Task 1: Discovering Special Right Triangles
Part A: Isosceles Right Triangles

Exploration: (Each person in the group should do this exploration on their own paper.) Using graph paper, draw an isosceles right triangle. Each person should use a **different length.** Mark the right angle. Label the triangle ABC with <B the right angle. What are the measures of the other two angles? _____ We call this a 45-45-90 triangle. What is side AB called? _____ What is side BC called? _____ What is side AC called? _____ Using the scale of the graph paper, what are the measures of sides AB and BC? _____Use the Pythagorean Theorem to find the measure of side AC. Simplify the radical.

_____

Compare and discuss with those in your group. Do you notice anything special about the hypotenuse with regard to the legs of your isosceles right triangles? _____

Now we will share with the class. Can generalize and fill in the following statements.

If you know the length of a leg of a 45-45-90 triangle, then the hypotenuse is found by _____.

If you know the length of the hypotenuse of a 45-45-90 triangle, then each leg is found by _____.

Part B: 30-60-90 Triangles

Exploration: (Each person in the group should do this exploration on their own paper.) You have an equilateral triangle ABC. Trace it on the inch graph paper. Measure the side. What is the measure? _____ Draw a perpendicular bisector of side AB. This should bisect <ACB. Label the point of intersection of the perpendicular bisector and side AB point D. Determine the measures of all angles in the triangle. What is the measure of <A? _____ of <B? _____ of <ACB? _____ of <ADC? _____ of < ACD? _____ Do you see a 30-60-90 triangle? _____ What is its name? _____

Use a ruler and carefully measure the shorter leg of the 30-60-90 triangle and the hypotenuse. What are the measures?

_____

Use the Pythagorean Theorem to find the length of side DC. What is the length of side DC? (simplify the radical) _____ Now we will compare your results with the others in class. Can you generalize and fill in the following statements?

In a 30-60-90 triangle, the hypotenuse is _____ the length of the shorter leg, the longer leg is _____ the length of the shorter leg and the longer leg is _____the length of the hypotenuse.