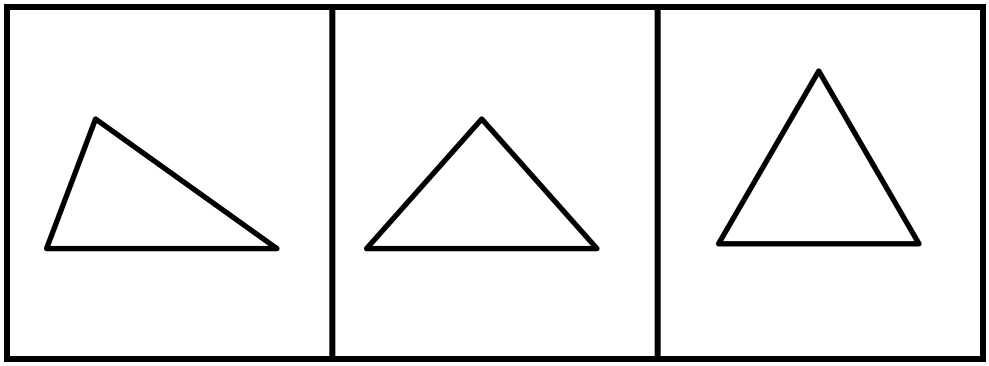
Introduction to Triangles

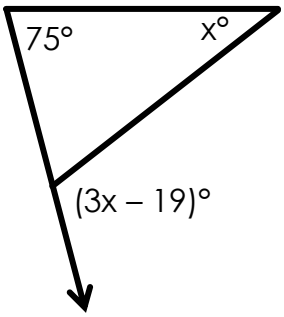
A TRIANGLE is

Classify a triangle by its **sides**



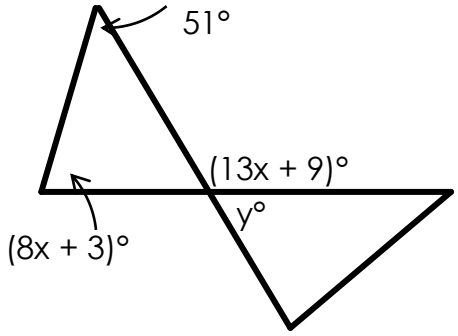
Ex. 4:

Find the measure of the exterior angle shown.



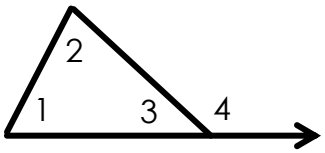
Ex. 5:

Find the values of x and y.

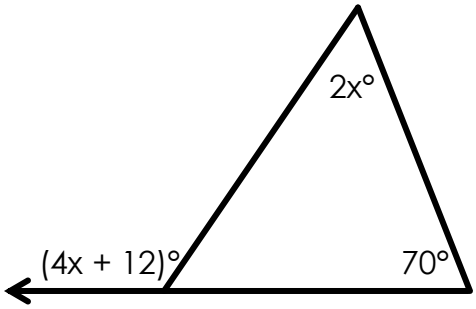


Exterior angle theorem

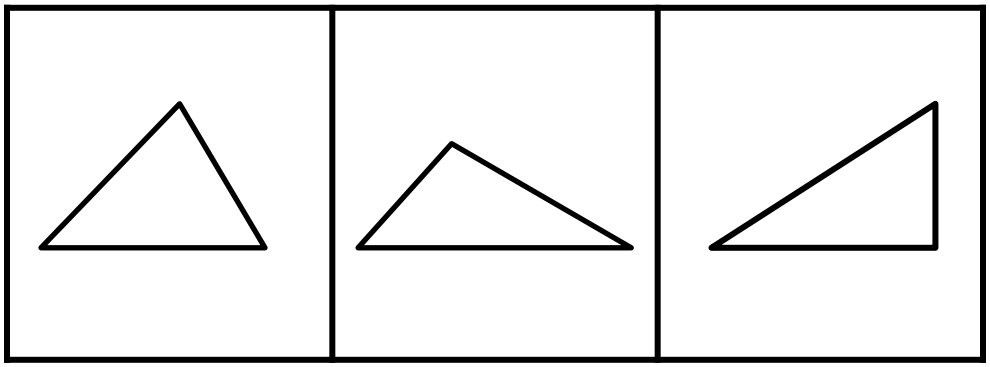
Exterior Angle Theorem:



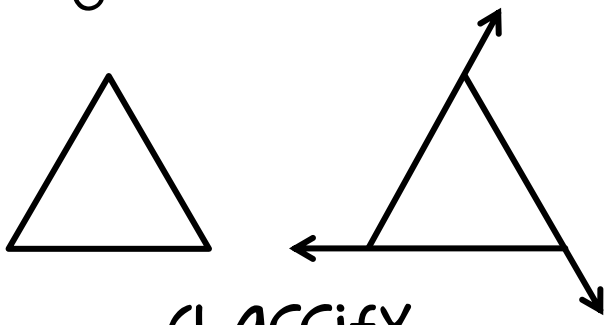
Ex. 3: Find the measure of the exterior angle shown.



