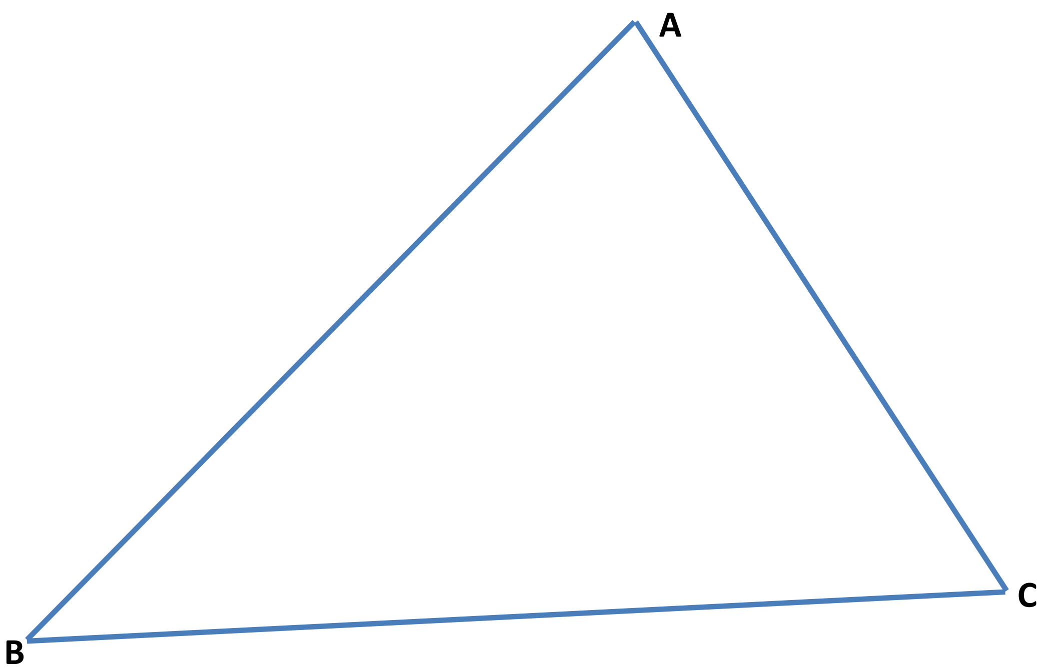
Geometry: **Points of Triangle Concurrency** Name:______________________ Per:_____ Date:_________

Circumcenter - $\perp$ bisectors

Circumcenter Theorem:

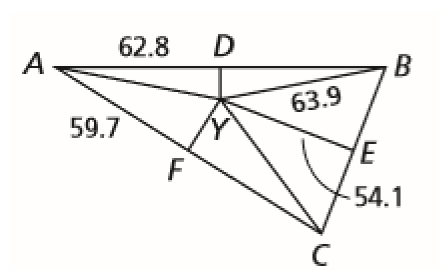
1. Construct the 3 **perpendicular bisectors** of the sides of the triangle.
2. Label the point of concurrency P. Draw in lines PA, PB, and PC.
   a. Measure each distance in centimeters:

      PA = _________ PB = _________ PC = _________
3. Compare the distances you measured in part 2a. Use this to come up with the Circumcenter Theorem.
4. Construct the circumscribed circle using point P as the center. The center of the circumscribed circle is on the circumcenter and each vertex of the triangle should fall on the circle.
5. Draw in any congruent marks and $\perp$ marks to show that you have drawn the perpendicular bisectors.

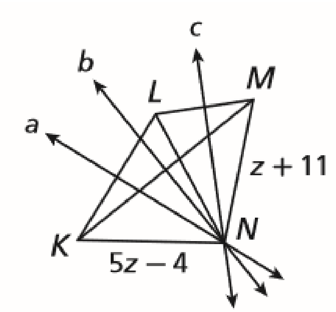


Solving

1. $\overline{DY}$, $\overline{EY}$, and $\overline{FY}$ are the perpendicular bisectors of $\triangle ABC$. Find each length.

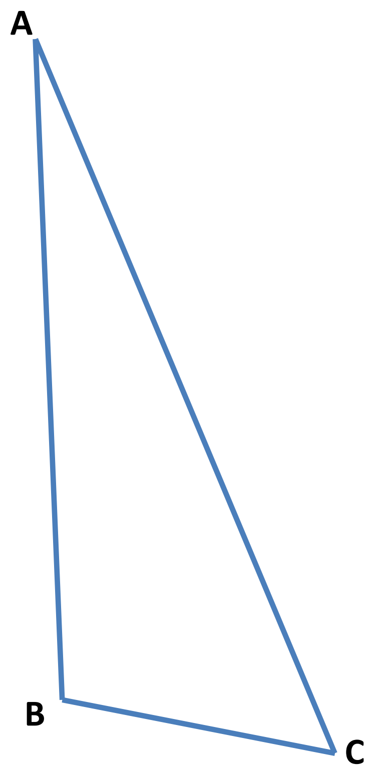


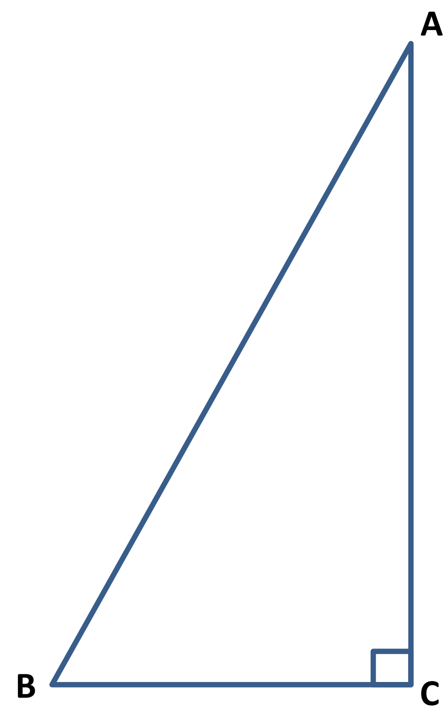
2. Lines a, b, and c are perpendicular bisectors of ΔKLM. Find the length of segment LN.



Homework: Please complete this side after doing all the other classwork problems.

Now find the circumcenter and draw the circumscribed circle for the right triangle and obtuse triangle below.





What is different about the circumcenter in these triangles compared to the acute triangle?

Make a conjecture about the location of the circumcenter of a triangle when the triangle is:

- acute
- obtuse
- right

Explain how you know where to draw the circumscribed circle of each triangle.