Discovering Special Triangles

Today, you will be using what you know about triangles to look for patterns in special triangles. With a partner cut out the triangles you've been given and complete the questions below.

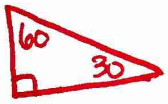
1. What type of triangles are they? How do you know?

   Equilateral - all the sides are the same length.

2. Take the largest triangle label all the side lengths and angle measures.

   Side lengths: 8, 8, 8 Angle measures: 60° 60° 60°

3. Fold the triangle in half, and cut along the fold. You now have two congruent triangles, one for you and one for your partner. What are the measures of each of the angles? Label them on your triangle.



   Smallest angle: 30° Middle angle: 60° Largest angle: 90°

4. What type of triangle is this? How do you know?

   Scalene right triangle - the sides are all different and there is one right angle.

30-60-90 Triangle

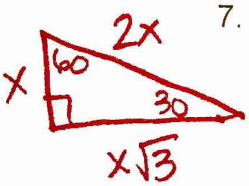
5. What are the lengths of each of the sides? Label them on your triangle.

   Smallest side: 4 Middle side: $4\sqrt{3}$ Largest side: 8

   $4^2 + b^2 = 8^2$ $\sqrt{b^2} = \sqrt{48}$

6. Repeat this process for the remaining two triangles. Fill in the tables below.

	Smallest angle	Shortest side	Middle angle	Middle side	Largest angle	Largest side
Smallest right triangle	30°	2	60°	$2\sqrt{3}$	90°	4
Middle right triangle	30°	3	60°	$3\sqrt{3}$	90°	6
Largest right triangle	30°	4	60°	$4\sqrt{3}$	90°	8



7. Do you notice any patterns? Describe any below.

   All the triangles have angles of 30°, 60°, 90°.

   Short side = $\frac{1}{2}$ Long side

   Middle side = Short side $\times \sqrt{3}$