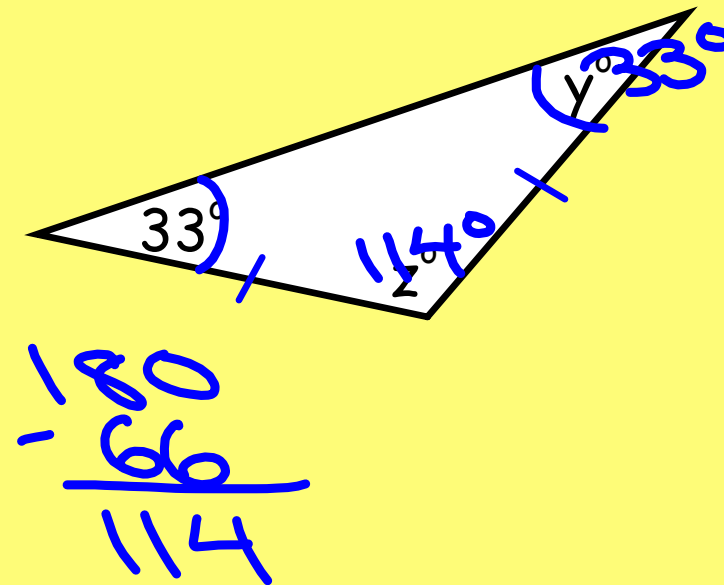
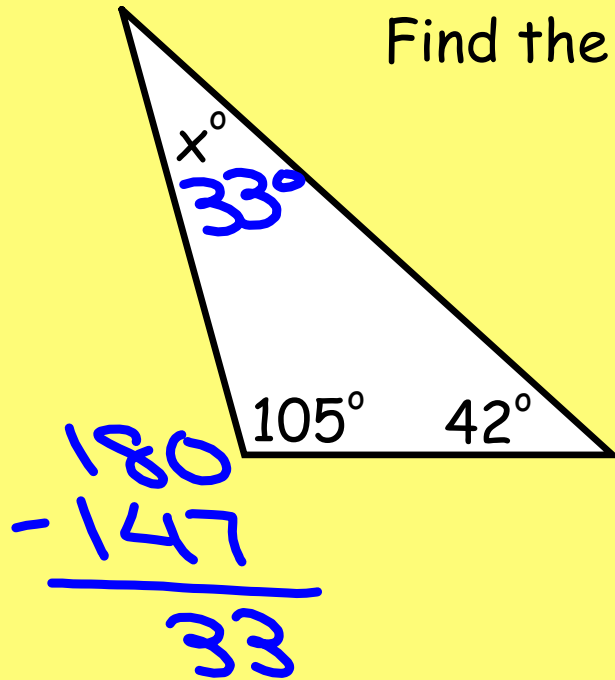


12/2/19 - Warm Up Problem
Find the measure of each angle.

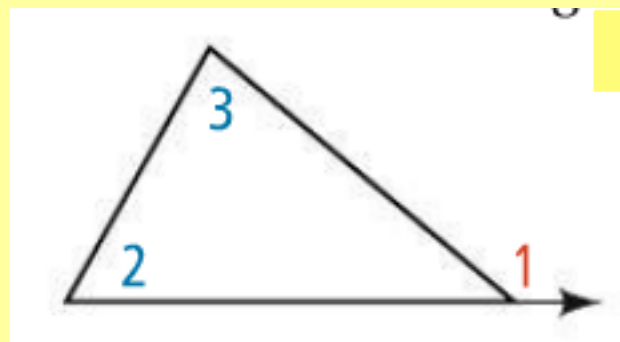
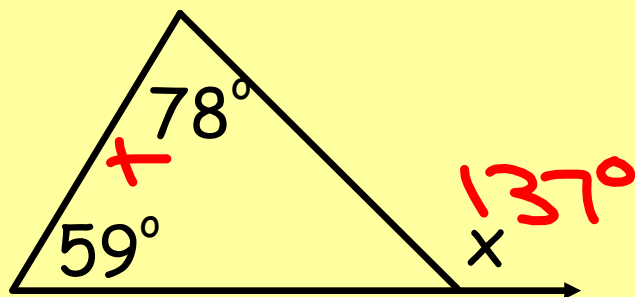


Concept 13 - Inequalities in Triangles

Goals: use inequalities to determine the largest and smallest angles in triangles and the longest and shortest sides

