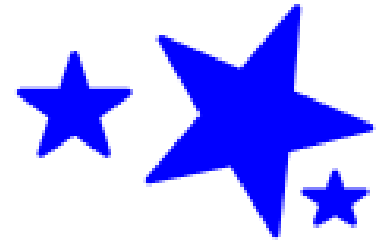


8 - 4

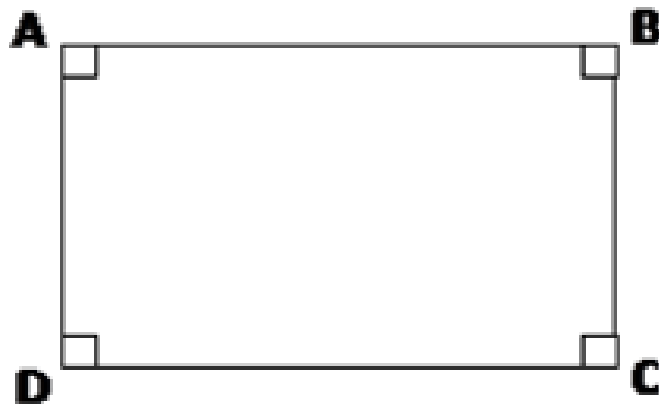
Rectangles

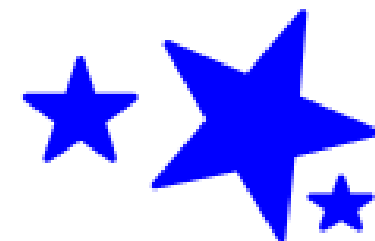
rectangle: a quadrilateral
with 4 right angles



Theorem 8.13:

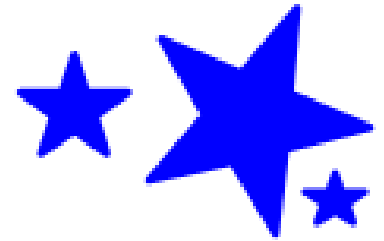
If a parallelogram is a rectangle,
then the diagonals are congruent.





****Since a rectangle is a parallelogram, it has all of those same properties.**

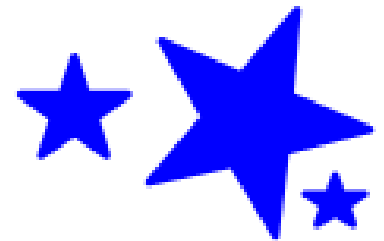
****Parallelograms' diagonals bisect each other, but only a rectangle's are congruent.**



Theorem 8.14:

If the diagonals of a parallelogram are congruent, then the parallelogram is a rectangle.

Ex: ABCD is a rectangle.
Find x and y.

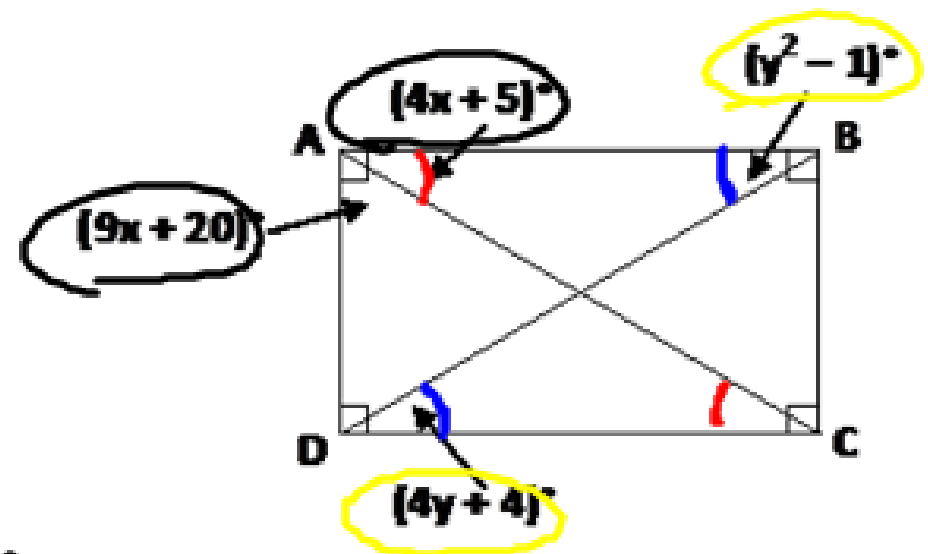


$$\underline{9x+20} + \underline{4x+5} = 90$$

$$\begin{array}{r} 13x + 25 = 90 \\ -25 \quad -25 \\ \hline \end{array}$$

$$\frac{13x}{13} = \frac{65}{13}$$

$$x = 5$$



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

$$\begin{array}{r} y^2 - 4y - 1 = 4 \\ -4 \quad -4 \\ \hline \end{array}$$

$$y^2 - 4y - 5 = 0$$

$$y^2 - 4y - 5 = 0$$

$$(y-5)(y+1) = 0$$

$$y-5=0 \quad y+1=0$$

$$y=5$$

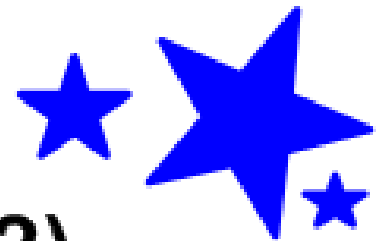
$$~~y=-1~~$$

$$x = -5$$

$$+ -4$$

$$-5 \quad +1$$

Ex: FGHIJ has vertices F(-4, -1), G(-2, -5), H(4, -2), and J(2, 2). Determine whether FGHIJ is a rectangle.

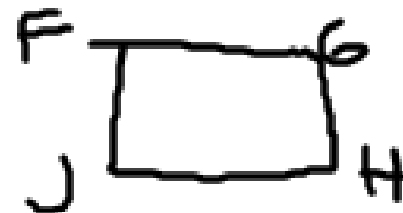


$$\overline{FG} : \frac{-1+5}{-4+2} = \frac{4}{-2} = -2$$

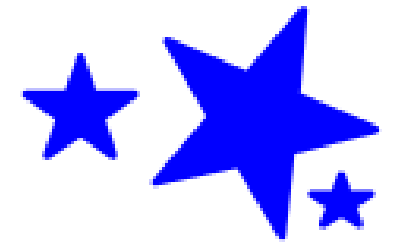
$$\overline{GH} : \frac{-5+2}{-2-4} = \frac{-3}{-6} = \frac{1}{2}$$

$$\overline{HI} : \frac{-2-2}{4-2} = \frac{-4}{2} = -2$$

$$\overline{JF} : \frac{2+1}{2+4} = \frac{3}{6} = \frac{1}{2}$$



Yes



Homework:

8 - 4 WS (odds)