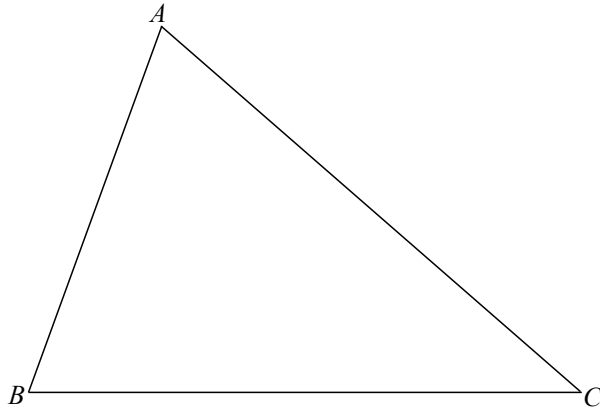**Geometry CC 1.7 Points of concurrency**

1. Construct the perpendicular bisectors for $\overline{AC}$, $\overline{BC}$, and $\overline{AB}$ in the triangle below. The point of concurrency is called the **circumcenter**. Label the point of concurrency **R** and draw a circle with center **R** and a radius of **RA**.

What observations can you make?

2. Construct angle bisectors for $\angle A$, $\angle B$ and $\angle C$ on the triangle below. The point of concurrency is called the **incenter.** Label the incenter **I** and set your compass to length from **I** to $\overline{BC}$. Using this compass setting, draw a circle with center **I**.
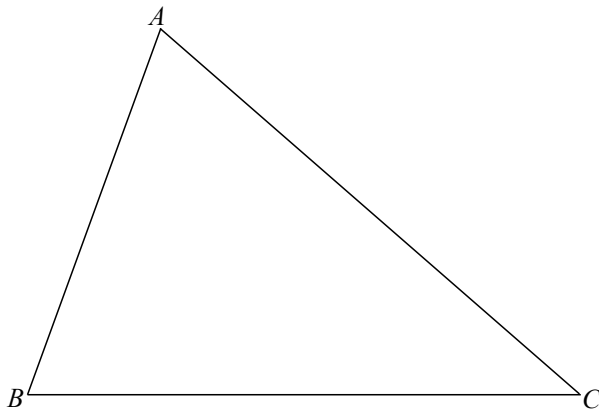
What observations can you make?

3. Construct medians drawn from $\angle A$ to $\overline{BC}$, from $\angle B$ to $\overline{AC}$, and from $\angle C$ to $\overline{AB}$ on the triangle below. The point of concurrency is called the **centroid.**

Hint: median is a line segment drawn from the vertex of a triangle to the midpoint of the opposite side.
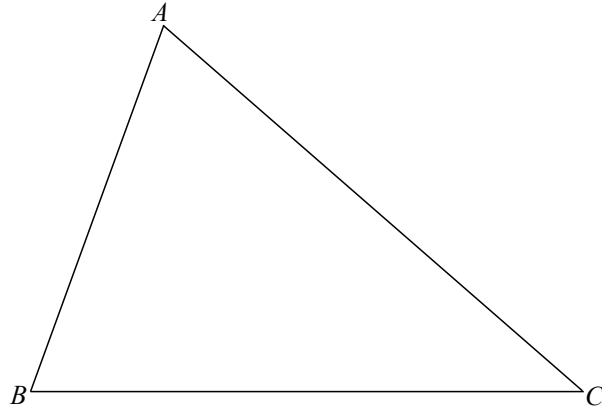
A centroid divides a median into two segments that are in a ratio of 2:1. Use your compass to prove or disprove this statement.

4. Construct the altitude from $\angle A$ to $\overline{BC}$, from $\angle B$ to $\overline{AC}$, and from $\angle C$ to $\overline{AB}$ on the triangle below. The point of concurrency is called the **orthocenter.**

Hint: the altitude is perpendicular to the side to which it's drawn - think of constructing a line perpendicular to $\overline{BC}$ and passing through point A