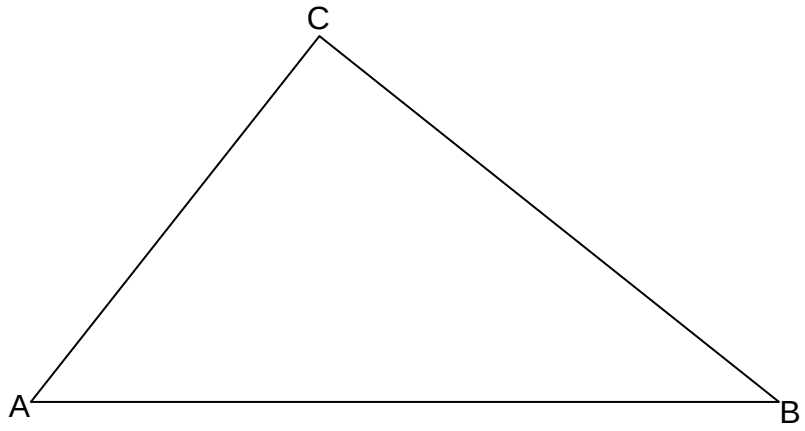
**Explore 1.7 Constructions**
**Pre-AP Geometry**

Name _____
Period _____ Date _____

Construct Perpendicular Bisector

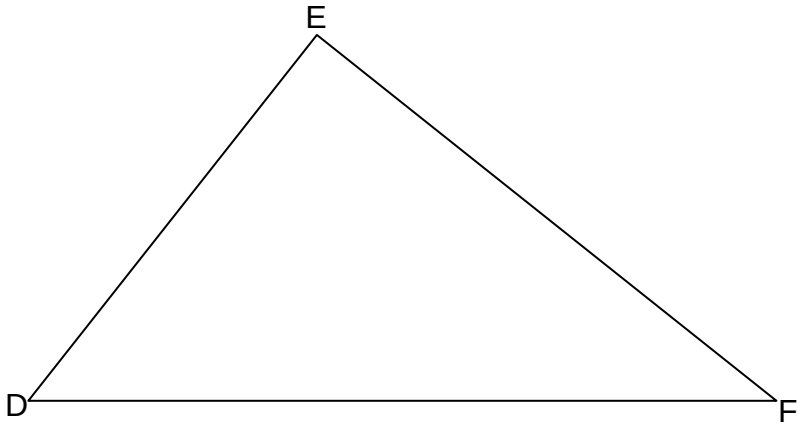
1. Place the compass on point A. Set the compass greater than half the length of $\overline{AB}$. Draw an arc.
2. Without changing the compass width, repeat the process from point B. The two arcs should intersect. Label these points S and T.
3. Using a straight edge, draw a line between points S and T.
4. Complete the Conditional Statement.




If a point is on the perpendicular bisector of a segment, then_____

Construct Angle Bisector

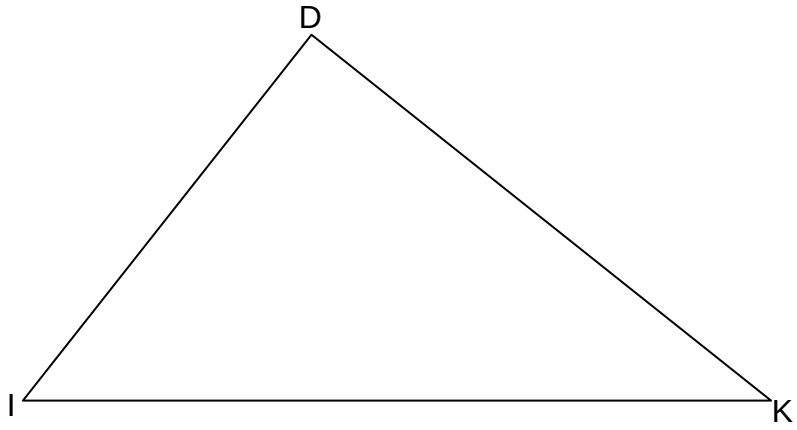
5. Place the compass on vertex D. Draw an arc that intersects the other two sides of the angle. Label the intersections X and Y.
6. Place the compass point at X and draw another arc.
7. Without changing the compass setting, place the compass point at Y and draw another arc. Label the intersection of the arcs point B.
8. Using a straight edge, draw ray $\overrightarrow{DB}$. Pick any point on $\overrightarrow{DB}$ in the triangle and draw two perpendicular segments to sides $\overline{DE}$ and $\overline{DF}$. Measure the length of these segments in centimeters.
9. Complete the Conditional Statement.




If a point is on the bisector of an angle, then_____

Construct a Median

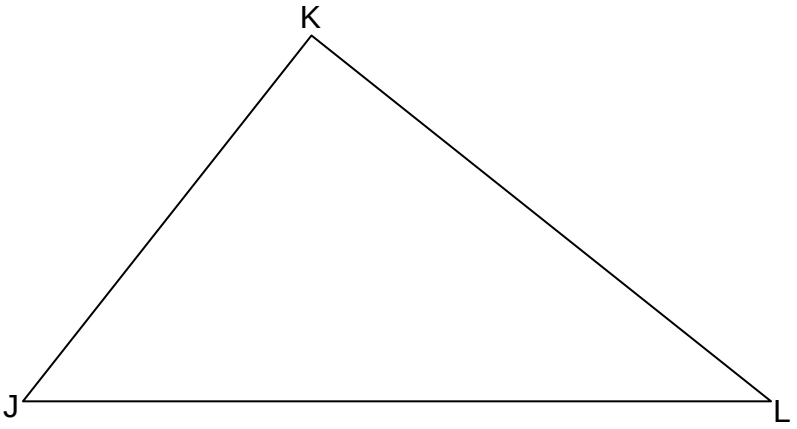
10. Construct the midpoint of $\overline{IK}$ (see steps 1 – 4). Label the midpoint of $\overline{IK}$ point M.
11. Using a straight edge, draw a line segment connecting D and M. **This is a Median.**
12. Describe the properties of a median of a triangle.




Properties of Median:_____

Construct an Altitude

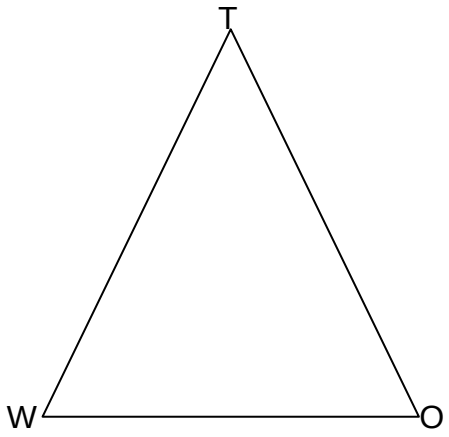
13. Place the compass on point J. Set the compass equal to the distance to K. Draw an arc.
14. Place the compass on the point L. Set the compass equal to the distance to K. Draw an arc. The two arcs should intersect. Label these points M and P.
15. Using a straight edge, draw a line between points M and P. **This is an Altitude**.
16. Describe the properties of an altitude of a triangle.




Properties of Altitude:_____

Isosceles Triangle

$\Delta$WTO is an isosceles triangle with vertex T. Make a conjecture about the perpendicular bisector, angle bisector and a median of an isosceles triangle.




Conjecture _____