

**Big Understandings of the Content Area**

\*Applying Logic and Reasoning.

\*Understanding Geometric Figures and their Relationships.

\*Determining Measures for Length, Area, and Volume.

\*Using Coordinate Geometry to Explain Geometric Concepts.

**Content Standards**

**A. NUMBERS AND NUMBER SENSE:** Students will understand and demonstrate a sense of what numbers mean and how they are used.

**B. COMPUTATION:** Students will understand and demonstrate computation skills.

**D. PROBABILITY:** Students will understand and apply concepts of probability.

**E. GEOMETRY:** Students will understand and apply concepts from geometry.

**F. MEASUREMENT:** Students will understand and demonstrate measurement skills.

**Performance Indicators**

Student will be able to:

- ♦ Describe the structure of the real number system and identify its appropriate applications and limitations.
- ♦ Explain what complex numbers (real and imaginary) mean and describe some of their many uses.

**Performance Indicators**

Student will be able to:

- ♦ Use various techniques to approximate solutions, determine the reasonableness of answers, and justify the results.
- ♦ Explain operations with number systems other than base ten.

**Performance Indicators**

Student will be able to:

- ♦ Find the probability of compound events and make predictions by applying probability theory.
- ♦ Create and interpret probability distributions.

**Performance Indicators**

Student will be able to:

- ♦ Draw coordinate representations of geometric figures and their transformation.
- ♦ Use inductive and deductive reasoning to explore and determine the properties of and relationships among geometric figures.
- ♦ Apply trigonometry to problem situations involving triangles and periodic phenomena.
- ♦ Understand the relationship between parallel, perpendicular, or oblique lines.
- ♦ Understand the Pythagorean Theorem and use it to solve problems.
- ♦ Classify figures based on congruence and solve problems using this concept.
- ♦ Classify figures based on similarity and solve problems using this concept.
- ♦ Use geometric models to solve problems in two or three dimensions.

**Performance Indicators**

Student will be able to:

- ♦ Use measurement tools and units appropriately and recognize limitations in the precision of the measurement tools.
- ♦ Derive and use formulas for area, surface area, and volume of many types of figures.

**Grade/Content Area: Secondary Math CP1 Geometry**

**GRADE LEVEL/CONTENT AREA GUIDE**

			<ul style="list-style-type: none"><li>♦ Perform transformations (translations, rotations, dilations) on geometric shapes.</li><li>♦ Use properties of lines to describe figures algebraically.</li></ul>	
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<u>Knowledge/Skills</u>	<u>Knowledge/Skills</u>	<u>Knowledge/Skills</u>	<u>Knowledge/Skills</u>	<u>Knowledge/Skills</u>
<ul style="list-style-type: none"> <li>♦ Use Pythagorean Theorem to solve problems.</li> <li>♦ Use properties of square roots to simplify radicals.</li> </ul>	<ul style="list-style-type: none"> <li>♦ Cross Cutting</li> </ul>	<ul style="list-style-type: none"> <li>♦ Use Geometric Models to Calculate Probability.</li> </ul>	<ul style="list-style-type: none"> <li>♦ Recognize parallel and perpendicular lines</li> <li>♦ Perform basic constructions using compass and straight edge.</li> <li>♦ Identify and use inductive and deductive reasoning.</li> <li>♦ Write two-column proofs.</li> <li>♦ Write paragraph proofs.</li> <li>♦ Relate perpendicular lines and right angles.</li> <li>♦ Identify pairs of angles formed by parallel lines and a transversal.</li> <li>♦ Prove lines parallel based on angle relationships.</li> <li>♦ Identify corresponding parts of congruent triangles.</li> <li>♦ Prove triangles congruent.</li> <li>♦ Solve problems using CPCTC.</li> <li>♦ Analyze properties of isosceles triangles.</li> <li>♦ Understand properties of altitudes, medians, and perpendicular bisectors in a triangle.</li> <li>♦ Solve problems using the Perpendicular Bisector Theorem and the Angle Bisector Theorem.</li> <li>♦ Determine measures of interior and exterior angles of polygons.</li> <li>♦ Classify quadrilaterals.</li> <li>♦ Identify and use properties of rectangles, rhombuses, and squares.</li> <li>♦ Identify and use the properties of trapezoids.</li> <li>♦ Identify similar polygons.</li> <li>♦ Use proportions in similar</li> </ul>	<ul style="list-style-type: none"> <li>♦ Find the measures of segments and angles.</li> <li>♦ Use the distance and midpoint formulas.</li> <li>♦ Use vectors to represent distances.</li> <li>♦ Understand the meaning of area of a plane figure.</li> <li>♦ Solve problems involving the area of parallelograms, triangles and trapezoids.</li> <li>♦ Solve problems involving the area of circle, sector of a circle.</li> <li>♦ Calculate the surface area and volume of prisms, cylinders, pyramids and cones.</li> <li>♦ Solve problems involving the surface area and volume of solids.</li> </ul>

