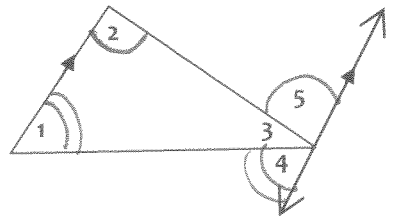
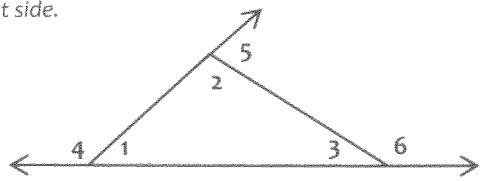
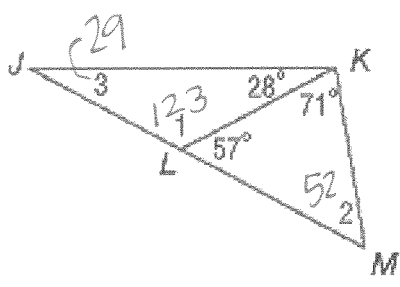
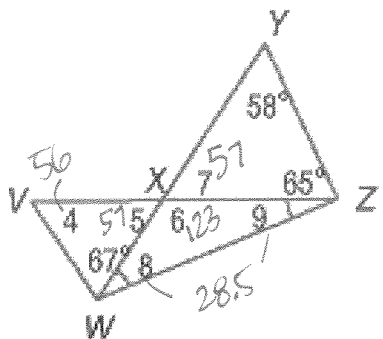
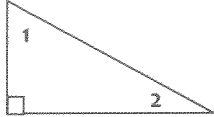



Master E

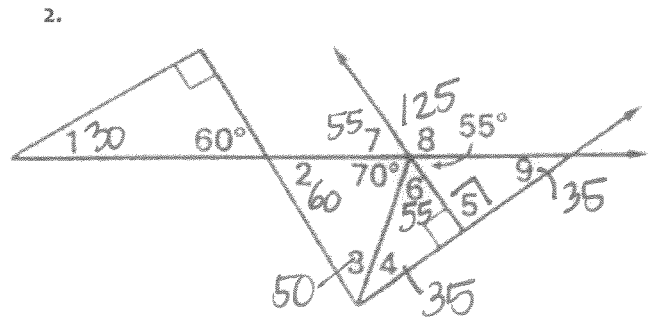
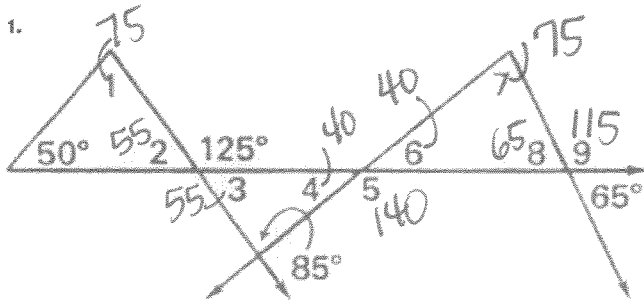
Day 01: 4-2 Angles of Triangles

Triangle Angle-Sum Theorem:	Exterior Angle Theorem:
 <p>PROOF of the Triangle Angle-Sum Theorem:</p> <ol style="list-style-type: none"> $\angle 2 \cong \angle 5$ $\angle 1 \cong \angle 4$ $m\angle 2 = m\angle 5$ $m\angle 1 = m\angle 4$ $m\angle 4 + m\angle 3 + m\angle 5 = 180$ $m\angle 4 + m\angle 3 + m\angle 2 = 180$ <p>1. If 2 parallel lines are CBT, alt. int. \angles are \cong</p> <p>2. Def. of \cong</p> <p>3. \neq + Post.</p> <p>4. Substitution POE</p> <p>\therefore The sum of the measures of the angles of a triangle will always be <u>180</u> degrees.</p>	<p>A triangle has 3 interior angles and it also has 3 exterior angles. An exterior angle is formed by one side of a triangle and the extension of an adjacent side.</p>  <p>The interior angles are: <u>$\angle 1$, $\angle 2$, & $\angle 3$</u></p> <p>The exterior angles are: <u>$\angle 4$, $\angle 5$, & $\angle 6$</u></p> <p>PROOF of the Exterior Angle Theorem:</p> <ol style="list-style-type: none"> $\angle 4 + m\angle 1 = 180$ $m\angle 1 + m\angle 2 + m\angle 3 = 180$ $m\angle 4 + m\angle 1 = m\angle 1 + m\angle 2 + m\angle 3$ $m\angle 4 = m\angle 2 + m\angle 3$ <p>1. The \angles of a L.P. are supp.</p> <p>2. Δ sum = 180</p> <p>3. Substitution</p> <p>4. Subtraction POE</p> <p>$\therefore m\angle 5 = m\angle 1 + m\angle 3$ and $m\angle 6 = m\angle 1 + m\angle 2$</p> <p>$\therefore$ The measure of an exterior angle of a triangle is equal to the <u>sum</u> of the measures of the two remote or <u>non-adjacent</u> interior angles.</p>
<p>Find the measure of each numbered angle.</p>	
 <p>$m\angle 1 = 123$ $m\angle 2 = 52$ $m\angle 3 = 29$</p>	 <p>$m\angle 4 = 56$ $m\angle 5 = 57$ $m\angle 6 = 123$ $m\angle 7 = 57$ $m\angle 8 = 28.5$ $m\angle 9 = 28.5$</p>

