
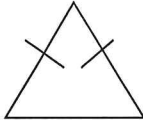


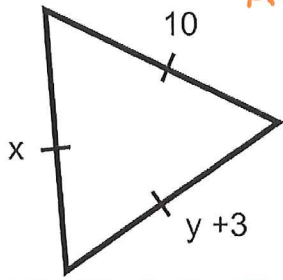


Classifying Triangles by Sides

Type of Triangle	Description	Example	Properties
Scalene Triangle	No sides are congruent		No angles are \cong
Isosceles Triangle	Two sides are congruent		Base angles of isosceles Δ s are \cong 
Equilateral Triangle	All sides are \cong		All \angle s are \cong OR All \angle s are 60°

Example 1: Find x and y. Equilateral



All \cong sides

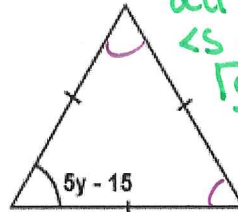
$$x = 10$$

$$y + 3 = 10$$

$$\quad -3 \quad -3$$

$$y = 7$$

Example 2: Find y. Equilateral



all \angle s are \cong or all \angle s = 60°

option 1

$$5y - 15 = 60$$

$$5y = 75$$

$$y = 15$$

option 2: Δ sum

$$5y - 15 + 5y - 15 + 5y - 15 = 180$$

$$15y - 45 = 180$$

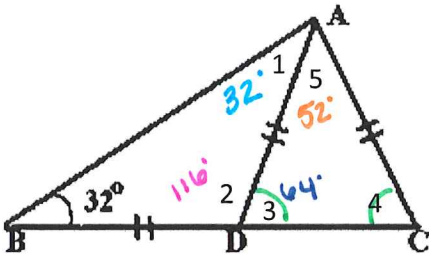
$$\quad +45 \quad +45$$

$$\frac{15y}{15} = \frac{225}{15}$$

$$y = 15$$

Notice either way you get the same answer.

Example 3. Find the numbered angles.



$\angle 1 = 32^\circ$ because ΔADB is isosceles and base \angle s of isosceles Δ are \cong

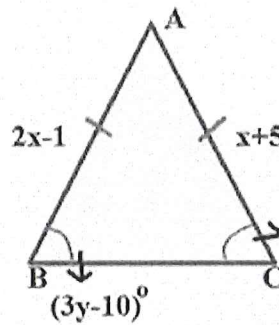
$\angle 2 = 116^\circ$ b/c Δ sum theorem

$\angle 3 = 64^\circ$ Ext. \angle thm or linear pairs

$\angle 4 = 64^\circ$ Base \angle s of isosceles Δ s are \cong

$\angle 5 = 52^\circ$ Δ sum thm

Example 4: Find x and y.



$AC \cong AB$
def of isosceles Δ

$$2x - 1 = x + 5$$

$$\quad -x \quad -x$$

$$x - 1 = 5$$

$$\quad +1 \quad +1$$

$$x = 6$$

$\angle B \cong \angle C$ base \angle s of isos. Δ 's are \cong .

$$3y - 10 = y + 30$$

$$\quad -y \quad -y$$

$$2y - 10 = 30$$

$$\quad +10 \quad +10$$


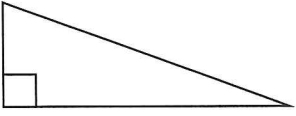
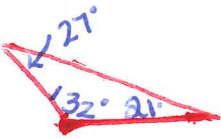

$$\frac{2y}{2} = \frac{40}{2}$$

$$y = 20$$

Name: Key

Basic Triangle Review

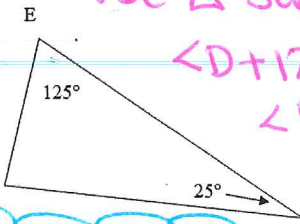
Classifying Triangles by Angles

Type of Angle	Description	Example
Acute Triangle	All angles are acute.	
Right Triangle	One angle is a right angle.	
Obtuse Triangle	One angle is an obtuse angle.	
Equiangular	All angles are congruent.	

Triangle Sum Theorem states: **ALL 3 Angles of a Triangle add to equal 180°**

EXAMPLE 1: Find the measure of $\angle D$.

Use Δ sum

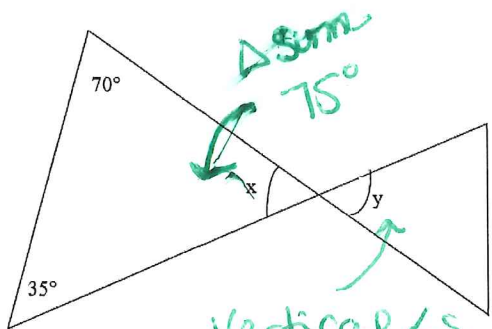


$$\begin{aligned} \angle D + 125 + 25 &= 180 \\ \angle D + 150 &= 180 \\ -150 \quad -150 \end{aligned}$$

ΔEFD IS OBTUSE

$\angle D = 30^\circ$

EX 3: Find the value of x and the value of y .



