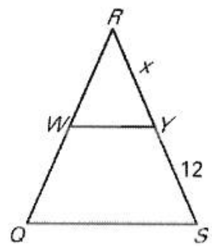
Name ______________________________ Date ______________ Hr ____

5.1-5.3 Quiz Review – Geometry 9

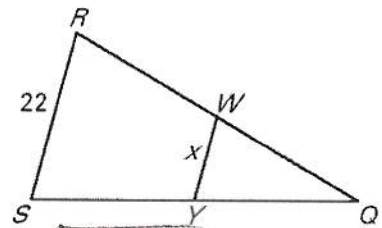
$\overline{WY}$ is the midsegment of $\triangle QRS$. Find the value of x.

1.



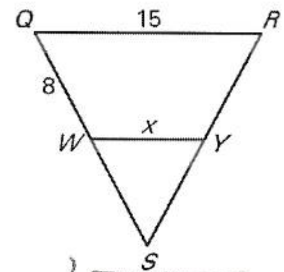
$X = 12$

2.

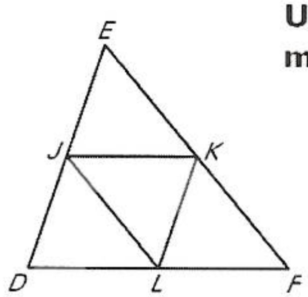


$x = 11$

3.



$X = 7.5$



Use $\triangle DEF$, where J, K, and L are midpoints of the sides.

4. If $DE = 8x + 12$ and $KL = 10x - 9$, what is DE?

$2(10x - 9) = 8x + 12$

$20x - 18 = 8x + 12$

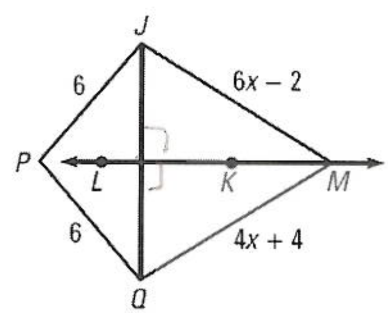
$12x = 30$

$x = 2.5$

$DE = 8(2.5) + 12$

$DE = 32$

5. In the diagram, $\overleftrightarrow{LM}$ is the perpendicular bisector of $\overline{JQ}$, and point K lies along $\overleftrightarrow{LM}$.



a. Find the value of x.

$6x - 2 = 4x + 4$

$6x = 4x + 6$

$2x = 6$

$x = 3$

b. Find JM.

$6(3) - 2 = 16$

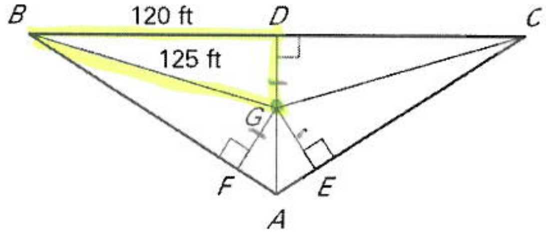
$JM = 16$

c. Identify two points that are the same distance from point K. J & Q

d. Is P guaranteed to be on line $\overleftrightarrow{LM}$, or not? State why.

yes, because of the ⊥ bisector converse.

6. **Monument** You are building a monument in a triangular park. You want the monument to be the same distance from each edge of the park. Use the figure with incenter G to determine how far from point D you should build the monument.



$120^2 + b^2 = 125^2$

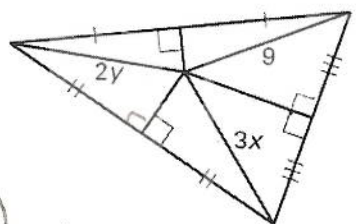
$b^2 = 1225$

$b = 35$

$\boxed{DG = 35 \text{ ft}}$

Find the value of x. Then find the value of y.

7.



(by SAS) (CPCTC)

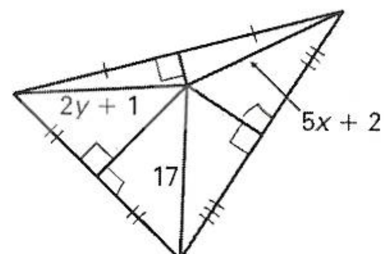
$3x = 9$

$\boxed{x = 3}$

$2y = 9$ (also by SAS (CPCTC))

$\boxed{y = 4.5}$

8.



