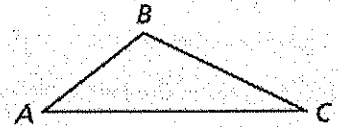


**Objectives:** Find the measures of interior and exterior angles of triangles & apply theorem about them to solve problems.

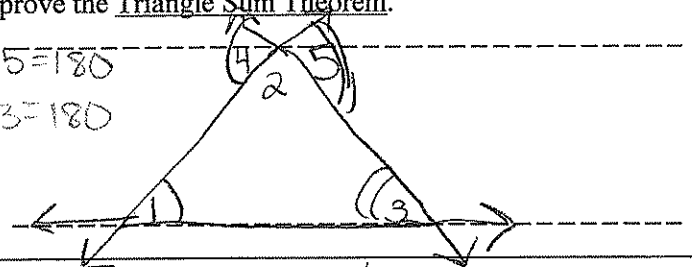
**Review: Triangle Sum Theorem:** the Sum of the interior angles of a triangle equals 180°.

$m\angle A + m\angle B + m\angle C = 180^\circ$



**Explore:** Use the auxiliary lines and alternate interior angles to prove the Triangle Sum Theorem.

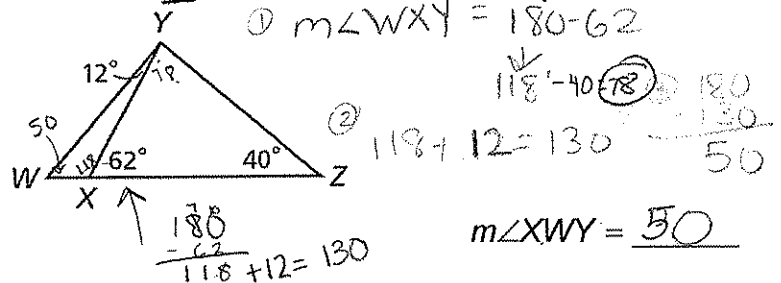
- 1) Draw a triangle with a side on the bottom line and touching the top line.
- 2) Label the angles 1, 2, & 3
- 3) Label the Alt. Int. Angles 4 & 5
- 4) Show your 3 interior angles = 180°



**EX 1:** Find the  $m\angle XYZ$  and  $m\angle XWY$ .

$$\begin{array}{r} 180 \\ -102 \\ \hline 78 \end{array}$$

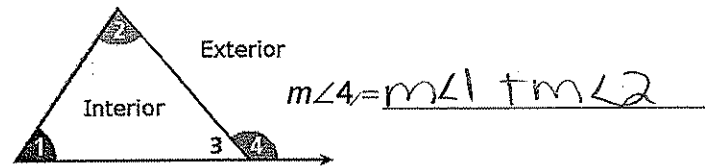
$m\angle XYZ = 78^\circ$



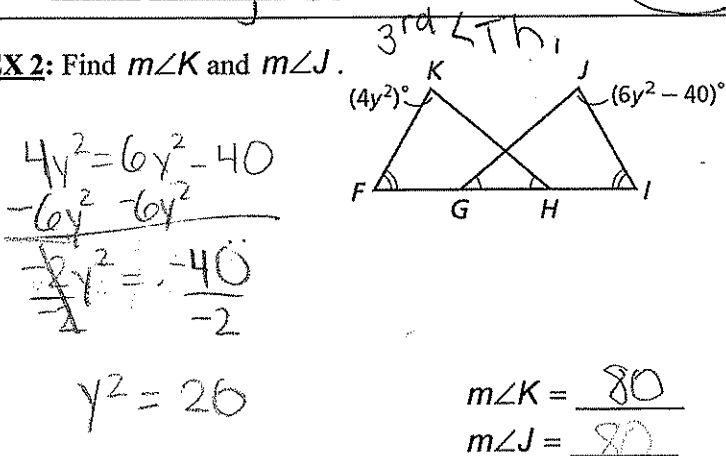
	Theorem/Corollary	Hypothesis	Conclusion
<b>Corollary to Triangle Sum Theorem</b>	If a triangle is a right triangle, ...		then its acute angles are <u>Complementary</u> . $m\angle D + m\angle E = 90^\circ$
<b>Third Angles Theorem</b>	If 2 angles of one triangle are congruent to 2 angles of another triangle, ...		... then the <u>third</u> pair of angles are <u>congruent</u> . $\angle N \cong \angle T$

**Interior vs. Exterior**

**Exterior Angle Theorem:** equal to the Sum of the 2 non-adjacent interior angles. (remote)



**EX 2:** Find  $m\angle K$  and  $m\angle J$ .

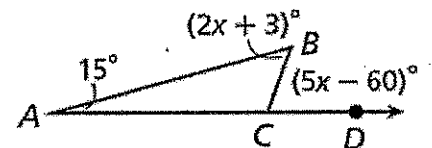


$$\begin{array}{r} 4y^2 = 6y^2 - 40 \\ -6y^2 \quad -6y^2 \\ \hline -2y^2 = -40 \\ \div -2 \quad \div -2 \\ \hline y^2 = 20 \end{array}$$

$m\angle K = 80$   
 $m\angle J = 80$

**EX 3:** Find  $m\angle B$ .

Ext. ∠ Th.



$$5x - 60 = 15 + 2x + 3$$

$$x = 26$$

$m\angle B = 55^\circ$