			<ul style="list-style-type: none"> <li>triangles.</li> <li>♦ Use proportions in right triangles.</li> <li>♦ Prove and use the Pythagorean Theorem.</li> <li>♦ Identify special right triangles and their properties.</li> <li>♦ Use sin, cos, and tan to solve right triangle problems.</li> <li>♦ Investigate the properties of vectors in the coordinate plane.</li> <li>♦ Solve problems involving the circumference of a circle.</li> <li>♦ Draw objects with perspective.</li> <li>♦ Identify and use the properties of tangent, chord, and secant.</li> <li>♦ Map preimages into images using reflection, translation, and rotation.</li> <li>♦ Make compositions of transformations.</li> <li>♦ Use congruent shapes to tessellate a planar region.</li> <li>♦ Use transformations in the coordinate plane.</li> <li>♦ Use dilations.</li> </ul>	
<b>Assessment</b> <ul style="list-style-type: none"> <li>♦ Homework, quizzes, tests, projects.</li> </ul>	♦ Same	♦ Same	Same	♦ Same
<b>LAS</b> <ul style="list-style-type: none"> <li>♦</li> <li>♦</li> </ul>			<ul style="list-style-type: none"> <li>♦ Boats and Ambulances</li> <li>♦ Dude On A Cliff</li> </ul>	♦ Boxes R Us
<b>Resources</b> <ul style="list-style-type: none"> <li>♦ Text: <u>PH-Tools For A Changing World</u></li> <li>♦</li> <li>♦</li> </ul>	♦ Text	♦ Text	<ul style="list-style-type: none"> <li>♦ NCTM</li> <li>♦ Prentice Hall-Geometry</li> <li>♦ Resource Material</li> <li>♦ Text</li> </ul>	<ul style="list-style-type: none"> <li>♦ Text</li> <li>♦ LAN</li> </ul>
<b>Instructional Strategies</b> <ul style="list-style-type: none"> <li>♦ Lecture</li> </ul>	♦ Same	Same	♦ Same	♦ Same