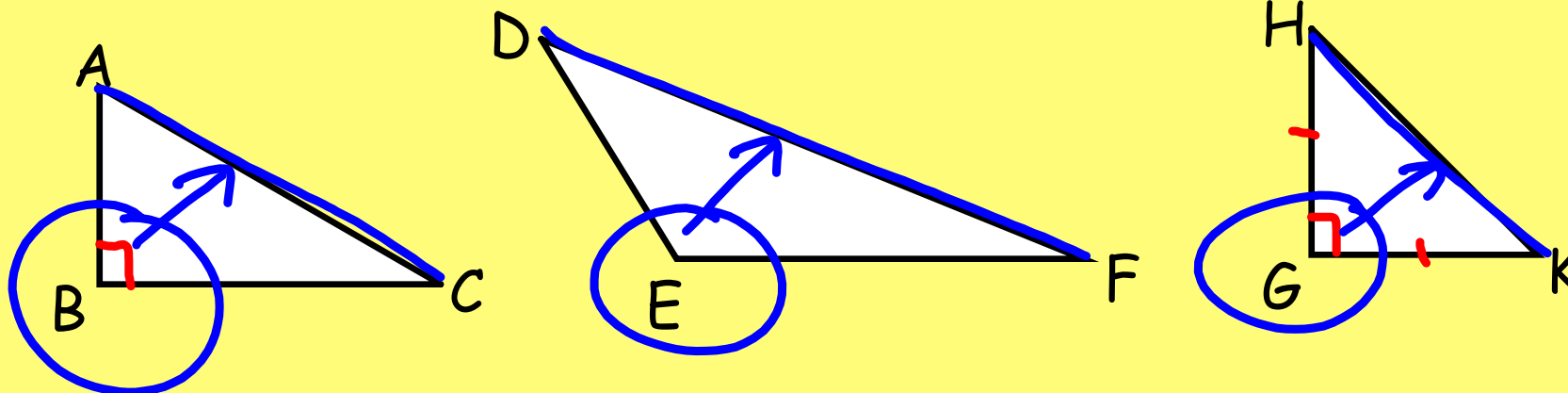
Corollary to the Triangle Exterior Angle Theorem

The measure of an exterior angle of a triangle is greater than the measure of each of the remote interior angles.



$$m\angle 1 > m\angle 2 \text{ and } m\angle 3$$

Which angle must be the largest?
Which side must be the longest?



Theorem 5.10

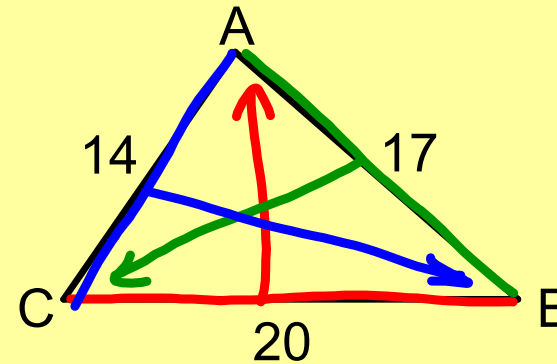
If two sides of a triangle are not congruent, then the larger angle lies opposite the longer side.

EXAMPLE:

Largest angle = $\angle A$

Mid-sized angle = $\angle C$

Smallest angle = $\angle B$

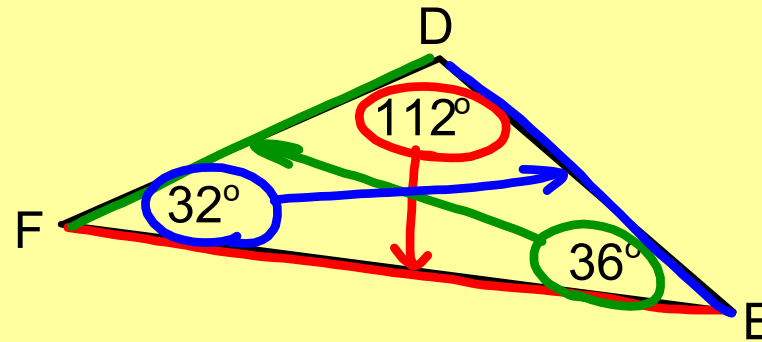


Theorem 5.11

If two angles of a triangle are not congruent, then the longer side lies opposite larger angle.

