

5-1 / 5-2

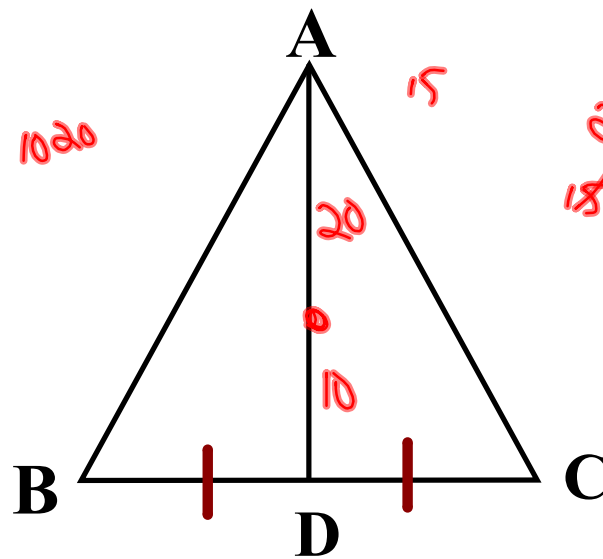
Special Segments in Triangles

4 Types

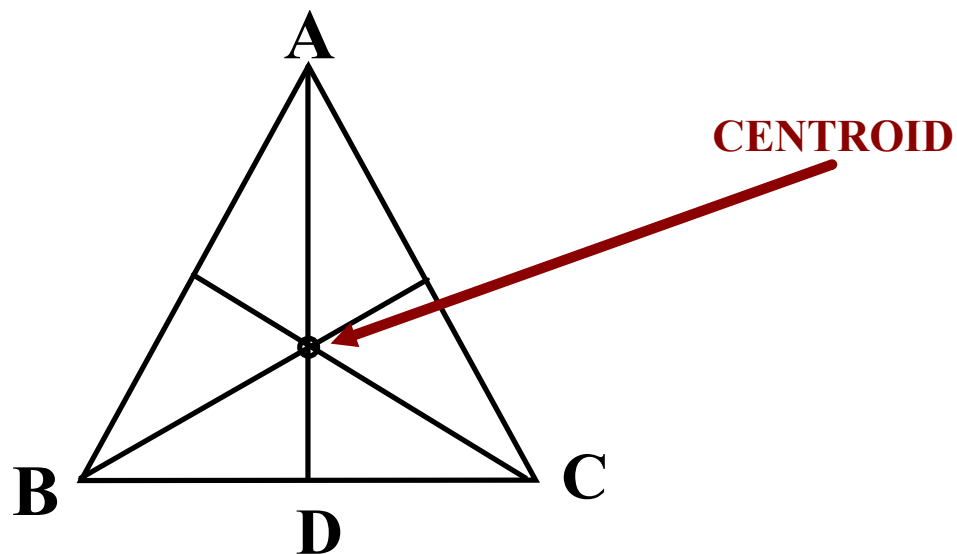
- *Median*
- *Angle Bisector*
- *Altitude*
- *Perpendicular Bisector*

Median

- A segment whose endpoints are a vertex of a triangle and the midpoint of the side opposite the vertex.

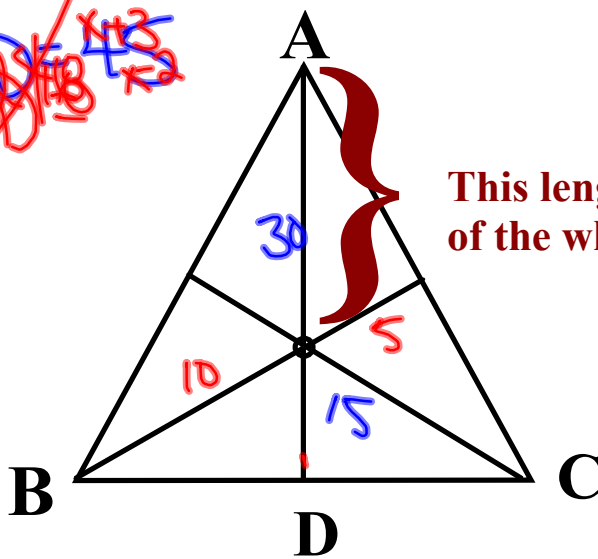


- A CENTROID is a common point in which all medians within the same triangle meet.



- The **CENTROID** is located $\frac{2}{3}$ ds of the distance from the vertex to midpoint.

