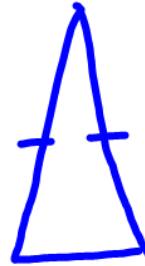


# 4.1 Triangle Sum Properties

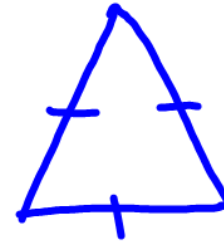
$\Delta$ 's by sides



no sides  $\cong$   
Scalene



2 sides  $\cong$   
isosceles



All sides  $\cong$   
equilateral

$\Delta$ 's by angles



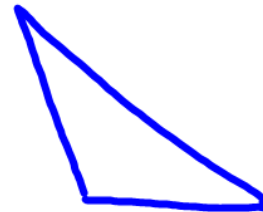
All  $\angle$ 's smaller  
than  $90^\circ$

Acute  $\Delta$



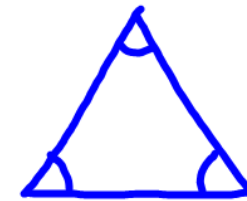
Right  $\angle$

Right  $\Delta$



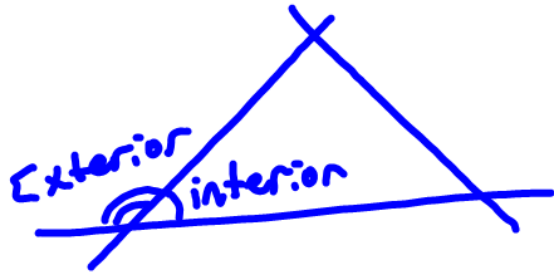
Angle bigger  
than  $90^\circ$

Obtuse  $\Delta$



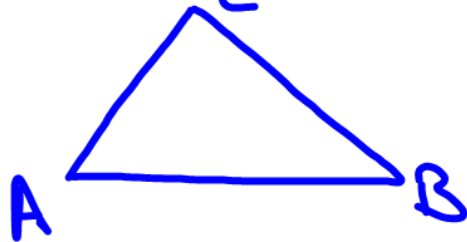
All  $\angle$ 's  $\cong$

Equiangular  
 $\Delta$



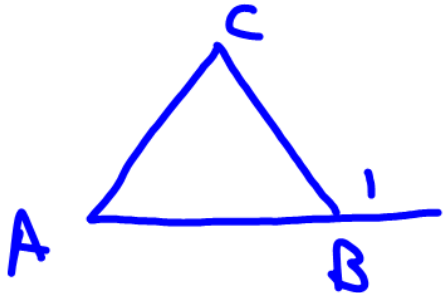
Interior - Inside  
 Exterior - Outside

## Triangle Sum Theorem

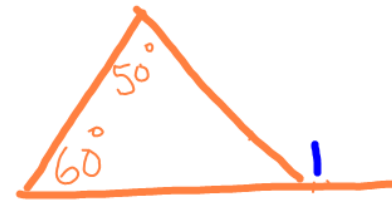


$$m\angle A + m\angle B + m\angle C = 180^\circ$$

## Exterior Angle Theorem



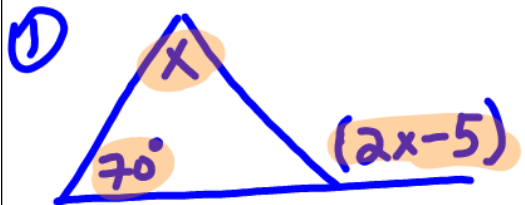
\* The exterior angle ( $\angle 1$ ) is equal to the sum of the 2 opposite interior angles ( $\angle A$  &  $\angle C$ )



$$\text{So } \angle 1 = 50 + 60 = 110^\circ$$

# Example

Solve for  $x$



Interior                      exterior

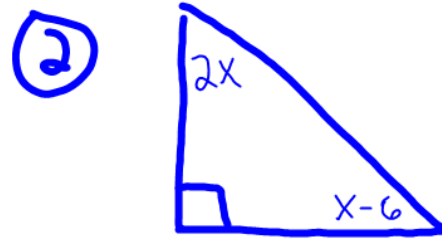
$$x + 70 = 2x - 5$$

+5                      +5

$$x + 75 = 2x$$

-x                      -x

$$75 = x$$



\* Know  $\Delta = 180^\circ$

~~$$2x + x - 6 + 90 = 180$$~~

$$2x + x - 6 + 90 = 180$$

-90                      -90

$$2x + x - 6 = 90$$

$$3x - 6 = 90$$

+6                      +6

$$\frac{3x}{3} = \frac{96}{3}$$

$$x = 32$$