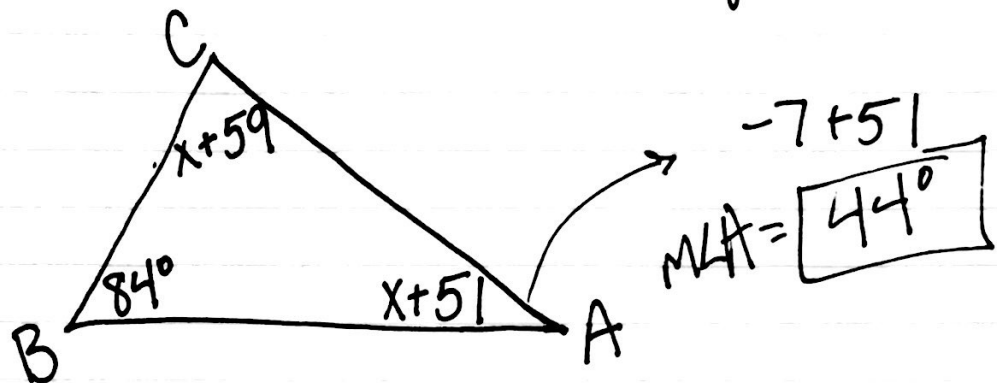


Triangle Angle Sum Theorem

Def: The sum of the measures of the interior angles of a triangle is 180° .

Ex: Find the measure of angle A.



$$84 + x + 59 + x + 51 = 180$$

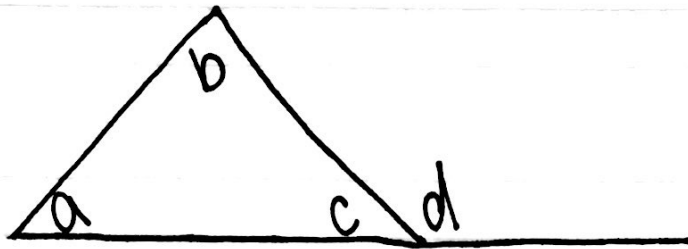
$$\begin{array}{r} 194 + 2x = 180 \\ -194 \quad -194 \end{array}$$

$$\frac{2x}{2} = \frac{-14}{2}$$

$$x = -7$$

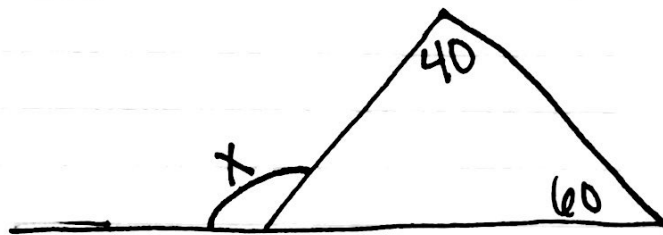
Exterior Angle Theorem

Def:



$$d = a + b$$

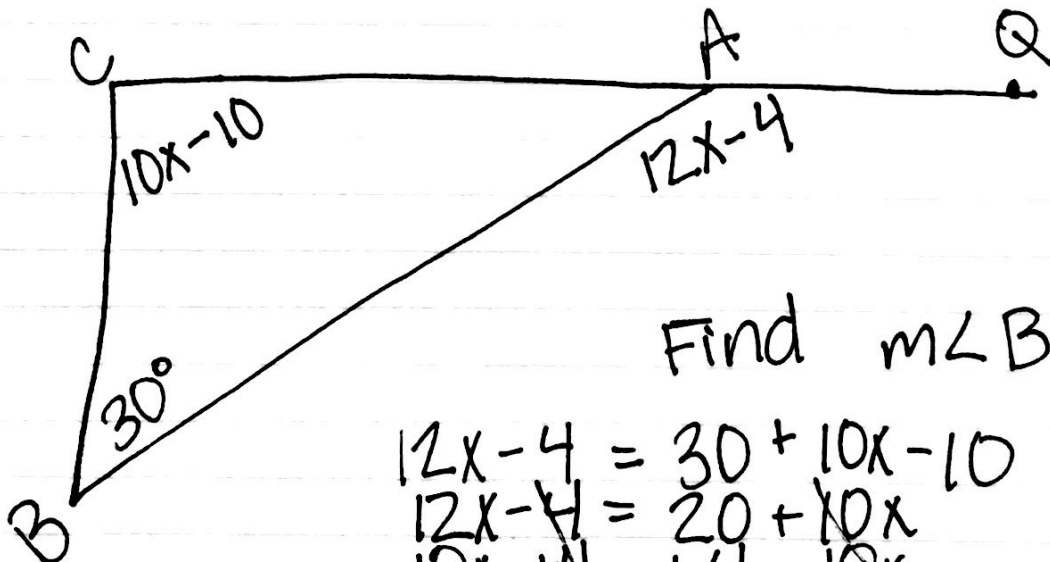
EX: Find x .



