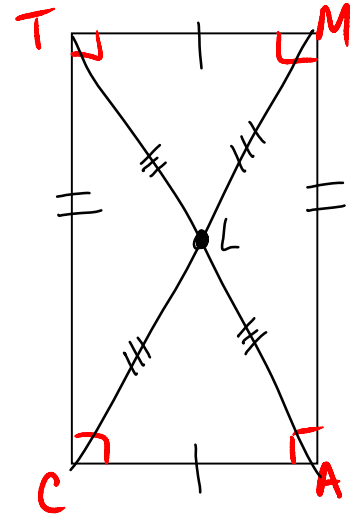


6.4 Rectangles

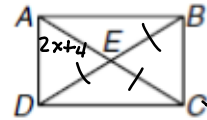
- Rectangle: a quadrilateral with 4 right \angle 's.

Rectangle Properties	Example
Opposite \angle 's are \cong	$\angle T \cong \angle A$ $\angle M \cong \angle C$
Consecutive \angle 's are supplementary	$m\angle T + m\angle M = 180$ $m\angle M + m\angle A = 180$ $m\angle A + m\angle C = 180$ $m\angle C + m\angle T = 180$
Opposite sides are \cong & \parallel	$\overline{TM} \cong \overline{CA}$ $\overline{TM} \parallel \overline{CA}$ $\overline{TC} \cong \overline{MA}$ $\overline{TC} \parallel \overline{MA}$
Diagonals are \cong and bisect each other	$\overline{TL} \cong \overline{LA}$ $\overline{TC} \cong \overline{CA}$ $\overline{ML} \cong \overline{LC}$ $\overline{MA} \cong \overline{CM}$
All 4 \angle 's are right \angle 's	



- If the diagonals are \cong , the quadrilateral is a ~~parallelogram~~ ^{rectangle}.

ABCD is a rectangle.



Ex. 1

If $AC = 2x + 13$ and $DB = 4x - 1$, find x .

$$\begin{array}{r} 2x + 13 = 4x - 1 \\ -2x \quad -2x \\ \hline 13 = 2x - 1 \end{array}$$

$$\begin{array}{r} 13 = 2x - 1 \\ +1 \quad +1 \\ \hline 14 = 2x \end{array}$$

$$\begin{array}{r} 14 = 2x \\ \frac{14}{2} = \frac{2x}{2} \\ \hline 7 = x \end{array}$$

Ex. 2

If $AE = 3x + 3$ and $EC = 5x - 15$, find AC . = 60

$$\begin{array}{r} 3x + 3 = 5x - 15 \\ -3x \quad -3x \\ \hline 3 = 2x - 15 \end{array}$$

$$\begin{array}{r} 3 = 2x - 15 \\ +15 \quad +15 \\ \hline 18 = 2x \end{array}$$

$$\begin{array}{r} 18 = 2x \\ \frac{18}{2} = \frac{2x}{2} \\ \hline 9 = x \end{array}$$

$$3 \cdot 9 + 3$$

$$30$$

$$5 \cdot 9 - 15$$

$$30$$

Ex. 3

If $m\angle DAC = 2x + 4$ and $m\angle BAC = 3x + 1$, find x .

$$\underline{2x} + 4 + \underline{3x} + 1 = 90$$

$$\begin{array}{r} 5x + 5 = 90 \\ -5 \quad -5 \\ \hline 5x = 85 \end{array}$$

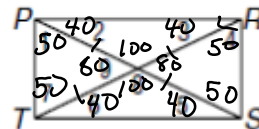
$$\begin{array}{r} 5x = 85 \\ \frac{5x}{5} = \frac{85}{5} \\ \hline x = 17 \end{array}$$

$$x = 17$$

Ex. 4

~~If $m\angle BAC = x + 3$ and $m\angle CAD = x + 15$, find $m\angle BAC$.~~

PRST is a rectangle. Find each measure if $m\angle 1 = 50$.



COORDINATE GEOMETRY Determine whether **TUXY** is a rectangle given each set of vertices. Justify your answer.

$T(-3, -2)$, $U(-4, 2)$, $X(2, 4)$, $Y(3, 0)$

