

Unit 7: Exploring Angles and Understanding Properties of Two-Dimensional Figures

Unit #:	APSDO-00017496	Duration:	16.0 Day(s)	Date(s)	
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Team:	Jodi Kryzanski (Author), Kerry Lurate, Ann Marie Castle, Kate Matos, Jonathan Moss, Michelle Gladue, Brian Kelly, Mary Labowsky, Laura McDonnell, Nancy Wall, Lynne Zemaitis, Laurie Mone, Kimberly Bray
Grade(s)	4
Subject(s)	Mathematics

Unit Focus

In this unit, students will identify and draw points, lines, line segments, rays, angles, and perpendicular and parallel lines. Students will recognize angles as geometric shapes formed by two rays sharing an endpoint. They will measure angles using degrees in reference to a circle, and progress to using a protractor to measure and draw angles. Students will classify types of angles and triangles by the size of their angles. They will sort and classify two-dimensional figures based on attributes, and identify or draw lines of symmetry on these figures. Primary instructional materials for this unit include On Core and Everyday Mathematics.

Stage 1: Desired Results - Key Understandings

Standard(s)	Transfer
<p>Common Core <i>Mathematics: 4</i></p> <ul style="list-style-type: none"> • 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 $\frac{1}{360}$ of a circle is called a one-degree angle, and can be used to measure angles. <i>CCSS.MATH.CONTENT.4.MD.C.5A</i> • Draw points, lines, line segments, rays, 	<p>T1 (T50) Based on an understanding of any problem, initiate a plan, execute it and evaluate the reasonableness of the solution.</p> <p>T2 (T53) Articulate how mathematical concepts relate to one another in the context of a problem or in the theoretical sense.</p> <p>T3 (T51) Examine alternate methods to accurately and efficiently solve problems.</p> <p>T4 (T52) Use appropriate tools strategically to deepen understanding of mathematical concepts.</p> <p>T5 (T40) Describe, classify, and compare objects by their attributes.</p> <p>T6 (T41) Compose/decompose shapes or attributes to form new shapes.</p>
	Meaning

<p>angles (right, acute, obtuse), and perpendicular and parallel lines. Identify these in two-dimensional figures. <i>CCSS.MATH.CONTENT.4.G.A.1</i></p> <ul style="list-style-type: none"> An angle that turns through n one-degree angles is said to have an angle measure of n degrees. <i>CCSS.MATH.CONTENT.4.MD.C.5B</i> 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. <i>CCSS.MATH.CONTENT.4.G.A.2</i> 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. <i>CCSS.MATH.CONTENT.4.G.A.3</i> Measure angles in whole-number degrees using a protractor. Sketch angles of specified measure. <i>CCSS.MATH.CONTENT.4.MD.C.6</i> 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. <i>CCSS.MATH.CONTENT.4.MD.C.7</i> Attend to precision. <i>CCSS.MATH.MP.6</i> Reason abstractly and quantitatively. <i>CCSS.MATH.MP.2</i> Use appropriate tools strategically. <i>CCSS.MATH.MP.5</i> 	<p style="text-align: center;">Understanding(s)</p> <p>U1 (U411) 2-D shapes can be categorized by the number and nature of the attributes that form them.</p> <p>U2 (U401) Every shape has properties that define it.</p> <p>U3 (U400) Objects in the world can be described by their shape.</p> <p>U4 (U304) Measurements can be used to categorize objects and recognize patterns that describe the world.</p> <p>U5 (U300) Every measurement has a unit in which it is expressed.</p> <p>U6 (U512) Mathematicians use diagrams, symbols, and terms to describe problems or situations</p> <p>U7 (U541) The accuracy of a solution depends upon the proper selection and effective use of a mathematical tool.</p> <p>U8 (U550) Attention to detail, such as specifying units of measure and labeling, leads to clarity in expressing mathematical information.</p>	<p style="text-align: center;">Essential Question(s)</p> <p>Q1 (Q401) How do these shapes (categories of shapes) compare with one another?</p> <p>Q2 (Q405) How do I use measurements about the shape to calculate additional information about it?</p> <p>Q3 (Q400) What kinds of attributes/characteristics would I use to describe this object? What category do they belong to?</p> <p>Q4 (Q301) How precise do I need to be in my measurement?</p> <p>Q5 (Q512) What information is needed and how do I use it to solve a problem?</p> <p>Q6 (Q541) How do I use tools to solve problems?</p> <p>Q7 (Q552) Does my solution make sense?</p> <p>Q8 (Q550) Did I use clear language (symbols, labels, terms, units of measure and significant digits) to explain my reasoning to others?</p>
Acquisition of Knowledge and Skill		
Knowledge		Skill(s)
		<p>S1</p> <p>Draw points, lines, line segments, rays, angles, and perpendicular and parallel lines</p> <p>S2</p> <p>Identify points, lines, line segments, rays, angles, and perpendicular and parallel lines in two dimensional shapes</p> <p>S3</p> <p>Classify two-dimensional figures based on</p>

		attributes (e.g, parallel or perpendicular lines, angle size) S4 Identify right triangles S5 Identify or draw a line of symmetry in a two dimensional figure
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