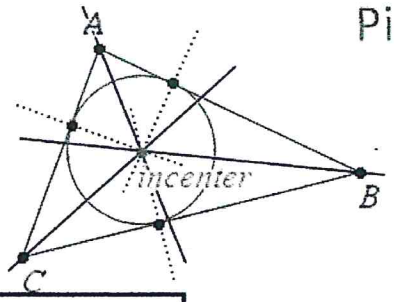
Incenter

Special Segment

Angle Bisector:

Picture

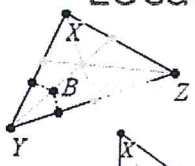


Purpose

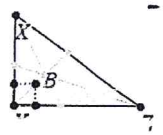
every point on an angle bisector is equidistant from the two sides of the angle

Location

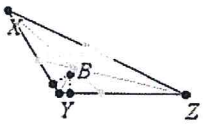
Acute:



Right:



Obtuse:

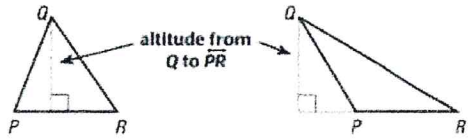


Orthocenter

Special Segment

Altitude:

Picture

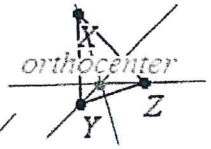


Purpose

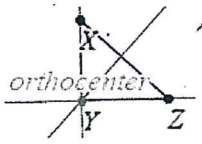
None - at least that we know now. Some aspects of math are just there for the pure beauty of it. Maybe you can research and find something yourself?!

Location

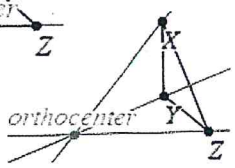
Acute:



Right:

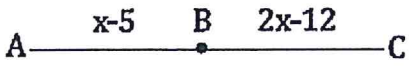


Obtuse:

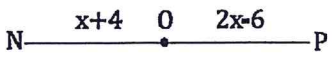


1. H is the midpoint of $\overline{GI}$. What is the value of x?

2. B is the midpoint of $\overline{AC}$. What is the value of AB?



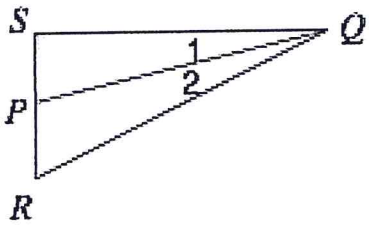
3. O is the midpoint of $\overline{NP}$. What is the value of NP?



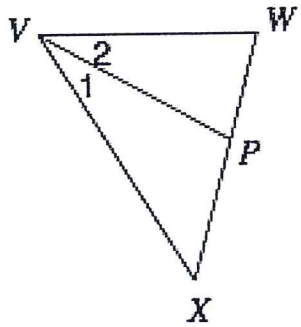
4. H is the midpoint of $\overline{GI}$. What is the value of x?

5. E is the midpoint of $\overline{DF}$, DE=6x+1, and EF=7x-4. What are the values of DE, EF, and DF?

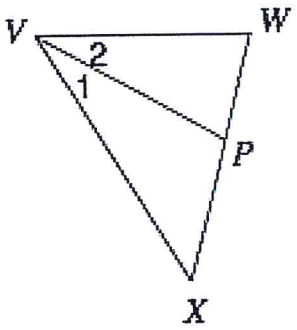
1. Given: $\overline{QP}$ bisects ∠SQR. m∠2=13°. What is m∠SQR?



2. Given: $\overline{VP}$ bisects ∠XVW. m∠1=(4x+5)° and m∠2=(5x–2)°. What is the value of x?



3. Given: $\overline{VP}$ bisects ∠XVW. m∠2=(1+28x)° and m∠XVW=(59x–1)°. What is the value of x?

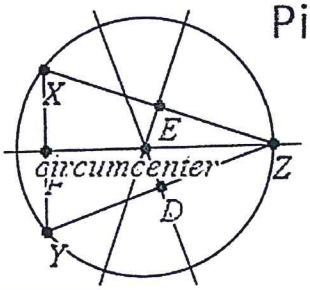


8. Complete the four-square that summarizes information about the circumcenter.

Special Segment

Perpendicular Bisector:

Picture



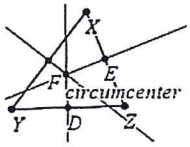
Circumcenter

Purpose

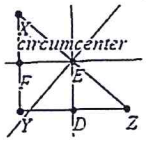
to determine the distance from the center of the circle to the vertices (along the radius of the circle)

