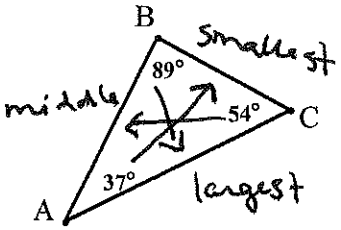
Cornell Notes	Name:_____ Date: _____
Main Ideas/Questions	5.5 Title of Notes: **Triangle Inequality**

Triangle Inequality

→ The smallest side is across from the smallest angle

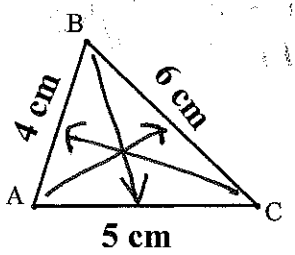
→ The largest angle is across from the largest side.



$\angle A$ is the smallest angle, $\therefore \overline{BC}$ is the smallest side.

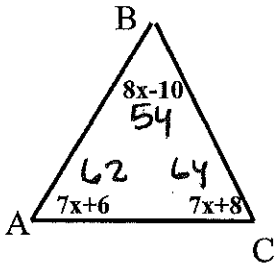
$\angle B$ is the largest angle, $\therefore \overline{AC}$ is the largest side.

EX 1: For the triangle, list the angles in order from least to greatest measure.



$\angle C, \angle B, \angle A$

EX 2: For the triangle, list the angles in order from least to greatest measure



$8x-10+7x+8+7x+6=180$

$x=8$

$\angle B, \angle A, \angle C$

Cornell Notes Main Ideas/Questions	Title of Notes: **Cont'd**

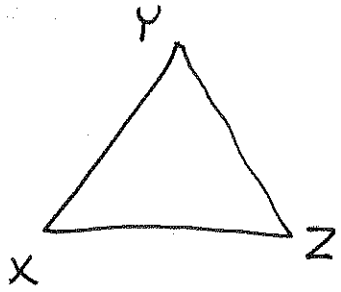
Triangle Inequality Theorem:

The sum of the lengths of any two sides of a triangle is greater than the length of the third side.

$XY + YZ > XZ$

$YZ + XZ > XY$

$XZ + XY > YZ$



EX 3: Determine if it is possible to draw a triangle with side measures 12, 11, and 17.

$12+11>17$ ✓

$17+11>12$ ✓

$17+12>11$ ✓

yes

Finding the range of the third side:

→Since the third side cannot be larger than the other two added together, we find the ***maximum*** value by adding the two sides

→Since the third side and the smallest side cannot be larger than the other side, we find the ***minimum*** value by subtracting the two sides

EX 4: Given a triangle with sides of length 3 and 8, find the range of possible values for the third side.

The maximum value	**The minimum value**
$3+8=11$	$8-3=5$

Range of the third side is

$5 < x < 11$