$17 = 5x + 2$

$15 = 5x$

$\boxed{x = 3}$

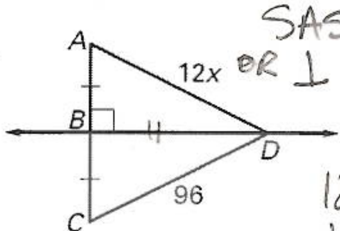
$2y + 1 = 17$

$2y = 16$

$\boxed{y = 8}$

Find the value of x. Identify the theorem used to find the answer.

9.

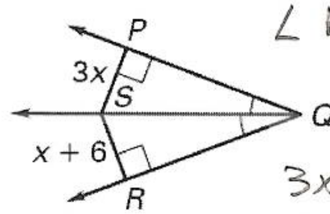


SAS-CPCTC OR $\perp$ bisector theorem

$12x = 96$

$\boxed{x = 8}$

10.



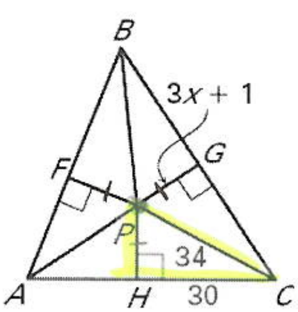
$\angle$ bisector theorem

$3x = x + 6$

$2x = 6$

$\boxed{x = 3}$

Find the value of x that makes P the incenter of the triangle.



$\triangle PHC$

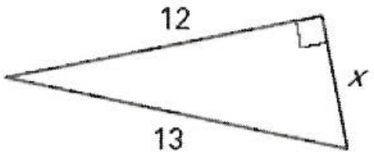
$x^2 + 30^2 = 34^2$

$x^2 = 256$

$\boxed{x = 16}$

Find the missing measurements. Leave your answer in simplest radical form.

6)

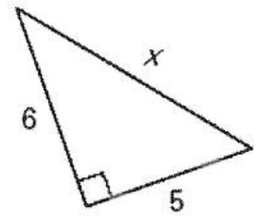


$x^2+12^2=13^2$

$x^2=25$

$\boxed{x=5}$

7)

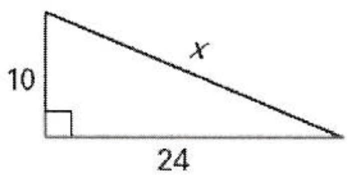


$5^2+6^2=x^2$

$61=x^2$

$\boxed{x=\sqrt{61}}$

8)

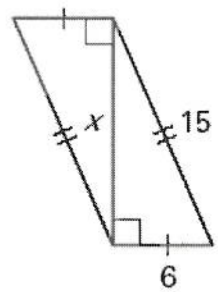


$10^2+24^2=x^2$

$676=x^2$

$\boxed{x=26}$

9)



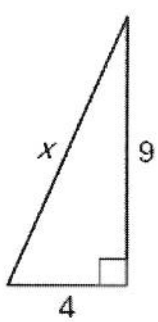
$x^2+6^2=15^2$

$\sqrt{x^2}=\sqrt{189}$

$x=\sqrt{9}\cdot\sqrt{21}$

$\boxed{x=3\sqrt{21}}$

10)

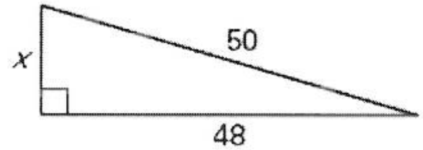


$4^2+9^2=x^2$

$x^2=97$

$\boxed{x=\sqrt{97}}$

11)



$48^2+x^2=50^2$

$x^2=196$

$\boxed{x=14}$

Coordinate Proof & Pythagorean Review WS
Geometry
[redacted]

