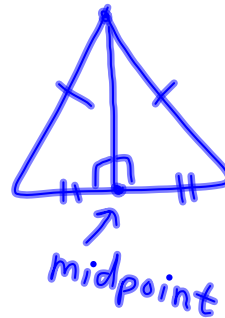


## Bell Work

What do you know about perpendicular bisectors? Be specific, use pictures if necessary

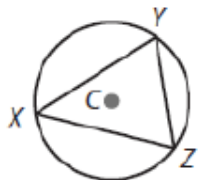
- Intersect at  $90^\circ$
- Create Vertical Angles
- Can make  $2 \cong \Delta$
- Splits into 2 equal parts



## 8.1 Perpendicular Bisectors of Triangles

**Circumscribed circle(circumcircle)**- every vertex of the polygon lies on the circle

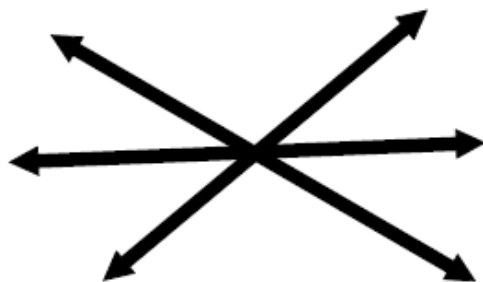
**Circumcenter**-the point of concurrency of the three perpendicular bisectors of a triangle



In the figure, circle  $C$  is circumscribed about  $\triangle XYZ$ . Circle  $C$  is called the circumcircle of the triangle.

**Concurrent**- three or more lines that intersect at one point

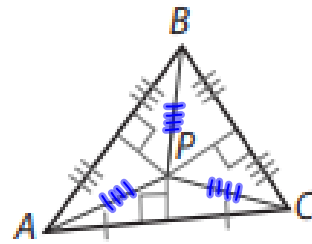
**Point of concurrency**- a point where three or more lines coincide



## Circumcenter Theorem

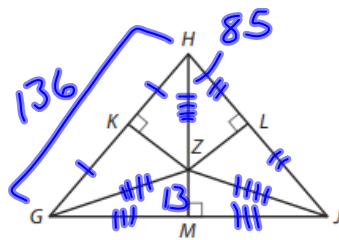
The perpendicular bisectors of the sides of a triangle intersect at a point that is equidistant from the vertices of the triangle.

$$PA = PB = PC$$



Tear out pages 361-364

**Example 2**  $\overline{KZ}$ ,  $\overline{LZ}$ , and  $\overline{MZ}$  are the perpendicular bisectors of  $\triangle GHJ$ . Use the given information to find the length of each segment. Note that the figure is not drawn to scale.



(A) Given:  $ZM = 7$ ,  $ZJ = 25$ ,  $HK = 20$

Find:  $ZH$  and  $HG$

$$\begin{aligned} ZH &= 25 \\ HG &= 40 \end{aligned}$$

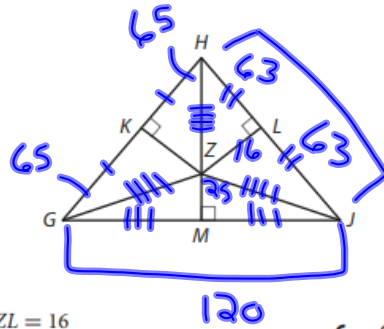
(B) Given:  $ZH = 85$ ,  $MZ = 13$ ,  $HG = 136$

Find:  $KG$  and  $ZJ$

$$\begin{aligned} KG &= \frac{136}{2} = 68 \\ ZJ &= 85 \end{aligned}$$

**Your Turn**

$\overline{KZ}$ ,  $\overline{LZ}$ , and  $\overline{MZ}$  are the perpendicular bisectors of  $\triangle GHJ$ . Copy the sketch and label the given information. Use that information to find the length of each segment. Note that the figure is not drawn to scale.



5. Given:  $ZG = 65$ ,  $HL = 63$ ,  $ZL = 16$   
Find:  $HJ$  and  $ZJ$

$HJ = 126$   
 $ZJ = 65$

6. Given:  $ZM = 25$ ,  $ZH = 65$ ,  $GJ = 120$   
Find:  $GM$  and  $ZG$

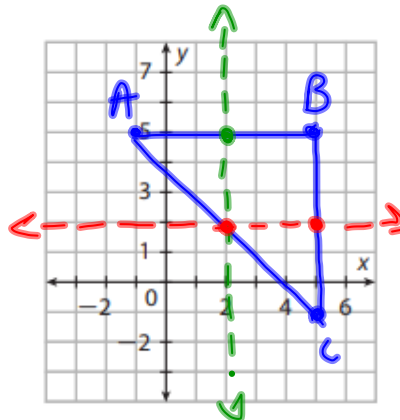
$GM = 60$   
 $ZG = 65$

**Explain 3 Finding a Circumcenter on a Coordinate Plane**

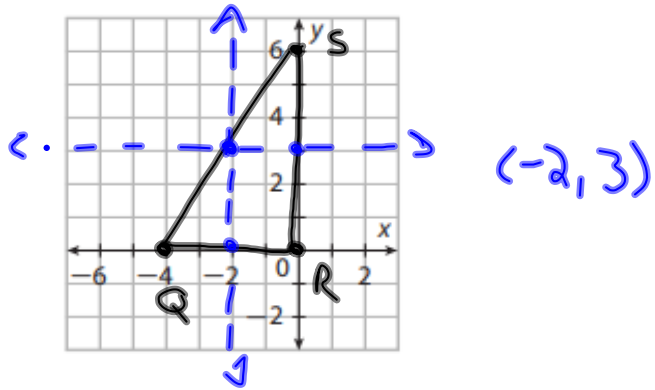
Given the vertices of a triangle, you can graph the triangle and use the graph to find the circumcenter of the triangle.

- B  $A(-1, 5)$ ,  $B(5, 5)$ ,  $C(5, -1)$

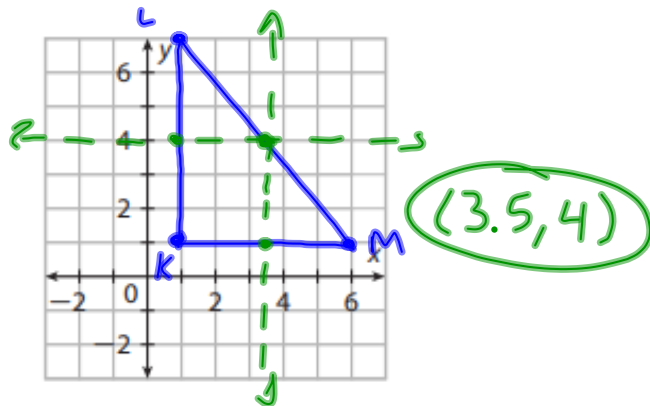
$(2, 2)$



8.  $Q(-4, 0), R(0, 0), S(0, 6)$



9.  $K(1, 1), L(1, 7), M(6, 1)$



Homework

Pg. 366 #5-7

Pg. 368 #11-12

Pg. 369 #15-16