Location

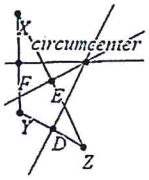
Acute:



Right:

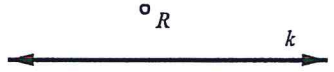
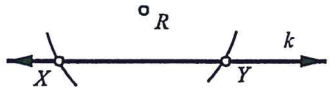
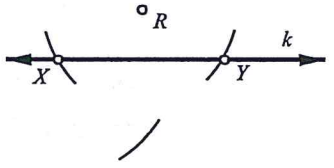
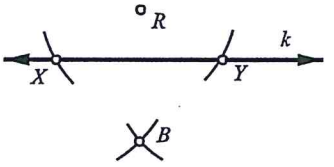
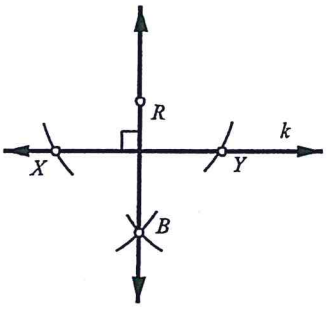


Obtuse:

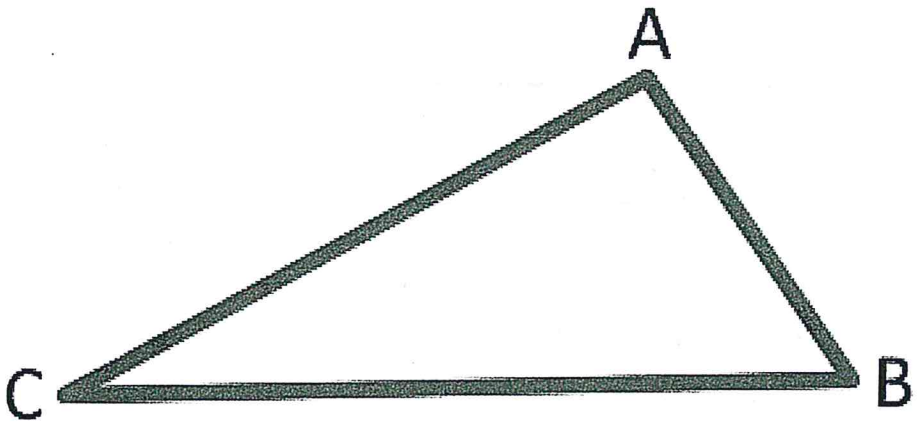


2D Special Segments Name_____

Given point R, <u>not</u> on line k, construct a line through R, perpendicular to k.

1. Begin with point line *k* and point *R*, not on the line.	
2. Place the compass on point *R*. Using an arbitrary radius, draw arcs intersecting line *k* at two points. Label the intersection points *X* and *Y*.	
3. Place the compass at point *X*. Adjust the compass radius so that it is more than (½)*XY*. Draw an arc as shown here.	
4. Without changing the compass radius, place the compass on point *Y*. Draw an arc intersecting the previously drawn arc. Label the intersection point *B*.	
5. Use the straightedge to draw line *RB*. Line *RB* is perpendicular to line *k*.	

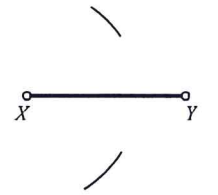
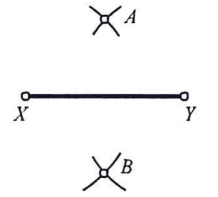
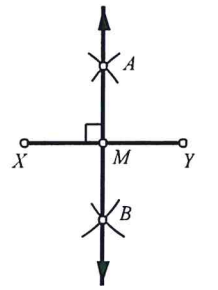
Construct the altitude in ΔABC from vertex A.



What segments, angles, and triangles are congruent in the construction?

Placing a Fire Hydrant Name_____

Construct the perpendicular bisector of a line segment. Or, construct the midpoint of a line segment.

1. Begin with line segment *XY*.	
2. Place the compass at point *X*. Adjust the compass radius so that it is more than (½)*XY*. Draw two arcs as shown here.	
3. Without changing the compass radius, place the compass on point *Y*. Draw two arcs intersecting the previously drawn arcs. Label the intersection points *A* and *B*.	
4. Using the straightedge, draw line *AB*. Label the intersection point *M*. Point *M* is the midpoint of line segment *XY*, and line *AB* is perpendicular to line segment *XY*.	

What segments, angles, and triangles are congruent in the construction?