Triangle Notes: Triangle Inequality Theorem

If one side of a triangle is longer than another side, then the angle ________________ the longer side is ____________ than the angle opposite the shorter side.

If one angle of a triangle is larger than another angle, then the side ________________ the larger angle is ____________ than the side opposite the smaller angle.

Example 1
Write the measures of the angles of the triangle in order from least to greatest.

Example 2
Write the measures of the sides of the triangle in order largest to smallest.

Triangle Inequality Theorem
The sum of the lengths of any two sides of a triangle is ________________ the length of the ____________ side.

AB + BC > AC
___ + ___ > BC
___ + ___ > AB

Example 1
Determine whether or not the following represent the lengths of the sides of a triangle.
a. 5, 7, 9  
b. 5, 7, 12  
c. 8, 10, 21

Example 2
What are the possible lengths of the third side of a triangle given the first two sides.
a. 7, 9  
b. 5, 12  
c. 8, 10