# Pre-9.6 Activity – The Pythagorean Theorem

$$a^2 + b^2 = c^2 \text{ or } c^2 = a^2 + b^2$$

The Pythagorean theorem is a formula that is used on right triangles. Right triangles are triangles that contain one right angle. Each side of a right triangle has a name. Two of the sides are called legs and the other side is called the hypotenuse. The sides that form the right angle are the legs of the right triangle, and the side opposite of the right angle is the hypotenuse.

Circle all the right triangles below. Label the sides of each right triangle using the terms "leg" and "hypotenuse".
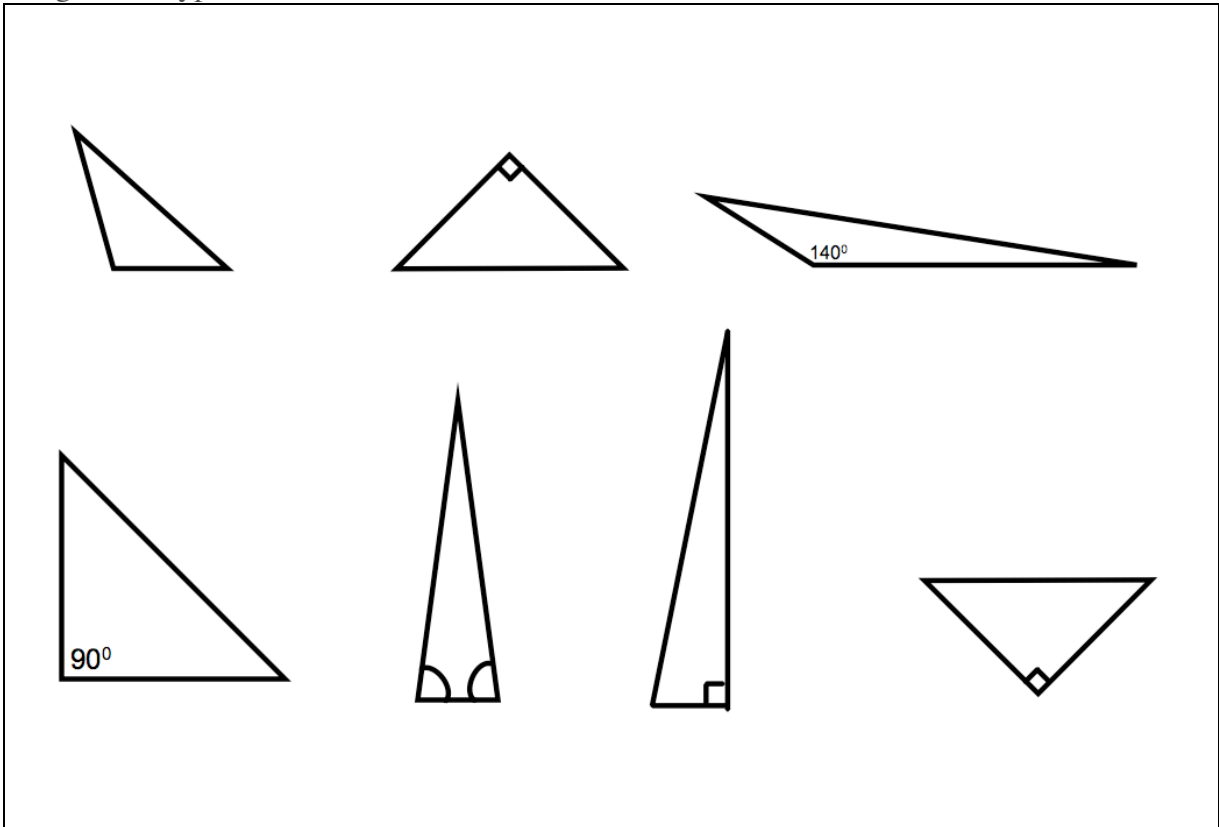
When using the formula it is important to know what sides are the legs and what side is the hypotenuse. To discover where to plug the sides into the formula, answer the following questions.

What side in a right triangle is the longest side?

How many legs are in a right triangle?

Using the answers from above, logically determine where the legs and the hypotenuse should be plugged into the formulas below.

$$a^2 + b^2 = c^2 \qquad\qquad c^2 = a^2 + b^2$$

To justify our notes we will complete the following activity.

Activity – Materials needed: • 1 to 2 pieces of graph paper • scissors • tape or glue	Directions 1. Plug the numbers given into the Pythagorean theorem. 2. Use the graph paper to create squares to represent the powers in the Pythagorean theorem. 3. Create a right triangle using the squares you created from the graph paper and tape/glue them to your notebook paper. 4. In the inside of each square state the area of the square. 5. Finish the calculations in the Pythagorean theorem to show that both sides are equal.

$3, 4, 5$

5, 12, 13

8, 15, 17

7, 24, 25

Homework

Each set of numbers in the class activity is an example of a Pythagorean Triple. A Pythagorean Triple is a set of three integers that "check out" in the Pythagorean theorem.

For homework go to link below and find six different Pythagorean triples that we have not used so far. Write each in a box below; plug them into the Pythagorean theorem and perform the calculations to show that each side of the equation is equal.

http://en.wikipedia.org/wiki/Pythagorean_triple#Examples