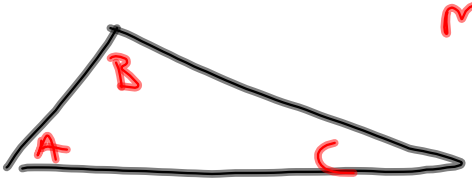
4.2 Triangle angle relationships

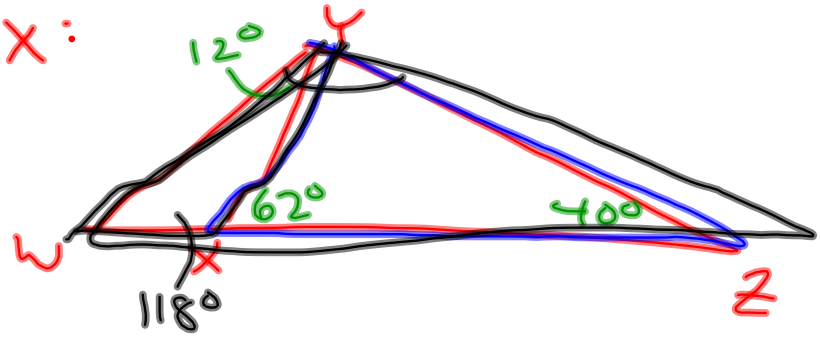
Triangle Sum Theorem:

The sum of all the angles of a △ is 180°.

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



Ex:



Find $m\angle XYZ$

$180-(62+40)$

$180-102=78°$

Find $m\angle YWZ$

$180-62=118°$

$180-(12+118)=50°$

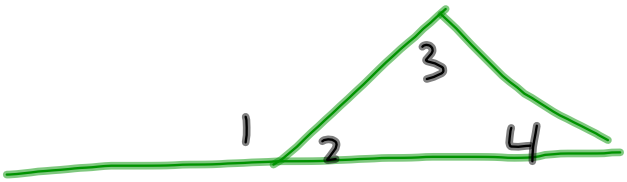
Corollary: Theorem whose proof follows directly from previously established theorems.

Corrolary 4-2-2: The acute ∠'s of a rt. △ are complimentary

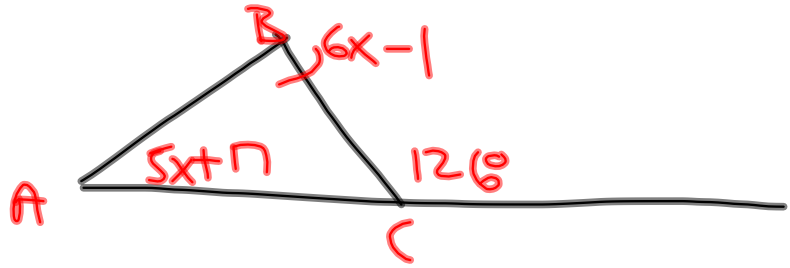
corrolary 4-2-3: The measure of each ∠ in an equiangular △ is 60°.

Exterior ∠ Theorem: The measure of an exterior ∠ of a △ is equal to the sum of its remote (non adjacent) interior ∠'s.

$m\angle 1 = m\angle 3 + m\angle 4$



Ex: Find $m\angle ABC$



$5x + 17 + 6x - 1 = 126^\circ$

$11x + 16 = 126$

$-16 \quad -16$

$\frac{11x}{11} = \frac{110}{11}$

$x = 10$

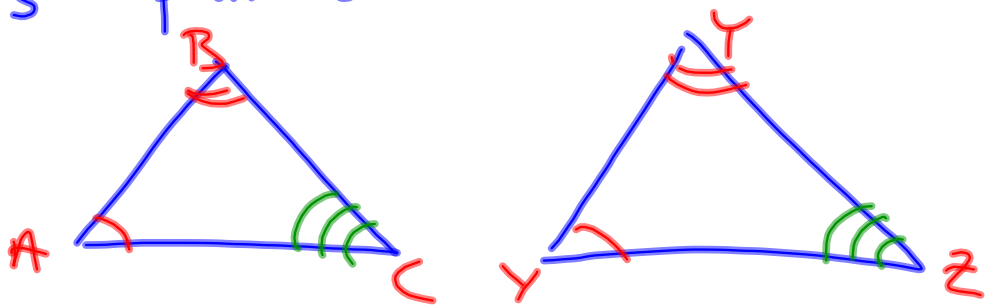
$m\angle ABC = 6x - 1$

$= 6(10) - 1$

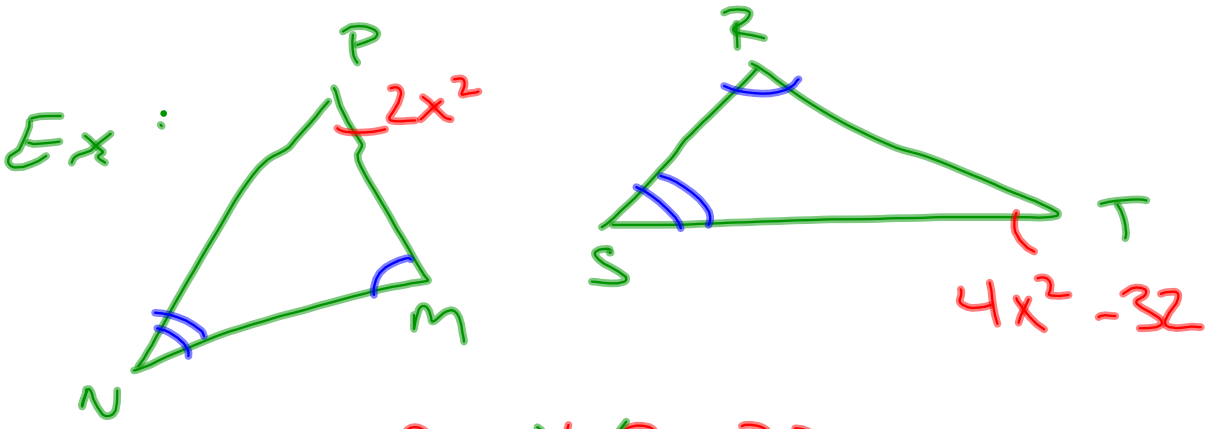
$= 59^\circ$

Third ∠'s Theorem:

if 2 ∠'s of 1 △ are ≅ to 2 ∠'s of another △, then the 3rd pair of ∠'s of both △'s are ≅.



Ex:



$$2x^2 = 4x^2 - 32$$
$$-4x^2 \quad -4x^2$$
$$-2x^2 = -32$$
$$\frac{-2x^2}{-2} = \frac{-32}{-2}$$
$$\sqrt{x^2} = \sqrt{16}$$
$$x = 4$$

Hw: p. 227, 2-34 even,
odds extra credit