**Grade/Content Area: Secondary Math CP1 Geometry**

**GRADE LEVEL/CONTENT AREA GUIDE**

♦ Experiment – Discovery ♦ Cooperative Learning ♦ Projects				
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<b><u>Content Standards</u></b>				
<b>G. PATTERNS, RELATIONS, FUNCTIONS:</b> Students will understand that mathematics is the science of patterns, relationships, and functions.	<b>H. ALGEBRA CONCEPTS:</b> Students will understand and apply algebraic concepts.	<b>I. DISCRETE MATHEMATICS:</b> Students will understand and apply concepts in discrete mathematics.	<b>J. MATHEMATICAL REASONING:</b> Students will understand and apply concepts of mathematical reasoning.	<b>K. MATHEMATICAL COMMUNICATION:</b> Students will reflect upon and clarify their understanding of mathematical ideas and relationships.
<b><u>Performance Indicators</u></b> Student will be able to:	<b><u>Performance Indicators</u></b> Student will be able to:	<b><u>Performance Indicators</u></b> Student will be able to:	<b><u>Performance Indicators</u></b> Student will be able to:	<b><u>Performance Indicators</u></b> Student will be able to:
<ul style="list-style-type: none"> <li>♦ Create a graph to represent a real-life situation and draw inferences from it.</li> <li>♦ Translate and solve a real-life problem using symbolic language.</li> <li>♦ Model phenomena using a variety of functions (linear, quadratic, exponential, trigonometric, etc.).</li> <li>♦ Identify a variety of situations explained by the same type of function.</li> </ul>	<ul style="list-style-type: none"> <li>♦ Use tables, graphs, and spreadsheets to interpret expressions, equations, and inequalities.</li> <li>♦ Investigate concepts of variation by using equations, graphs, and data collection.</li> <li>♦ Formulate and solve equations and inequalities</li> <li>♦ Analyze and explain situations using symbolic representations.</li> </ul>	<ul style="list-style-type: none"> <li>♦ Use linear programming to find optimal solutions to a system.</li> <li>♦ Use networks to find solutions to problems</li> <li>♦ Apply strategies from game theory to problem-solving situations.</li> <li>♦ Use matrices as tools to interpret and solve problems.</li> </ul>	<ul style="list-style-type: none"> <li>♦ Analyze situations where more than one logical conclusion can be drawn from data presented.</li> </ul>	<ul style="list-style-type: none"> <li>♦ Restate, create, and use definitions in mathematics to express understanding, classify figures, and determine the truth of a proposition or argument.</li> <li>♦ Read mathematical presentations of topics within the Learning Results with understanding.</li> </ul>
<b><u>Knowledge/Skills</u></b>	<b><u>Knowledge/Skills</u></b>	<b><u>Knowledge/Skills</u></b>	<b><u>Knowledge/Skills</u></b>	<b><u>Knowledge/Skills</u></b>
<ul style="list-style-type: none"> <li>♦ Measure central angles and arcs of circles and use circle graphs.</li> <li>♦ Recognize conditions that result in parallel lines when a transversal is involved.</li> <li>♦ Use properties of tangents, secants, and chords to solve problems.</li> </ul>	<ul style="list-style-type: none"> <li>♦ Graph lines on coordinate plane and determine if lines are perpendicular or parallel using their slope.</li> <li>♦ Use properties of congruence and similarity.</li> <li>♦ Use Triangle Inequality to solve problems</li> <li>♦ Use properties of angles and perpendicular bisectors.</li> <li>♦ Use properties of special right triangles to solve problems.</li> <li>♦ Find the length of chords,</li> </ul>	<ul style="list-style-type: none"> <li>♦ Understanding Connected Traversable and Shortest Route Networks</li> </ul>	<ul style="list-style-type: none"> <li>♦ Use different styles of proofs to write convincing arguments.</li> </ul>	<ul style="list-style-type: none"> <li>♦ Identify and use geometric terms.</li> <li>♦ Use appropriate terminology and notation.</li> </ul>

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	measure of arcs, inscribed angles, and segments associated with circles.			
<b>Assessment</b> Homework, quizzes, tests, projects, and investigations.	♦ Same	♦ Same	♦ Same	♦ Same
<b>LAS</b> ♦		♦ Exploring Networks	♦ Boats & Ambulances	
<b>Resources</b> ♦ Text: <u>PH-Tools For A</u> ♦ <u>Changing World</u>	♦ Same	♦ Same	♦ Same	♦ Same
<b>Instructional Strategies</b> ♦ Lecture ♦ Experiment – Discovery ♦ Cooperative Learning ♦ Projects	♦ Same	♦ Same	♦ Same	♦ Same