NOTES 5.1 – CLASSIFYING TRIANGLES

Objective: I can identify how angle measures of a triangle are related.

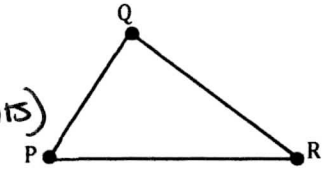
TERM	DESCRIPTION	SKETCH
Triangle	a figure having 3 sides and 3 angles	

A triangle is made up of three components:

Vertices: P, Q, R (points)

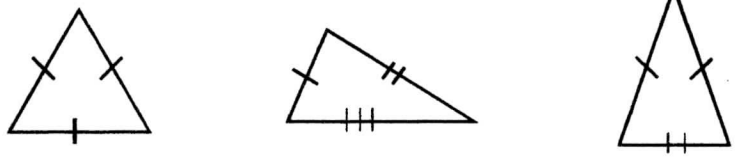
Sides: $\overline{PQ}$, $\overline{QR}$, $\overline{PR}$ (segments)

Angles: $\angle P$, $\angle Q$, $\angle R$



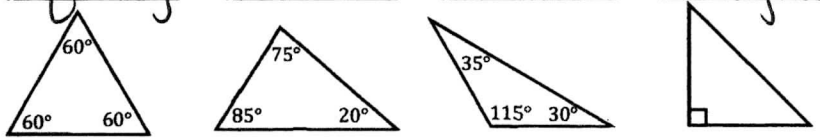
EXAMPLE 1: Classify each of the triangles by SIDES.

a) equilateral b) Scalene c) Isosceles



EXAMPLE 2: Classify each of the triangles by ANGLES.

a) equiangular b) acute c) obtuse d) right



EXAMPLE 3: Find the measure of the third angle of a triangle, if the first angle has a measure of 66° and the second angle measures 37°.

$66+37=108$

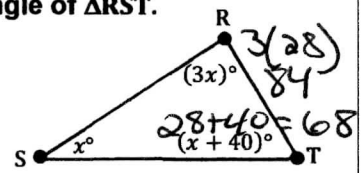
$180 - 103 = 77°$

EXAMPLE 4: Find the measure of each angle of ΔRST.

$m\angle R = 84°$

$m\angle S = 28°$

$m\angle T = 68°$



$3(28) = 84$

$28+40 = 68$

$x + 3x + x + 40 = 180$

$5x + 40 = 180$

$5x = 140$

$x = 28$

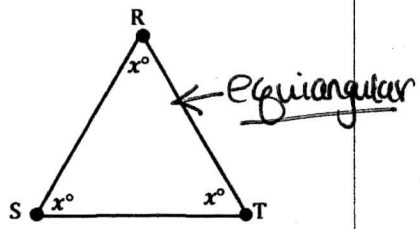
EXAMPLE 5: Find the value of 'x'.

$x = 60°$

$x + x + x = 180$

$3x = 180$

$x = 60$



EXAMPLE 6: Find the value of 'x'.

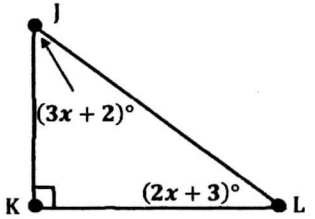
$3x + 2 + 2x + 3 = 90$

$5x + 5 = 90$

$5x = 85$

$x = 17$

$x = 17$



∠J and ∠L are classified as ***acute angles.*** Since their sum is **90°**, we can say that the acute angles of a right triangle are ***complementary.***

An exterior angle of a triangle is formed by one side of the triangle and the extension of an adjacent side.

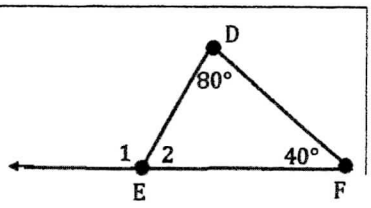
To find the measure of an exterior angle of a triangle, add the two remote interior angles.

EXAMPLE 7: Find the measure of ∠1.

$m\angle 1 = \angle D + \angle F$

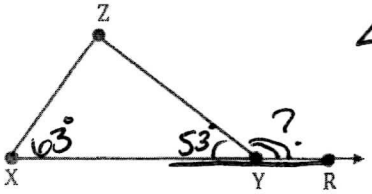
$m\angle 1 = 80 + 40$

$m\angle 1 = 120°$



$m\angle 1 =$ 120°

EXAMPLE 8: In ΔXYZ, $m\angle X = 63°$ and $m\angle XYZ = 53°$, find $m\angle ZYR$.

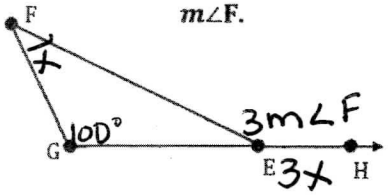


$\angle XYZ + \angle ZYR = 180°$ (Linear pair)

$180 - 53 = 127°$

$m\angle ZYR =$ 127°

EXAMPLE 9: In ΔEFG, $m\angle G = 100°$ and $m\angle FEH = 3 \cdot m\angle F$. Find $m\angle F$.



$\angle F + \angle G = \angle FEH$

$x + 100 = 3x$

$-x \quad -x$

$\frac{100}{2} = \frac{2x}{2}$

$50 = x$

$m\angle F =$ 50°