Classify a triangle by its **angles**

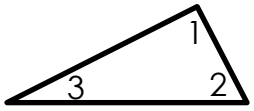


Equiangular triangle:

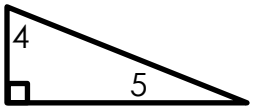


CLASSIFY

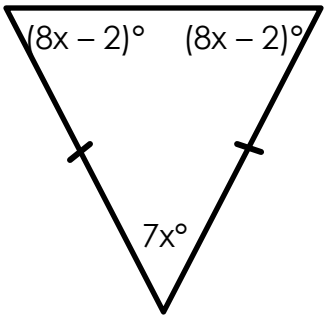
Triangle Sum Theorem:



Corollary to the Triangle Sum Theorem:

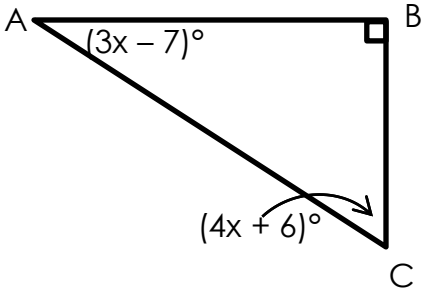


Ex. 1: Find the value of x.



Ex. 2:

Find m∠ACB and m∠BAC.



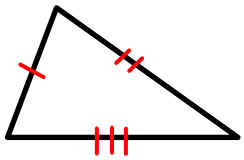
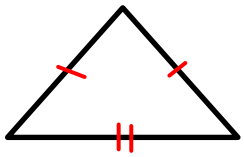
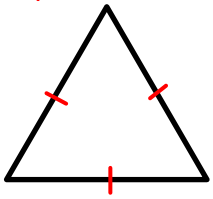
Triangle Sum Theorem

Answer Key

Introduction to Triangles

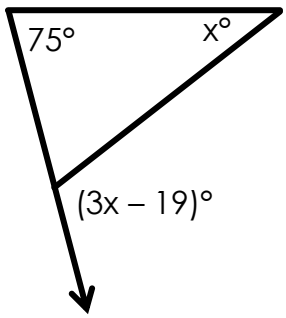
A **TRIANGLE** is a polygon with three sides.

CLASSIFY A TRIANGLE BY ITS **SIDES**

Scalene	Isosceles	Equilateral
		
No congruent sides	2 congruent sides	3 congruent sides

EX. 4:

Find the measure of the exterior angle shown.

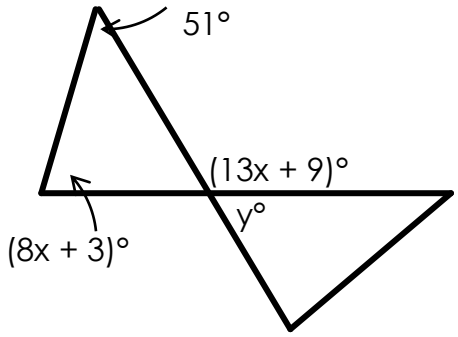


$75 + x = 3x - 19$
$94 = 2x$
$x = 47$

$(3x - 19)°$
$(3(47) - 19)°$
$(141 - 19)°$
$122°$

EX. 5:

Find the values of x and y.



$51 + (8x + 3) = 13x + 9$
$8x + 54 = 13x + 9$
$45 = 5x$
$x = 9$

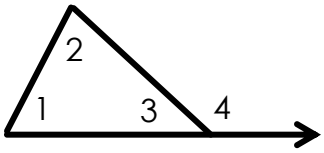
$13x + 9$
$13(9) + 9$
$117 + 9 = 126$

$180 - 126$
$y = 54$

EXTERIOR ANGLE THEOREM

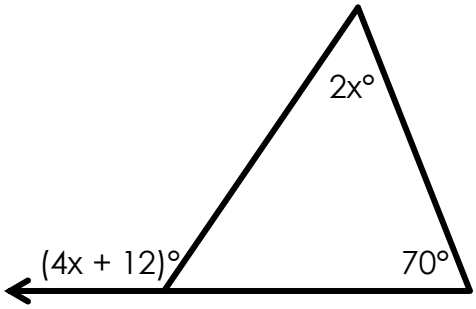
Exterior Angle Theorem:

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



$m\angle 1 + m\angle 2 = m\angle 4$

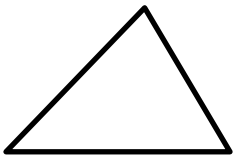
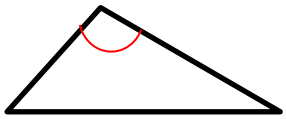
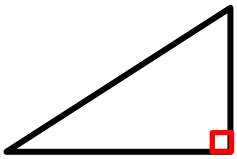
Ex. 3: Find the measure of the exterior angle shown.