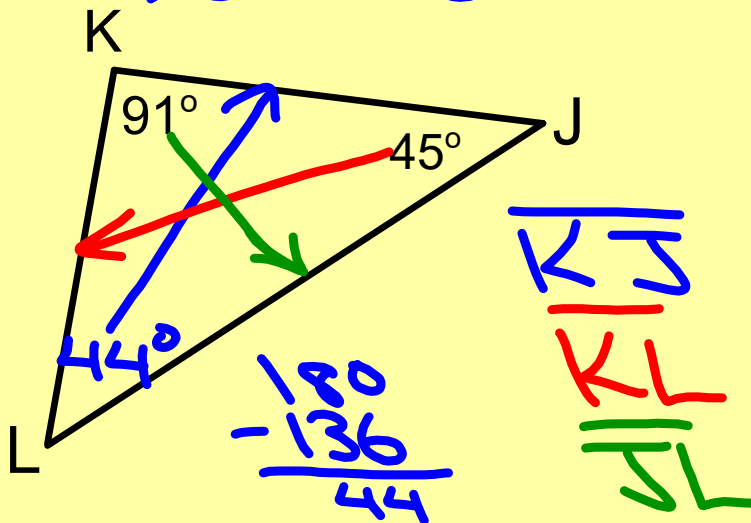
EXAMPLE:

Longest side = FE
Medium side = FD
Shortest side = DE

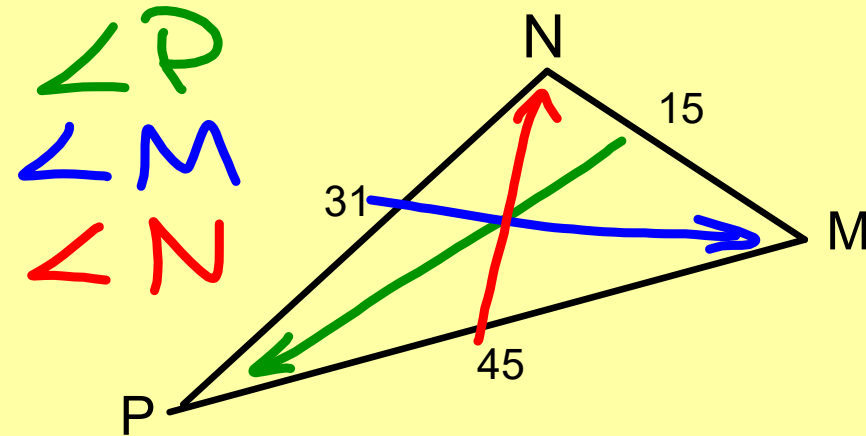


TRY IT ON YOUR OWN..

List the sides in order from least to greatest.



List the angles in order from smallest to largest.

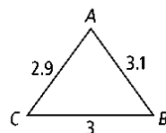


Assignment:

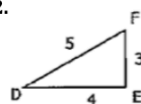
**Concept 13 Worksheet
(front)**

List the angles of each triangle in order from smallest to largest.

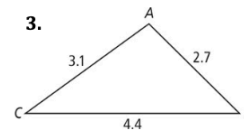
1.



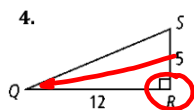
2.



3.

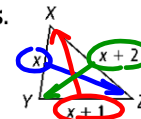


4.



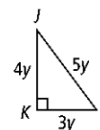
$\angle Q, \angle S, \angle R$

5.



$\angle Z, \angle X, \angle Y$

6.



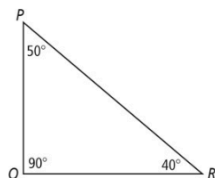
7. $\triangle ABC$, where $AB = 17$, $AC = 13$, and $BC = 29$.

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

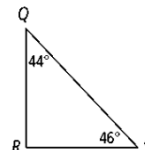
8. $\triangle MNO$, where $MN = 4$, $NO = 12$, and $MO = 10$.

Find the missing angle of each triangle if it has one. Then, list the sides of each triangle in order from shortest to longest.

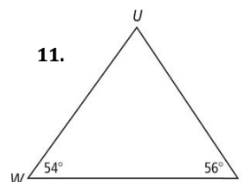
9.



10.



11.



List the sides of each triangle in order from shortest to longest. The sides are $\overline{AB}, \overline{BC}, \overline{AC}$.

12. $\triangle ABC$, where $m\angle A = 99$, $m\angle B = 44$, and $m\angle C = 37$.

13. $\triangle ABC$, where $m\angle A = 122$, $m\angle B = 22$, and $m\angle C = 36$.

14. $\triangle ABC$, where $m\angle A = 65$ and $m\angle B = 70$.

$\angle C = 45$

$$\begin{array}{r} 65 \\ + 70 \\ \hline 135 \end{array} \quad \begin{array}{r} 180 \\ - 135 \\ \hline 45 \end{array}$$