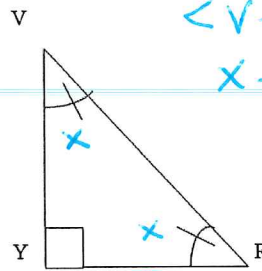
Δ sum

Vertical \angle s are \cong

$y = 75^\circ$

EXAMPLE 2: Find the measure of $\angle R$.

Right Δ



$$\angle V + \angle R + 90 = 180$$

$$x + x + 90 = 180$$

$$2x + 90 = 180$$

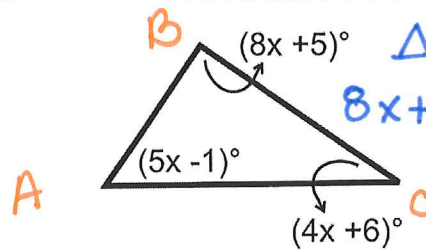
$$-90 \quad -90$$

$$2x = 90$$

$$x = 45^\circ$$

$\angle R = 45^\circ$

EX 4. Find the value of x .



Δ sum theorem

$$8x + 5 + 4x + 6 + 5x - 1 = 180$$

$$17x + 10 = 180$$

$$-10 \quad -10$$

$$\frac{17x}{17} = \frac{170}{17}$$

$x = 10$

$$\angle A = 5(10) - 1 = 49^\circ$$

$$\angle B = 8(10) + 5 = 85^\circ$$

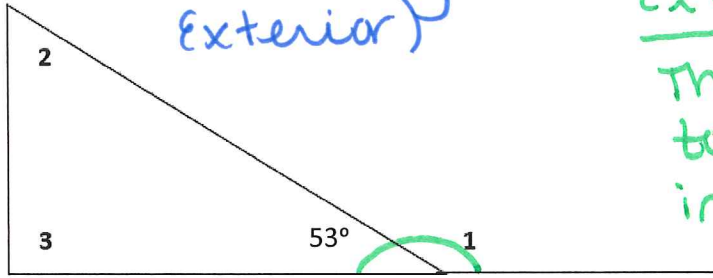
$$\angle C = 4(10) + 6 = 46^\circ$$

1

$\angle A = 49^\circ$ $\angle B = 85^\circ$ $\angle C = 46^\circ$

Exterior Angles of a Triangle

2 and 3 are Remote interior \angle s (NOT touching the Exterior) 1 is the (outside) exterior \angle .



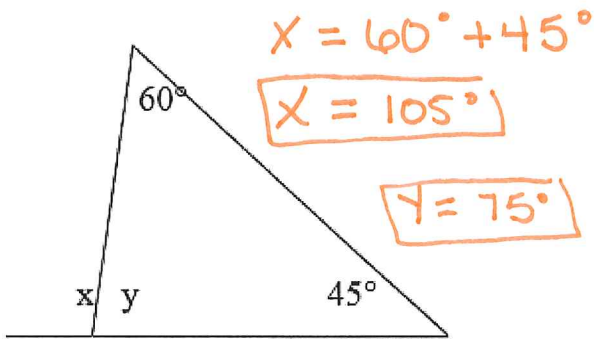
Exterior Angle Theorem
The exterior angle is equal to the sum of the remote interior \angle s.

linear pairs
 $\angle 1 + 53 = 180^\circ$
 $\angle 1 = 122^\circ$

Exterior Angle = $\angle 1$

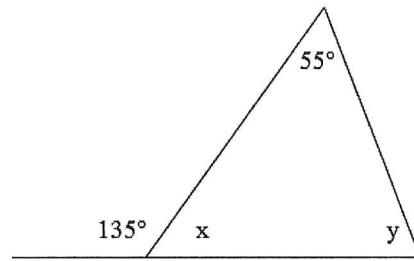
Remote Interior Angle = $\angle 2 + \angle 3$
 $\angle 2 + \angle 3 = 122^\circ$

EXAMPLE 1: Find the value of x and y.



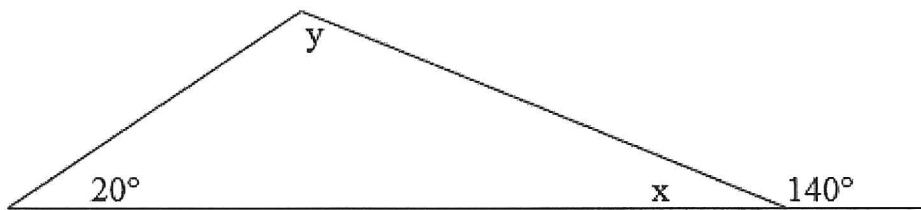
$x = 60^\circ + 45^\circ$
 $x = 105^\circ$
 $y = 75^\circ$

EXAMPLE 2: Find the value of x and y.



linear pairs
 $55 + y = 135^\circ$
 $x + 135 = 180$
 -55
 -55
 $y = 80^\circ$
 $x = 45^\circ$

EXAMPLE 3: Find the value of x and y.



Ext. \angle s theorem
 $20 + y = 140^\circ$
 $y = 120^\circ$

$x + 140 = 180$ linear pairs
 $x = 40^\circ$