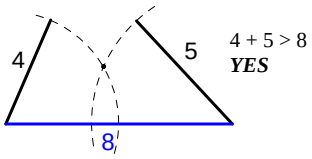
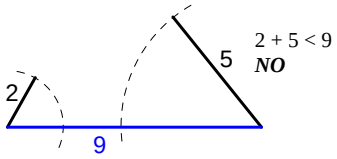
Geometry SOL Practice
Topic #7: Triangle Inequalities
Notes

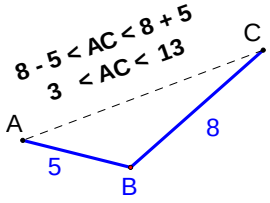
I. Given 3 segment lengths, will they make a triangle?





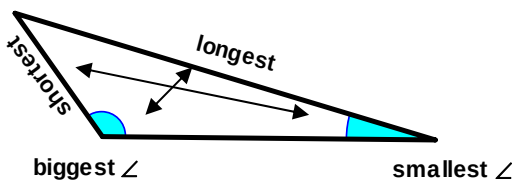
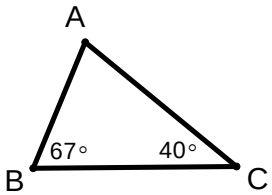
Generalization	**Example**	**Example**
Given: **short side**, **middle side**, **long side** If **short side** + **middle side** > **long side** then **YES** a triangle can be form. Otherwise, **NO**.	Given: side 1 = 8 inches side 2 = 10 inches side 3 = 7 inches Is 8 + 7 > 10 ? Is 15 > 10 ? → ***YES***	Given: side 1 = 16 inches side 2 = 5 inches side 3 = 9 inches Is 5 + 9 > 16 ? Is 14 > 16 ? → ***NO***

II. Given 2 sides of a triangle, what is the range of the third side?



Generalization	**Example**
Given: **side 1** and **side 2** **| side 1 – side 2 | < side 3 < side 1 + side 2** or ***subtract*** *the sides* < **side 3** < ***add*** *the sides*	Given: side 1 = 11 inches side 2 = 15 inches 15 – 11 < **side 3** < 15 +11 4 < **side 3** < 26 [Side 3 is between 4 and 26 inches.]

III. Given the sides of a triangle, list the angles in order of size.
Given the angles of a triangle, list the sides in order of size.

Generalization	**Example**
The smallest angle is opposite the shortest side. The largest angle is opposite the longest side.  	Given: m∠B = 67° and m∠C = 40° List the sides in order from shortest to longest. [note: m∠A = 180° - 67° - 40° = 73°]  solution: **AB < AC < BC**