure such that the figure can be folded along the line into matching parts. Identify line-symmetric figures and draw lines of symmetry.</p>	Acquisition:	
<p><i>Students will know...</i></p> <ol style="list-style-type: none"> 1. How to use benchmark angles to determine the measure of interior and exterior angles 2. That angles are not static and are measures of rotation 3. That there are 360 degrees in a full turn 4. How to use a protractor to measure angles 5. Vocabulary: parallel, perpendicular, angle, right angle, acute angle, obtuse angle, straight angle, equilateral triangle, scalene triangle, isosceles triangle, rhombus, symmetry, parallelogram, polygon, line segment, quadrilateral, trapezoid, square, congruent, vertex, protractor, ray, zero angle, interior angle, straight angle, ray, area, dimension, perimeter, 	<p><i>Students will be skilled at...</i></p> <ol style="list-style-type: none"> 1. Identifying, drawing, comparing, analyzing and classifying angles 2. Measuring and sketching angles with a protractor 3. Identifying parts of a circle 4. Using the area and perimeter formulas for a rectangles 5. Finding the unknown angle in a diagram using addition and subtraction 6. Identifying and draw acute, obtuse, right angles of two-dimensional shapes 7. Identify and draw perpendicular and parallel lines 8. Classifying two-dimensional shapes 9. Identifying polygons based on properties 	