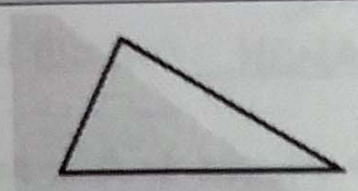
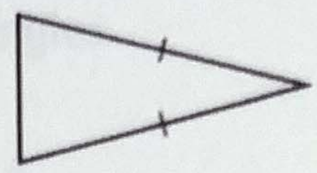
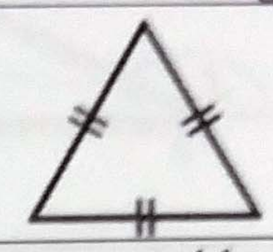
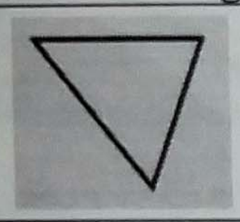
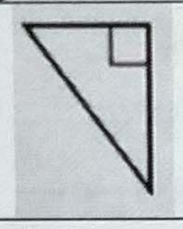
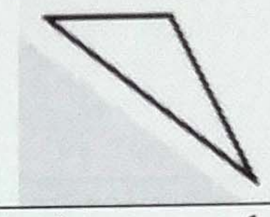
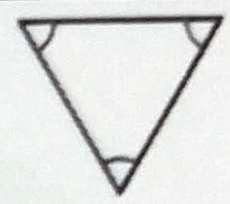
Geometry 5.1 Notes: Classifying Triangles

Classifying Triangles by their **SIDES**

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

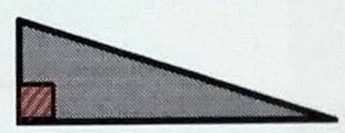
Classifying Triangles by their **ANGLES**

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

1. Classify the triangular shape by its sides.

ISOSCELES △

2. Classify the triangular shape by its angles.



RIGHT △

In the Coordinate Plane

3. Classify ΔOPQ by its sides. Then determine whether it is a right triangle.

$PO = \sqrt{5}$
$PQ = 5\sqrt{2}$
$OQ = 3\sqrt{5}$

USE DISTANCE FORMULA
NONE MATCH
→ SCALENE △

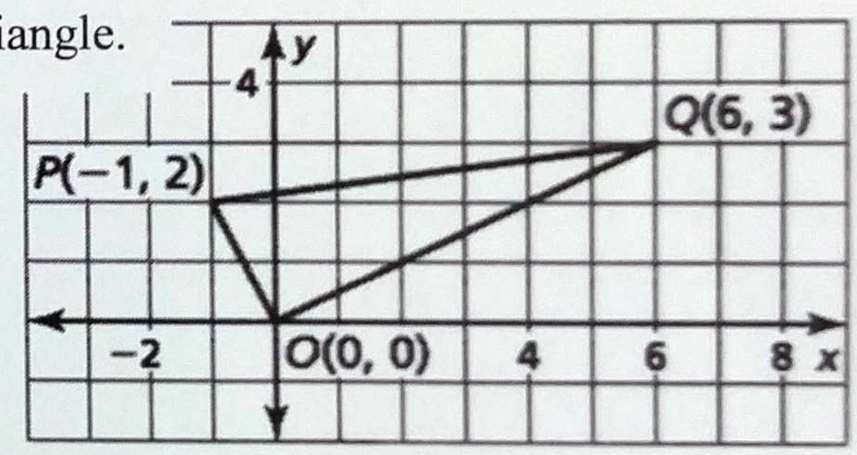
$m_{PO} = -2$
$m_{OQ} = \frac{1}{2}$

USE SLOPE FORMULA

$(-2)(\frac{1}{2}) = -1$

$OP \perp OQ$, SO $m\angle O = 90°$

→ RIGHT △

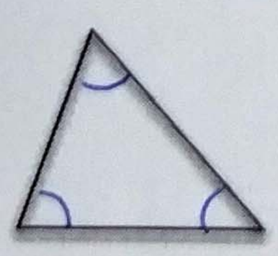


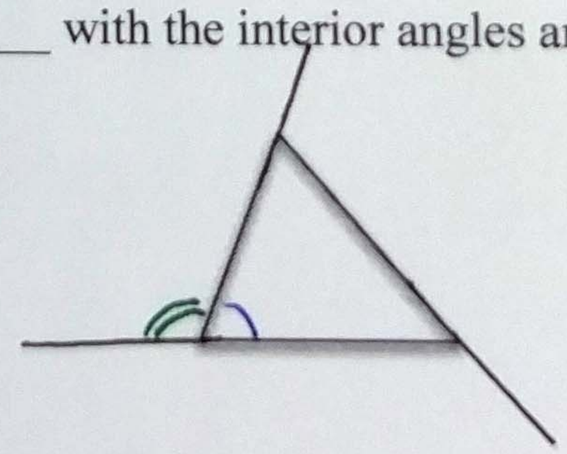
Finding Angle Measures of Triangles

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.

