

**Unit Title: “Tool Kit: Writing Proofs”**

**Course: Geometry**

**Subject Area: Mathematics**

**Time Frame: 14 days**

**Standards**

<b>DCPS Geometry Standards</b>	<b>Sunshine State Standards</b>	<b>NCEE New Standards</b>
<p>The student will:</p> <ul style="list-style-type: none"><li>1.3 Solve problems related to angles and parallel lines.</li><li>2.1 Solve problems involving interior and exterior angles of triangles.</li><li>2.2 Use properties related to altitudes and medians of triangles to solve problems.</li><li>2.3 Use properties related to isosceles triangles to solve problems.</li><li>7.1 Use the Pythagorean Theorem and its converse to solve problems.</li><li>10.1 Recognize the hypothesis and conclusion of an if-then statement and state its converse.</li><li>10.2 Use inductive reasoning to observe data, recognize patterns, and make generalizations.</li><li>10.3 Complete geometric proofs by applying appropriate postulates and theorems.</li></ul>	<p>MA.A.3.4.3 The student will add, subtract, multiply, and divide real numbers, including square roots and exponents, using appropriate methods of computing, such as mental mathematics, paper and pencil, and calculator.</p> <p>MA.C.1.4.1 The student will use properties and relationships of geometric shapes to construct formal and informal proofs.</p> <p>MA.C.2.4.1 The student will understand geometric concepts such as perpendicularity, parallelism, tangency, congruency, similarity, reflections, symmetry, and transformations including flips, slides, turns, enlargements, rotations, and fractals.</p>	<p>The student:</p> <ul style="list-style-type: none"><li>M2a Models situations geometrically to formulate and solve problems.</li><li>M2b Works with two- and three-dimensional figures and their properties, including polygons and circles, cubes and pyramids, cylinders, cones, and spheres.</li><li>M2c Uses congruence and similarity in describing relationships between figures.</li><li>M2f Uses the Pythagorean Theorem in many types of situations, and works through more than one proof of this theorem.</li><li>M2h Analyzes figures in terms of their symmetries using, for example, concepts of reflection, rotation, and translation.</li><li>M2p Analyzes geometric figures and proves simple things about them using deductive methods.</li><li>M6d Uses basic geometric terminology accurately, and deduces information about basic geometric figures in solving</li></ul>

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		problems.

## Desired Results

<b>Enduring Understanding</b>	<b>Essential Questions</b>	<b>Knowledge and Skills</b>
<p>Students will understand:</p> <ul style="list-style-type: none"><li>The strengths and weaknesses of the proof are dependent upon clarity, logic, and content.</li></ul>	<ul style="list-style-type: none"><li>What is and is not an effective argument?</li><li>Are there more than one way in completing each solution process and reasoning?</li></ul>	<p>Students will know</p> <ul style="list-style-type: none"><li>Key terms (e.g., proof, two-column proof, indirect proof, converse, counterexample, auxiliary lines, substitution).</li></ul> <p>Students will be able to</p> <ul style="list-style-type: none"><li>Solve problems related to angles and parallel lines.</li><li>Solve problems involving interior and exterior angles of triangles.</li><li>Use properties related to altitudes and medians of triangles to solve problems.</li><li>Use properties related to isosceles triangles to solve problems.</li><li>Use the Pythagorean Theorem and its converse to solve problems.</li><li>Recognize the hypothesis and conclusion of an if-then statement and state its converse.</li><li>Use inductive reasoning to observe data, recognize patterns, and make generalizations.</li><li>Complete geometric proofs by applying appropriate postulates and theorems.</li></ul>

### Acceptable Evidence

Performance Tasks	Quizzes, Test, and Work Samples	Observations and Dialogues
<ul style="list-style-type: none"> <li>• <b>Conditional Statements</b> Students practice writing clear arguments supporting conjectures and/or statements. It provides the opportunity for all students to learn and practice sound, logical argumentation. Students begin writing proofs in paragraph form.</li> <li>• <b>Flowchart Proof</b> Flowcharts are another way to show the steps in solving a problem. Students use flowcharts to construct and justify the steps used in completing a proof.</li> <li>• <b>Two-Column Proof</b> Students complete the much-used two-column proofs.</li> <li>• <b>Indirect Proof</b> Students are introduced to proof by contradiction.</li> </ul>	<p>Check-Up 1 Quiz A Check-Up 2 Quiz B Unit Test</p>	<p>Teacher observations of students during work on performance tasks. Accountable talk during work on performance tasks.</p>