$$x = 60 + 40$$

$$x = 100^\circ$$

EX:



Find $m\angle BAQ$

$$12x - 4 = 30 + 10x - 10$$

$$12x - 4 = 20 + 10x$$

$$-10x + 4 \quad +4 \quad -10x$$

$$\frac{2x}{2} = \frac{24}{2}$$

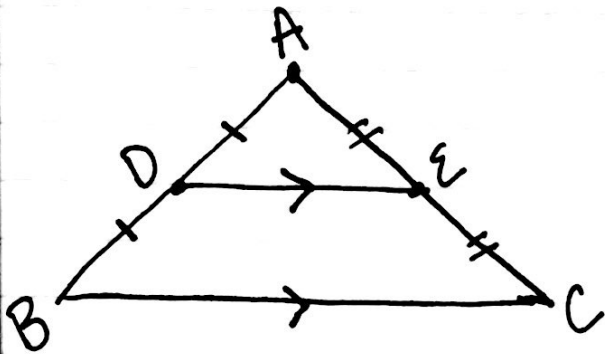
$$x = 12$$

$$m\angle BAQ = 12(12) - 4$$

$$= 140^\circ$$

Triangle Midsegment Theorem

Def:

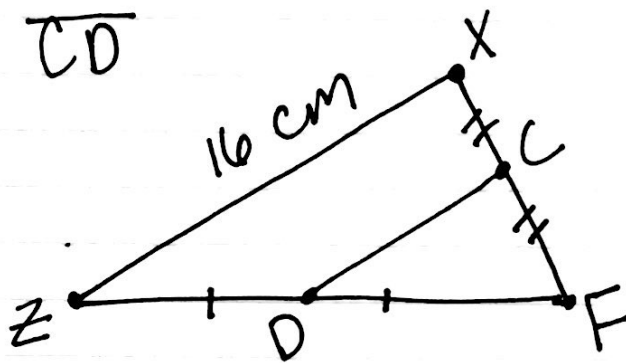


A midsegment connecting 2 sides of a triangle is \parallel to the third side and half as long

If $\overline{AD} \cong \overline{DB}$ and $\overline{AE} \cong \overline{EC}$,
then $\overline{DE} \parallel \overline{BC}$ and $\overline{DE} = \frac{1}{2} \overline{BC}$

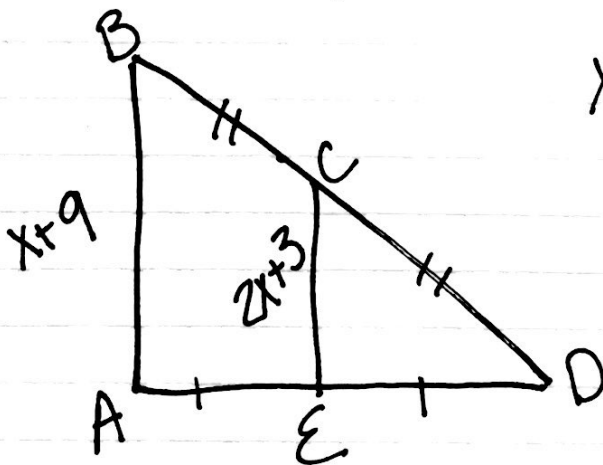
EX:

Find \overline{CD}



$$\overline{CD} = 8 \text{ cm}$$

EX: Solve for x .



$$x+9 = 2(2x+3)$$

$$\begin{array}{r} x+9 = 4x+6 \\ -x \quad -6 \quad -x \quad -6 \\ \hline 3 = 3x \end{array}$$

$$\frac{3}{3} = \frac{3x}{3}$$

$$\boxed{x=1}$$