~~AD = x+3~~
~~AD = 15~~
~~AD = 10~~
~~AD = 5~~
~~AD = 2~~

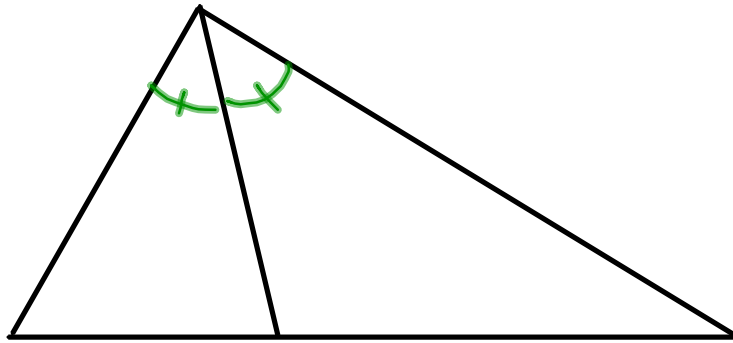


This length is $\frac{2}{3}$ ds the length of the whole Median.

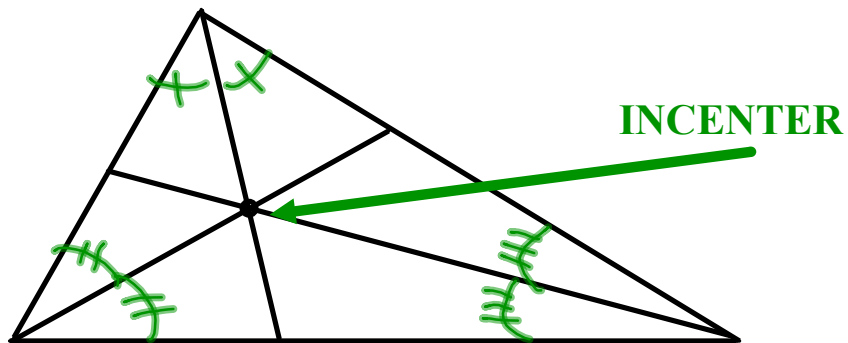
$$2(x+3) = x-2$$

Angle Bisector

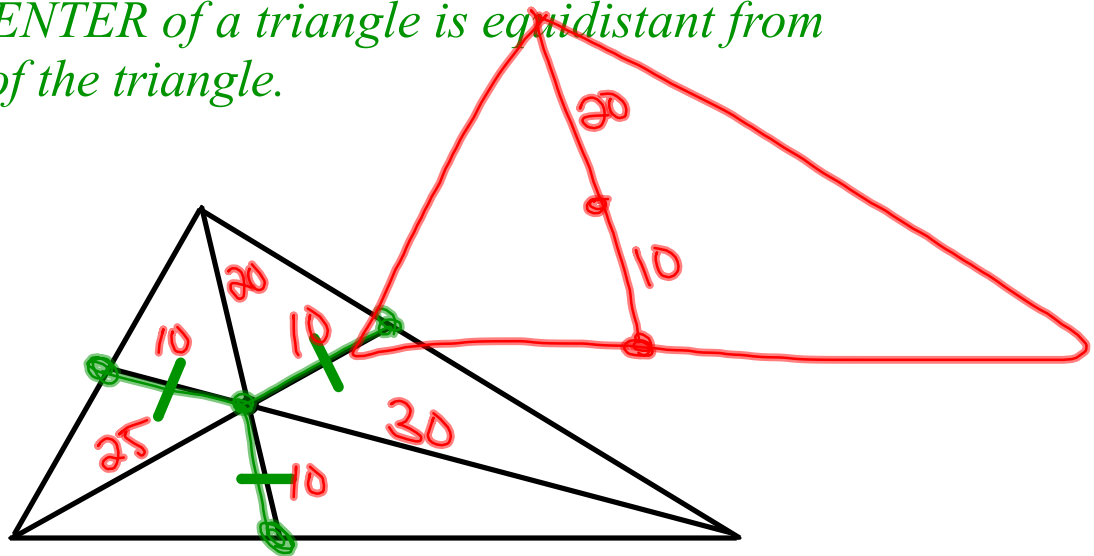
- A segment, line, or ray that is drawn from the vertex to the side opposite the vertex, cutting the vertex angle into two equal smaller angles.



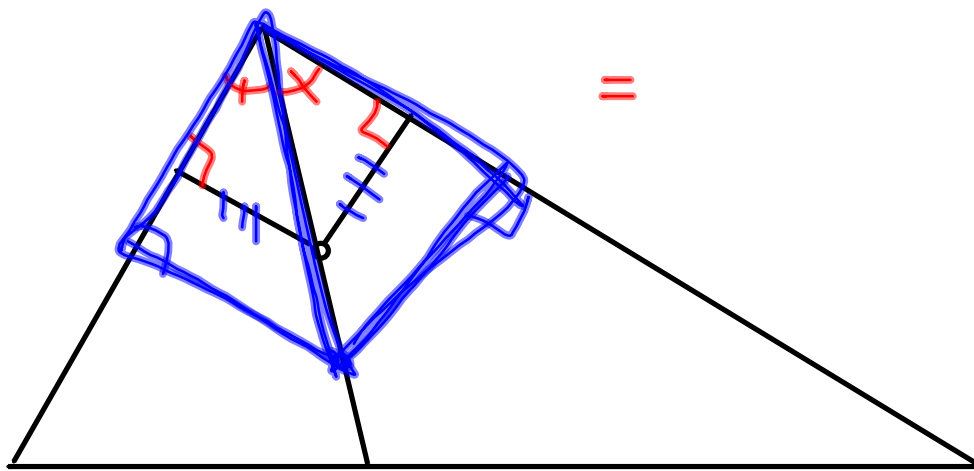
- The point at which all Angle Bisectors meet within a triangle is called the *INCENTER*.