$2x + 70 = 4x + 12$
$58 = 2x$
$x = 29$

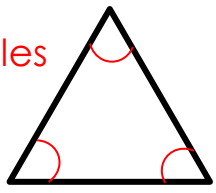
$4x + 12$
$4(29) + 12$
$116 + 12$
$128°$

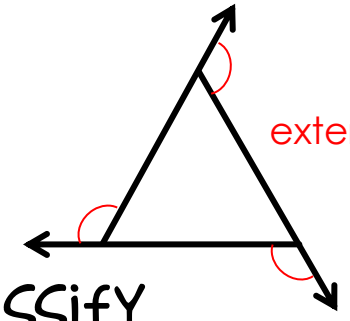
Classify a triangle by its angles

acute	obtuse	right
		
all 3 angles are acute	exactly 1 angle is obtuse	exactly 1 angle is right

Equiangular triangle: triangle with 3 congruent angles

interior angles



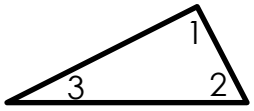


exterior angles

CLASSIFY

Triangle Sum Theorem:

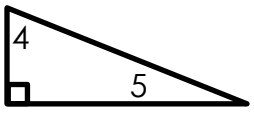
The sum of the measures of the interior angles of a triangle is 180°.



$m\angle 1 + m\angle 2 + m\angle 3 = 180°$

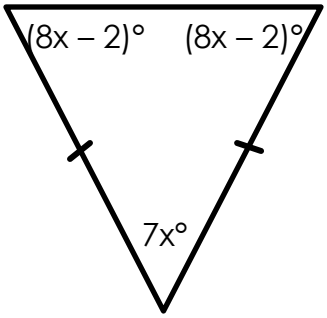
Corollary to the Triangle Sum Theorem:

The acute angles of a right triangle are complementary (add to 90°).



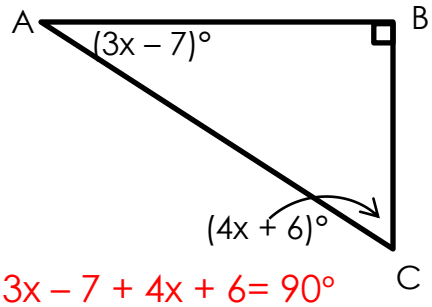
$m\angle 4 + m\angle 5 = 90°$

Ex. 1: Find the value of x.



$7x + 8x - 2 + 8x - 2 = 180°$
$23x - 4 = 180$
$23x = 184$
$x = 8$

Ex. 2: Find m∠ACB and m∠BAC.



$3x - 7 + 4x + 6 = 90°$
$7x - 1 = 90$
$7x = 91$
$x = 13$

m ∠ ACB
~~4x + 6~~
~~4(13) + 6~~
58°

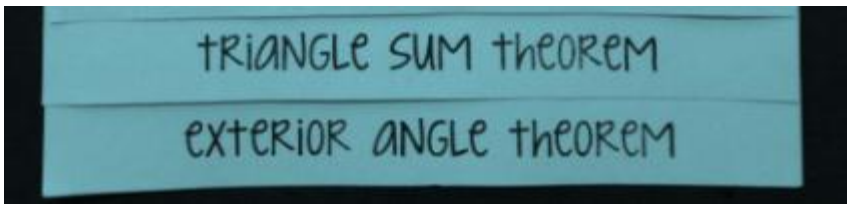
m ∠ BAC
3x – 7
3(13) – 7
32°

Triangle Sum Theorem

Directions:

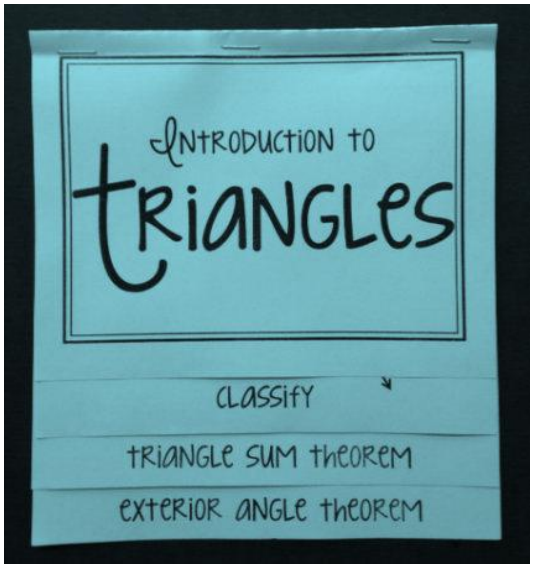
Print pages 1 & 2, and 3 & 4 front to back (5 & 6, 7 & 8 for the answer key). On my printer, I use the option to print double sided and to flip along the short edge.

Have students line up the two pages as shown:



Next fold over the top portion and secure with a few staples. Lastly, have students cut along the dotted line on the right side, to cut off the extra piece.

The final product should look like this:



* Note: This foldable has been scaled down to fit into an interactive notebook. That is why the extra piece is cut off the right side of the pages.