

**Classifying Triangles can be done by**

\* the angles      or      \* the sides

**Classifying triangles by angles:**

\* **Acute Triangle**- all angles are  $< 90^\circ$ .



\* **Obtuse Triangle**- one angle is  $> 90^\circ$ .

\* **Right Triangle**- one angle is  $90^\circ$ .

**Classifying triangles by sides:**

\* **Scalene triangle**- all sides are a different length.

\* **Isosceles triangle**- at least 2 sides are congruent.



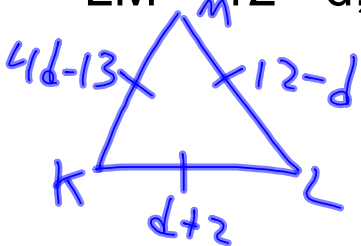
\* **Equilateral triangle**- all 3 sides are congruent.

**An equilateral triangle is a special isosceles triangle.**

**You cannot go by appearance, you must go by the given.**

**Triangle sides DO NOT add up to  $180^\circ$ .**

1. Find  $d$  and the measure of each side of equilateral triangle KLM if  $KL = d + 2$ ,  $LM = 12 - d$ , and  $KM = 4d - 13$ .



$$\begin{aligned} d+2 \\ 5+2=7 \end{aligned}$$

$$\begin{aligned} KL &= 7 \\ KM &= 7 \\ LM &= 7 \end{aligned}$$

$$\begin{array}{r} 12-d = d+2 \\ \quad +d \quad +d \\ \hline 12 = 2d+2 \end{array}$$

$$\begin{array}{r} 12 = 2d+2 \\ -2 \quad -2 \\ \hline 10 = 2d \end{array}$$

$$\begin{array}{r} 10 = 2d \\ \frac{10}{2} = \frac{2d}{2} \\ 5 = d \end{array}$$

$$\boxed{5 = d}$$

2. Find the measures of the sides of  $\triangle RST$  if  $R(-1, -3)$ ,  $S(4, 4)$ , and  $T(8, -1)$ . Classify the triangle by sides.

$$RS = \sqrt{(4 - (-1))^2 + (4 - (-3))^2}$$

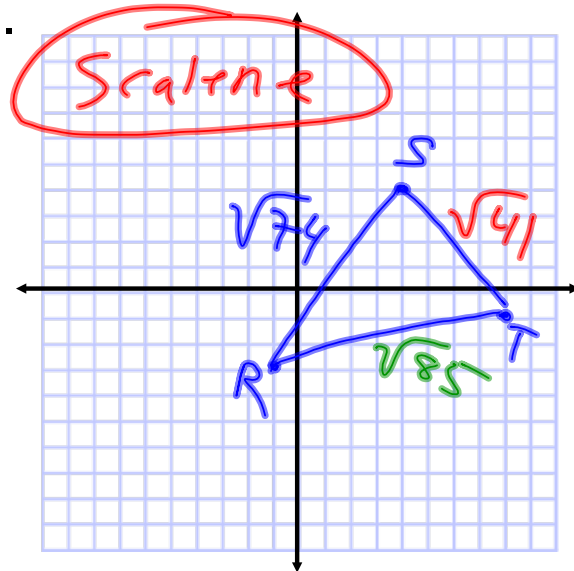
$$= \sqrt{25 + 49} = \sqrt{74}$$

$$RT = \sqrt{(8 - (-1))^2 + (-1 - (-3))^2}$$

$$= \sqrt{81 + 4} = \sqrt{85}$$

$$ST = \sqrt{(8 - 4)^2 + (-1 - 4)^2}$$

$$= \sqrt{16 + 25} = \sqrt{41}$$



3. Identify the indicated triangles in the figure if  $\overline{UV} \cong \overline{VX} \cong \overline{UX}$ .

a. isosceles triangles

$\triangle UTX$   
 $\triangle UVX$

b. scalene triangles.

$\triangle UZY$   $\triangle UTX$   
 $\triangle UZV$   $\triangle UTV$   
 $\triangle XVW$