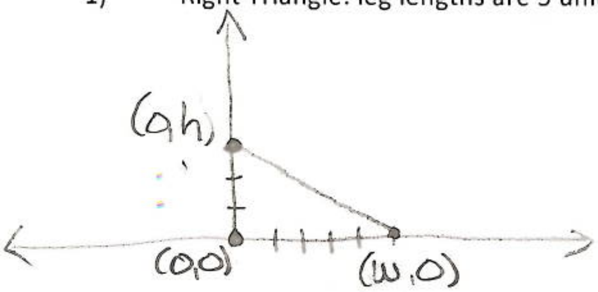
Name Key

Period

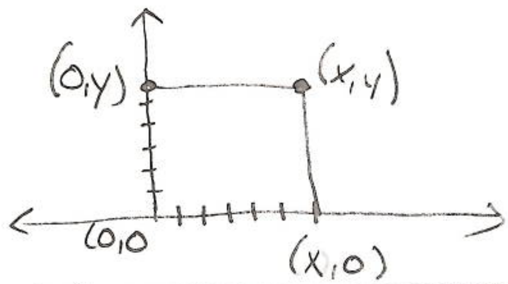
Using Variable Coordinates

Place the figure in a coordinate plane in a convenient way and assign coordinates to each vertex.

1) Right Triangle: leg lengths are 5 units and 3 units.

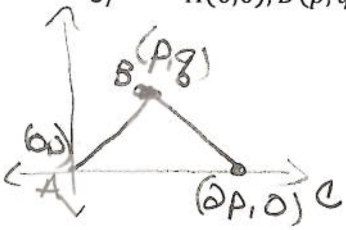


2) Square: side lengths are 6 units



Sketch ΔABC. After, find the **length**, **slope**, and **midpoint** of each side.

3) $A(0,0), B(p,q), C(2p,0)$



Length $AC = 2p$

$AB = \sqrt{p^2+q^2}$

$BC = \sqrt{(2p-p)^2+(-q)^2}$

$= \sqrt{p^2+q^2}$

Slope $AC: 0$

$AB: \frac{q}{p}$

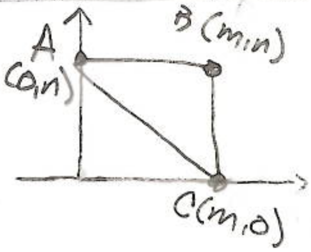
$BC: \frac{q-0}{2p-p} = \frac{q}{p}$

mdpt $AC: (p, 0)$

$AB: \left(\frac{p}{2}, \frac{q}{2}\right)$

$BC: \left(\frac{3p}{2}, \frac{q}{2}\right)$

4) $A(0,n), B(m,n), C(m,0)$



Length $AB = m$

$BC = n$

$AC = \sqrt{m^2+n^2}$

Slope $AB: 0$

BC: undefined

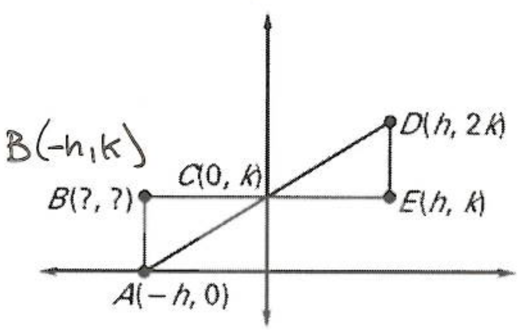
$AC: \frac{n}{-m}$

mdpt $AB: \left(\frac{m}{2}, n\right)$

$BC: \left(m, \frac{n}{2}\right)$

$AC: \left(\frac{m}{2}, \frac{n}{2}\right)$

5) First, find the coordinates of point B. Then, show $\Delta ABC \cong \Delta DEC$. Hint: Show SSS congruence is true. or SAS



Distance

$BC = \sqrt{(k-k)^2+(0-h)^2}$ $\quad EC = \sqrt{(h-0)^2+(k-k)^2}$

$BC \sqrt{h^2}$ $\quad EC = \sqrt{h^2}$

so $\boxed{\overline{BC} \cong \overline{EC}}$

$AC = \sqrt{(-h-0)^2+(0-k)^2}$ $\quad DC = \sqrt{(h-0)^2+(2k-k)^2}$

$\sqrt{(-h)^2+(-k)^2}$ $\quad DC = \sqrt{h^2+k^2}$

$AC = \sqrt{h^2+k^2}$ $\quad \boxed{\overline{AC} \cong \overline{DC}}$

$\angle BCA \cong \angle DCE$ by vertical $\angle$'s

so $\Delta ABC \cong \Delta DEC$ by SAS