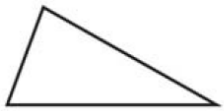
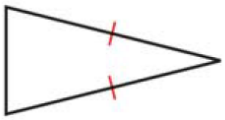
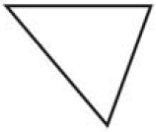
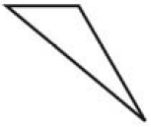
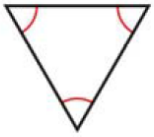
Unit 8.1 Apply Triangle Sum Properties NOTES

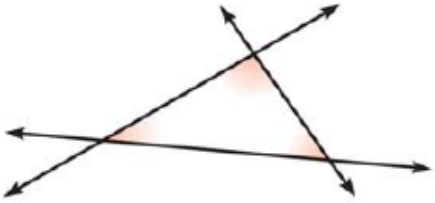
Classifying Triangles by Sides

Scalene Triangle	Isosceles Triangle	Equilateral Triangle
		
No congruent sides	At least 2 congruent sides	3 congruent sides

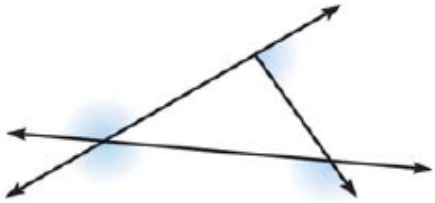
Classifying Triangles by Angles

Acute Triangle	Right Triangle	Obtuse Triangle	Equiangular Triangle
			
3 acute angles	1 right angle	1 obtuse angle	3 congruent angles

ANGLES When the sides of a polygon are extended, other angles are formed. The original angles are the **interior angles**. The angles that form linear pairs with the interior angles are the **exterior angles**.



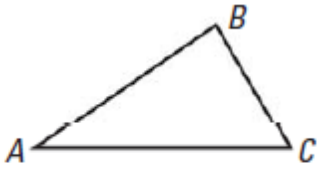
interior angles



exterior angles

THEOREM 4.1 Triangle Sum Theorem

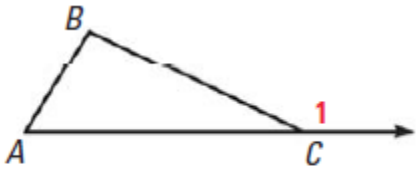
The sum of the measures of the interior angles of a triangle is 180°.



$m\angle A + m\angle B + m\angle C = 180°$

THEOREM 4.2 Exterior Angle Theorem

The measure of an exterior angle of a triangle is equal to the sum of the measures of the two nonadjacent interior angles.

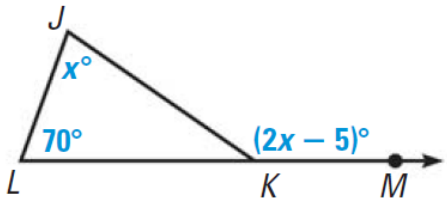


$m\angle 1 = m\angle A + m\angle B$

Unit 8.1 Apply Triangle Sum Properties NOTES continued

EXAMPLE 3 Find an angle measure

ALGEBRA Find $m\angle JKM$.



Solution

STEP 1 **Write** and solve an equation to find the value of x.

$(2x - 5)° = 70° + x°$ Apply the Exterior Angle Theorem.

$x = 75$ Solve for x.

STEP 2 **Substitute** 75 for x in $2x - 5$ to find $m\angle JKM$.

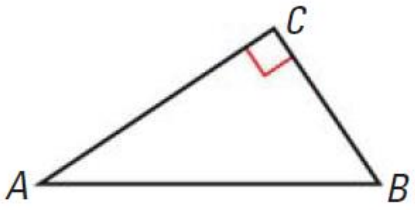
$2x - 5 = 2 \cdot 75 - 5 = 145$

▶ The measure of $\angle JKM$ is 145°.

A **corollary to a theorem** is a statement that can be proved easily using the theorem. The corollary below follows from the Triangle Sum Theorem.

Corollary to the Triangle Sum Theorem

The acute angles of a right triangle are complementary.



$m\angle A + m\angle B = 90°$