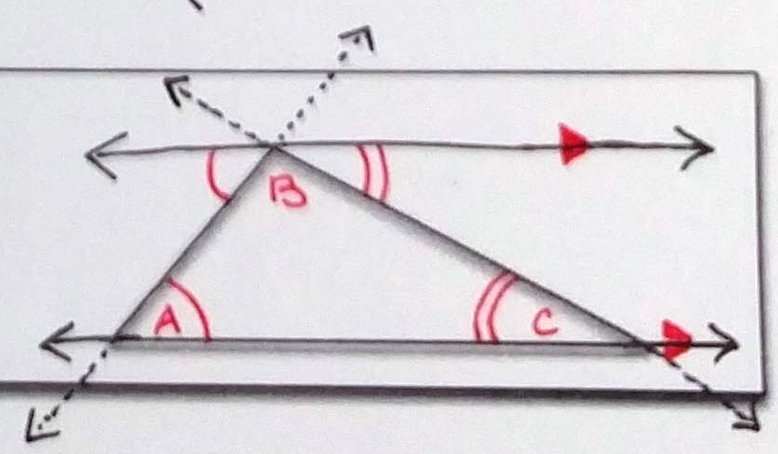




Triangle Sum Theorem

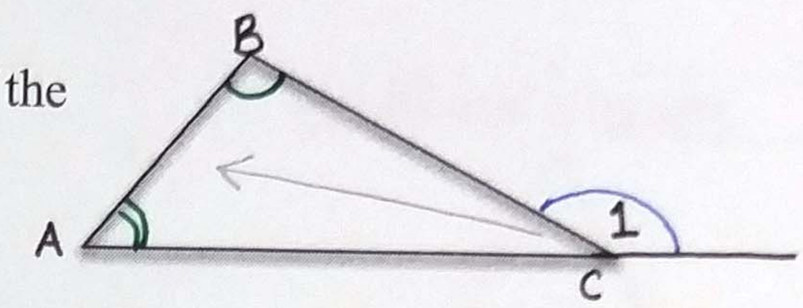
The sum of the measures of the interior angles of a triangle is 180°.

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



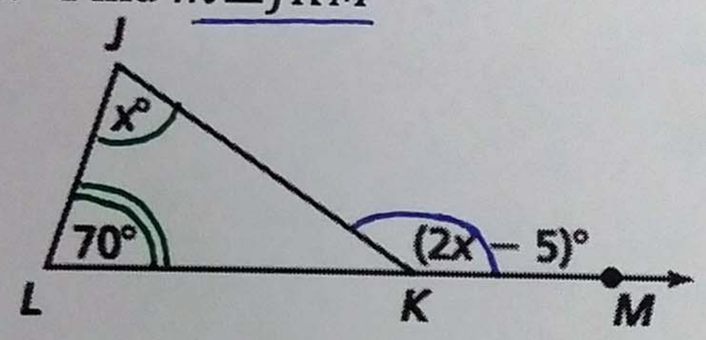
xterior Angle Theorem

The measure of an exterior angle of a triangle is equal to the SUM (ADDITION) of the measures of the two NONADJACENT (OPPOSITE) interior angles.



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

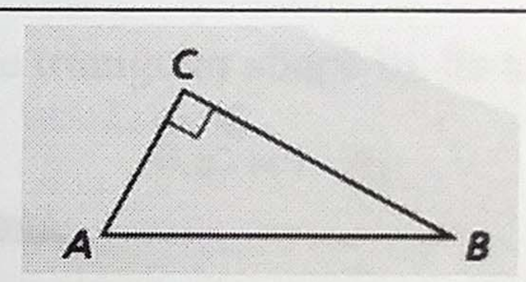
4. Find $m\angle JKM$



$x + 70 = 2x - 5$
$70 = x - 5$
$75 = x$
$2(75) - 5$
$= 150 - 5$
$\boxed{= 145°}$

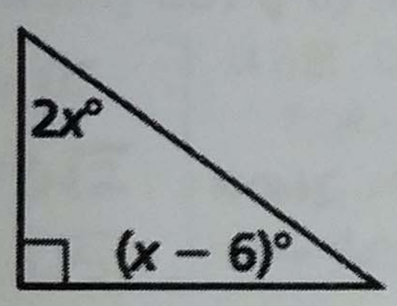
Corollary to the Triangle Sum Theorem

The acute angles of a right triangle are COMPLEMENTARY.



$m\angle A + m\angle B = 90°$

5. Find the measure of each acute angle.



$2x + (x - 6) = 90$
$3x - 6 = 90$
$3x = 96$
$x = 32$

$2(32)$ $\boxed{= 64°}$

$(32 - 6)$ $\boxed{= 26°}$