Triangle Angle-Sum Corollaries:	
 <p>PROOF of the Acute Angles of a Right Triangle Theorem:</p> <ol style="list-style-type: none"> $m\angle 1 + m\angle 2 + 90 = 180$ $m\angle 1 + m\angle 2 = 90$ <p>1. Δ Sum = 180</p> <p>2. Subtraction POE</p> <p>\therefore The acute angles of a right triangle will always be <u>complementary</u>.</p>	 <p>There can only be <u>1</u> right or obtuse angle in a triangle. Why?</p> <p>If there were 2 right \angles, the sum would already be 180, which would mean the 3rd \angle would be 0°.</p>

4-2 PRACTICE PROBLEMS

1-2: Find the measure of each angle. Write the measures on the pictures.



3-4: The variable expressions represent the angle measures of the triangle. Write and solve an equation in order to find the measure of each angle. Then classify the triangle by its angles.

3. $m\angle A = x^\circ$
 $m\angle B = 2x^\circ$
 $m\angle C = 3x^\circ$

$$x + 2x + 3x = 180$$

$$6x = 180$$

$$x = 30$$

$m\angle A = 30$
 $m\angle B = 60$
 $m\angle C = 90$ Right, Scalene Δ

4. $m\angle A = (3x - 17)^\circ$
 $m\angle B = (x + 40)^\circ$
 $m\angle C = (2x - 5)^\circ$

$$3x - 17 + x + 40 + 2x - 5 = 180$$

$$6x + 18 = 180$$

$$6x = 162$$

$$x = 27$$

$m\angle A = 64$
 $m\angle B = 67$
 $m\angle C = 49$ Acute, Scalene Δ

5-6: Write and solve an equation in order to find the measure of each exterior angle shown.

5.

$$3x - 22 = x + 80$$

$$2x - 22 = 80$$

$$2x = 102$$

$$x = 51$$

ext $\angle = 3(51) - 22 = 131$

6.

$$4x + 8 = 2x + 3 + 51$$

$$4x + 8 = 2x + 54$$

$$2x + 8 = 54$$

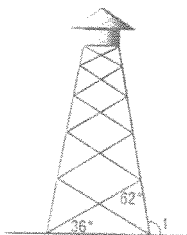
$$2x = 46$$

$$x = 23$$

ext $\angle = 4(23) + 8 = 100$

7-8: Solve each real-life problem using the properties of triangles.

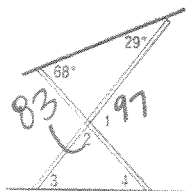
5. **TOWERS** A lookout tower sits on a network of struts and posts. Leslie measured two angles on the tower.



What is the measure of angle 1?

$$m\angle 1 = 36 + 62 = 98$$

8. **DRAFTING** Chloe bought a drafting table and set it up so that she can draw comfortably from her stool. Chloe measured the two angles created by the legs and the tabletop in case she had to dismantle the table.



a. Which of the four numbered angles can Chloe determine by knowing the two angles formed with the tabletop? What are their measures? $\angle 1 = \angle 2$

b. What conclusion can Chloe make about the unknown angles before she measures them to find their exact measurements? They add up to equal 97°