The Pythagorean Theorem

This theorem states if a triangle is a ___________________ , then the sum of a ___________________ and the ___________________ is equal to the ___________________.

Example 1: Use the Pythagorean Theorem to find the missing length x.

a.) b.) c.)

The Pythagorean Triples

▪ Three numbers that _______________ work in the ________________________________.
▪ Always plug in the ______________ number for c → why? ________________________________
▪ Common Pythagorean Triples: ____________ ____________ ____________ ____________

Multiply any of these common triples by the same positive whole number, it will produce more sets!

Example 2: Determine if each set of numbers form a Pythagorean Triple.

a.) 7 , 8 , 9 b.) 38 , 21 , 28 c.) 15 , 25 , 20
The Converse of the Pythagorean Theorem

If ______________________ , then Δ will be a(n) __________.

If ______________________ , then Δ will be a(n) __________.

If ______________________ , then Δ will be a(n) __________.

Example 3: The lengths of the sides of a triangle are given. Classify each triangle appropriately.

<table>
<thead>
<tr>
<th>a.) 4, 5, 6</th>
<th>b.) 7, 12, 8</th>
<th>c.) 30, 16, 34</th>
<th>d.) (\sqrt{7}, \sqrt{16}, \sqrt{11})</th>
</tr>
</thead>
</table>

Example 4: Find the missing side x. Leave answers in radical form.

<table>
<thead>
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<th>a.)</th>
<th>b.)</th>
<th>c.)</th>
<th>d.)</th>
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<tbody>
<tr>
<td><img src="image1.png" alt="Diagram" /></td>
<td><img src="image2.png" alt="Diagram" /></td>
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Example 5: For the following –

a.) Draw a picture representing each word problem.
b.) Solve for what the problem is asking for. Round to tenth place.

c.) A telephone support cable attaches to the pole 18 feet high. If the cable is 32 feet long, how far from the bottom of the pole does the cable attach to the ground?  
b.) Tara leaned a ladder against her house. The bottom of the ladder is 11 feet from the house and the top of the ladder is 15 feet above the ground? How long is the ladder?  
c.) A walkway forms one diagonal of a square playground. The walkway is 24 meters long. How long are the sides of the playground?