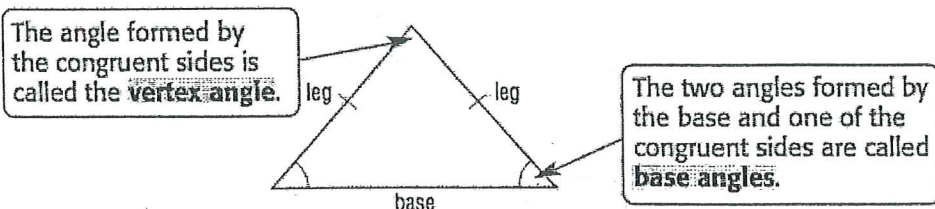


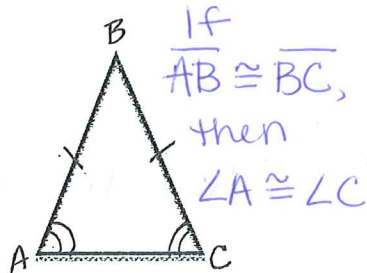
4-6 Isosceles Triangles Notes

Properties of Isosceles Triangles:



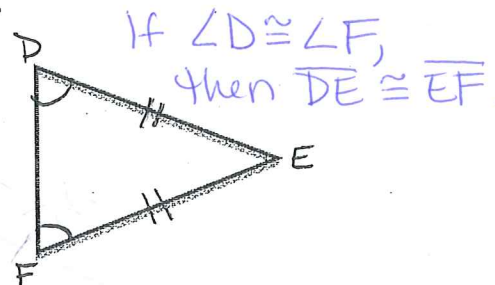
Isosceles Triangle Theorem – If two sides of a triangle are congruent, then the angles opposite those sides are congruent.

Example:



Converse of the Isosceles Triangle Theorem – If two angles of a triangle are congruent, then the sides opposite those angles are congruent.

Example:



**COROLLARIES**

4.3 A triangle is equilateral if and only if it is equiangular.

4.4 Each angle of an equilateral triangle measures 60°.

Example 1:

$\triangle EFG$  is equilateral and  $\overline{EH}$  bisects  $\angle E$ .

a. find  $m\angle 1$  and  $m\angle 2$ .

b. find  $x$ .

$m\angle 1 = 30$

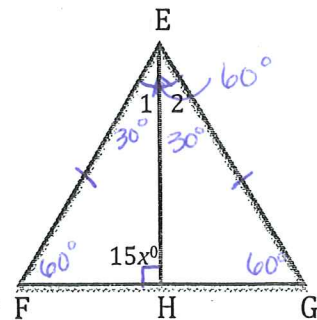
$m\angle 2 = 30$

$30 + 60 + 15x = 180$

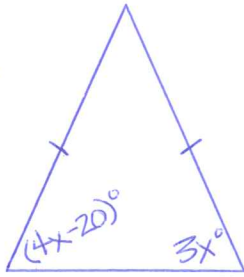
$90 + 15x = 180$   
 $-90 \quad -90$

$15x = 90$   
 $\frac{15x}{15} = \frac{90}{15}$

$x = 6$



Ex:



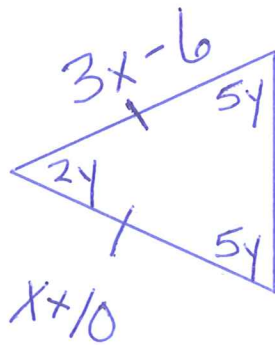
Solve for  $x$ .

$$\begin{array}{r} 4x-20 = 3x \\ -3x \quad -3x \end{array}$$

$$\begin{array}{r} x-20 = 0 \\ +20 \quad +20 \end{array}$$

$$\boxed{x=20}$$

Ex:



Solve for  $x$  and  $y$

$$\begin{array}{r} 3x-6 = x+10 \\ +6 \quad +6 \end{array}$$

$$\begin{array}{r} 3x = x+16 \\ -x \quad -x \end{array}$$

$$\begin{array}{r} 2x = 16 \\ \frac{2x}{2} = \frac{16}{2} \end{array}$$

$$\boxed{x=8}$$

$$2y + 5y + 5y$$

$$\frac{12y}{12} = \frac{180}{12}$$

$$\boxed{y=15}$$