

## LEARNING PLAN

<p><b>Exploratory Activities</b> Cal Tech Video – Pythagorean Theorem (22 min)</p>	<p><b>CONCEPT</b> Radicals and the Pythagorean Theorem</p>
<p><b>Concept Development Activities</b></p> <ul style="list-style-type: none"> <li>• Proof without words</li> <li>• Proofs of the Pythagorean Theorem             <ul style="list-style-type: none"> <li>• Garfield’s Proof</li> <li>• Open Investigations 12.1, 12.2, 12.3 from <i>Patty Paper Geometry Student Workbook</i></li> </ul> </li> <li>• Pythagorean Triples – 2 ways to generate them looking for patterns.</li> <li>• Model irrational numbers using the geoboard. Use the number line or calculator to approximate their values.</li> <li>• Explore radical operations of addition, subtraction, multiplication, and raising to powers as extensions of operations with algebraic expressions.</li> <li>• <i>Algebra: Themes, Tools, and Concepts</i> p 331-332 (including the Distance Formula)</li> <li>• (Optional) Investigate the Pythagorean Theorem in 3 dimensions or with similar figures rather than with squares on the legs and hypotenuse.</li> </ul>	<p><b>Materials and Resources</b> Cal Tech Video on The Pythagorean Theorem Patty Paper Scissors Tape Geoboards Dot paper <i>Algebra: Themes, Tools, and Concepts</i> <i>Patty Paper Geometry Student Workbook</i> <i>A Collection of Performance Tasks and Rubrics: High School Mathematics</i></p> <p>[The <i>TEXTEAMS Geometry for All Institute</i> is an excellent resource for teaching the Pythagorean Theorem.]</p>
<p><b>Basic Facts and Standard Algorithms Formalized</b> Assign problems from the adopted textbook (McDougal Littell’s <i>Algebra I Explorations and Applications</i>) from Sections 6.1, 6.2, 6.3 to provide practice for students using the Pythagorean Theorem to solve problems, identifying Pythagorean triples, and calculating with radicals.</p>	<p><b>Originality and Creativity</b> <i>Student Products</i></p> <p><b>Written</b> Write a journal article describing the various proofs of the Pythagorean Theorem.</p>
<p><b>Assessment</b> Written Task or Demonstration: Explain what the following equation means: <math>a^2 + b^2 = c^2</math> Is it true for any triangle? "See the Light" (p. 210) in <i>A Collection of Performance Tasks and Rubrics: High School Mathematics (1998)</i> Performance Task: <i>Algebra I Explorations and Applications</i> (p. 275 #40)</p>	<p><b>Verbal</b> Design and conduct an interview with a craftsman on how he/she uses right angles and right triangles.</p> <p><b>Kinesthetic</b> Lead the class on a scavenger hunt to find examples that illustrate the Pythagorean Theorem.</p>
<p><b>Test Items from the Algebra I EOC Exam</b> <a href="#">Spring 2000</a>: 16</p>	<p><b>Visual</b> Create a poster illustrating the various proofs of the Pythagorean Theorem.</p>