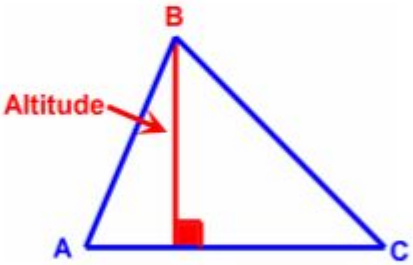
Important Lines for Triangles

Altitude of a Triangle

The **altitude** is the **height** of a triangle.

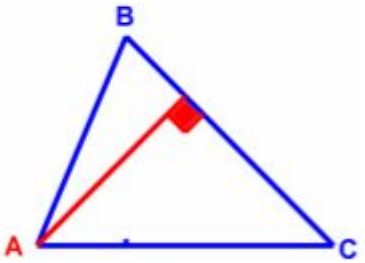
For example, in ΔABC below, we can make an **altitude** from **vertex B** to $\overline{AC}$. Notice that the **altitude** is **perpendicular** to $\overline{AC}$.



Always use your set square to make an altitude.

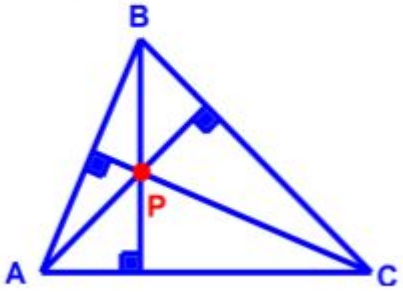
We can make an altitude from any of the three vertices of ΔABC

In the same triangle, the altitude from vertex A would look like this:



Orthocentre of a Triangle

If we draw an altitude from all three vertices, the point at which the three altitudes meet is called the **orthocenter**.

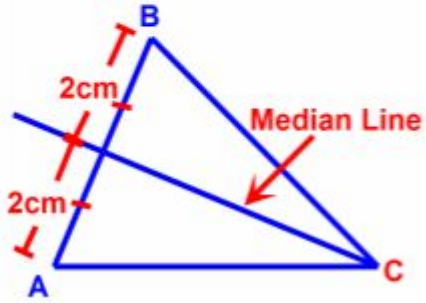


Point P is the **orthocenter** of ΔABC.

Median Line of a Triangle

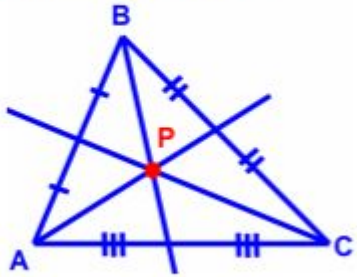
A **median** is a line from a vertex to the **midpoint** of the side that is opposite from that vertex.

For example, in ΔABC below, we can make a **median** from **vertex C** to $\overline{AB}$.



Center of Gravity

If we draw a median from all three vertices, the point at which the three medians meet is called the **center of gravity**.

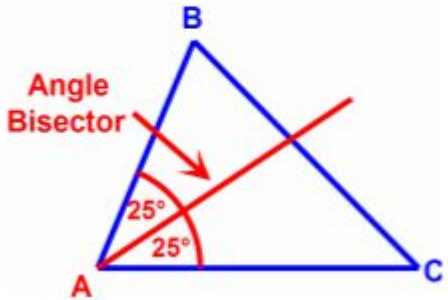


Point P is the **center of gravity** of ΔABC.

Angle Bisector

Remember that an **angle bisector splits an angle into two equal angles**.

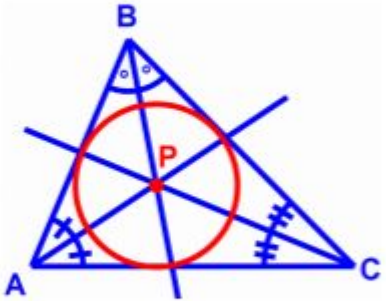
For example, the angle bisector at vertex A in ΔABC looks like this:



Inscribed Circle

If we draw the angle bisector from all three vertices, the point at which the three angle bisectors meet is the **center** where we can draw an **inscribed circle** in ΔABC

An inscribed circle is a circle inside the triangle that touches the inside of all three edges.

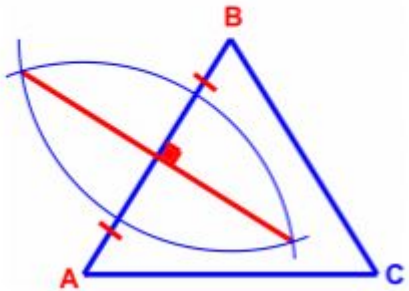


Point P is the center of the inscribed circle in

Use a compass to draw the circle.

Right Bisector

In ΔABC, the **right bisector** of $\overline{AB}$ looks like this:



Circumscribed Circle

If we draw the right bisectors of all three sides, the point at which the three right bisectors meet is the center of where we can draw a circumscribed circle around

A circumscribed circle is a circle outside the triangle that passes through all three vertices.

A circumscribed circle looks like this: