

COMPONENT	OBJECTIVES	COMPETENCY
<p>I Number Sense, Concepts and Operations</p>	<ol style="list-style-type: none"> <li>1. Use technology (i.e., calculators, computers) and manipulatives to discover number patterns involving geometric concepts. (MA.A.3.4.3)</li> <li>2. Determine whether pen and pencil, mental math (i.e., rules of divisibility) or calculators are the best method for performing manipulation of primes (of numbers and expressions), factors (of numbers and expressions), multiples (of numbers and expressions) and exponents (of numbers and expressions). (MA.A.3.4.3)</li> <li>3. Use estimation strategies in real-world applications to predict results (i.e., interpolation and extrapolation) and to check the reasonableness of results. (MA.A.4.4.1)</li> </ol>	<p>A. Demonstrate the ability to solve real-world problems by using geometric models and/or applying geometric properties.</p>
<p>II Measurement</p>	<ol style="list-style-type: none"> <li>1. Investigate and solve problems of standard (customary and metric units) and non-standard measurement and determine reasonableness of results. (MA.B.2.4.1)</li> <li>2. Solve real-world and mathematical problems involving exact/estimates of measurement (i.e., time, weight/mass, temperature, money, perimeter - linear, area - square, and volume - cubic) and the effects of measurement errors on calculations. (MA.B.3.4.1)</li> <li>3. Use concrete and graphical models to derive formulas for finding perimeter, circumference, area, surface area, and volume of two- and three-dimensional shapes. (MA.B.1.4.1)</li> <li>4. Apply and explain formulas relating to perimeter, area, and volume. (MA.B.1.4.1)</li> </ol>	<p>A. Compare, apply and explain quantities of measurement within systems both standard/non-standard and customary/metric; include estimation, error of measurement, and accuracy.</p> <p>B. Demonstrate the ability to solve real-world problems by using geometric models and/or applying geometric properties.</p>

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III Geometry	<p>5. Use concrete and graphic models for finding distance, rate and time; including angle measures and arc lengths. (MA.B.1.4.2)</p> <p>6. Solve real-world problems involving measurement (i.e., investigations involving direct and indirect variation, similarity and proportionality). (MA.B.1.4.3)</p> <p>7. Collect, organize and interpret data by constructing charts, tables and graphs to approximate and predict outcomes of time, weight/mass, temperature, money, perimeter - linear, and area - square. (MA.B.3.4.1)</p> <p>1. Investigate the properties of lines (i.e., perpendicularity and parallelism) and concepts of congruency, similarity, tangency and symmetry of geometric shapes (MA.C.2.4.1)</p> <p>2. Represent and apply geometric properties and relationships to solve real-world mathematical problems (i.e., ratio, proportion and properties of right triangles: <math>45^\circ</math>-<math>45^\circ</math>-<math>90^\circ</math>, <math>30^\circ</math>-<math>60^\circ</math>-<math>90^\circ</math>, and the ratios of sine, cosine, and tangent). (MA.C.3.4.1)</p> <p>3. Analyze and apply geometric relationships involving planar cross-sections (the intersection of a plane and a three-dimensional figure). (MA.C.2.4.2)</p> <p>4. Develop formal and informal arguments of proof (i.e., inductive and deductive reasoning) for the properties of geometric shapes. (MA.C.1.4.1)</p>	<p>A. Demonstrate an understanding of the terminology and fundamental properties of geometry.</p> <p>B. Demonstrate an understanding of deductive and inductive reasoning.</p>

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<p>IV Algebraic Thinking</p>	<ol style="list-style-type: none"> <li>5. Use transformations (i.e., reflections, translations, rotations, and dilation) to describe geometric patterns in the Cartesian plane. (M.A.C.2.4.1)</li> <li>6. Using a rectangular coordinate system (graph), apply and algebraically verify properties of two- and three dimensional figures, including distance, midpoint, slope, parallelism, and perpendicularity, with and without technology. (M.A.C.3.4.2)</li> <li>1. Describe and represent patterns and algebraic relationships found in charts, tables and graphs and draw conclusions/predictions (i.e., interpolate, extrapolate). (M.A.D.1.4.1)</li> <li>2. Solve concrete and real world problems involving geometric concepts using patterns and functions. (M.A.D.1.4.1)</li> <li>3. Identify, analyze and explain characteristics of linear and quadratic graphs (i.e., range, domain, relation/function, x and y intercepts, roots or zeroes of a function). (M.A.D.1.4.2)</li> <li>4. Understand the concept of variable, expression and equation; is able to translate English phrases involving geometric concepts and sentences into algebraic expressions and equations, and vice-versa. (M.A.D.1.4.1)</li> <li>5. Represent through modeling, real-world problem situations involving geometric concepts, using finite graphs, matrices, sequences and series. (M.A.D.2.4.1)</li> <li>6. Solve real-world problems using a system of two first-degree equations and inequalities in two variables. (M.A.D.2.4.2)</li> </ol>	<ol style="list-style-type: none"> <li>C. Demonstrate and understanding of transformational and coordinate geometry.</li> <li>A. Describes analyzes and generalizes a wide variety of patterns, relations and functions.</li> <li>B. Use expressions, equations, graphs, and formulas to represent and interpret situations involving geometric concepts.</li> </ol>

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<p>V Data Analysis and Probability</p>	<p>7. Model equations and polynomial operations graphically (i.e., area models). (MA.D.2.4.2)</p> <p>1. Investigate experimental design involving geometric concepts using more than one variable; analyze and interpret results (MA.E.3.4.1)</p> <p>2. Demonstrate the use and limitations of statistics in real-world problems involving geometric concepts and justify the conclusions or lack of conclusions through valid arguments. (MA.E.3.4.2)</p>	<p>A. Collect, organize and interpret data through experimental and simulated investigations to predict and explain outcomes.</p>