- The *INCENTER* of a triangle is equidistant from each side of the triangle.



- *ANY point on an Angle Bisector is equidistant from the sides of the angle.*

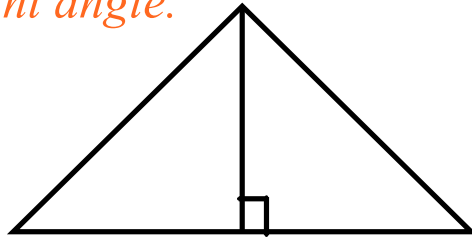
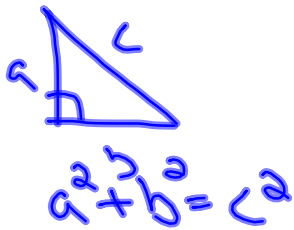


(Remember, any line drawn to represent "distance" will create a right angle)

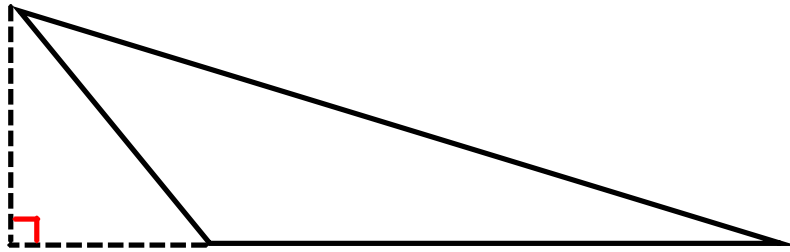
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ALTITUDE

- A segment that connects one vertex to the side opposite that vertex creating a right angle.

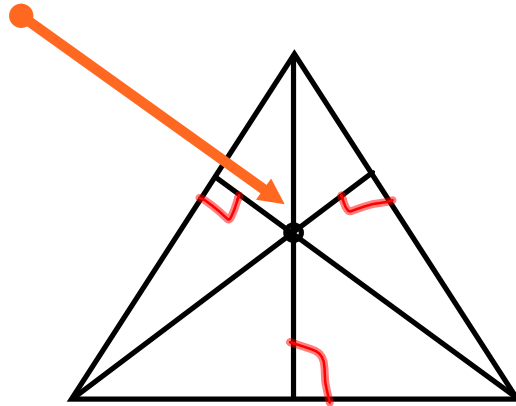


- In an obtuse triangle, the Altitude can be drawn outside the triangle.



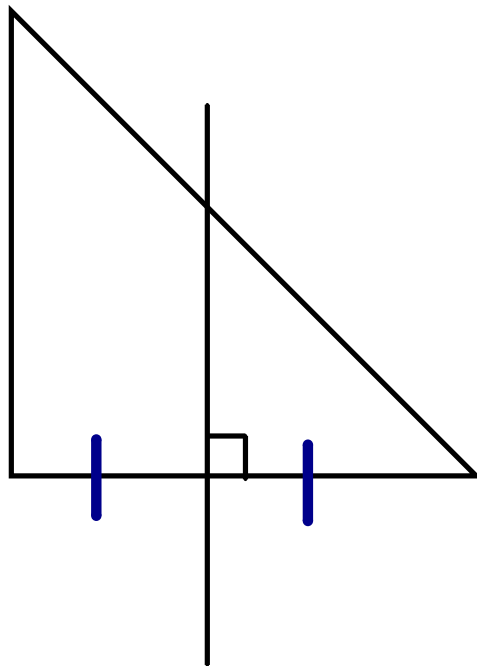
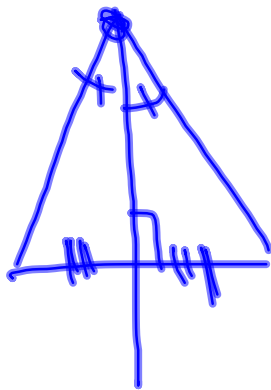
- If three altitudes are drawn within the same triangle, the point at which they all intersect is called the **ORTHOCENTER**.

ORTHOCENTER

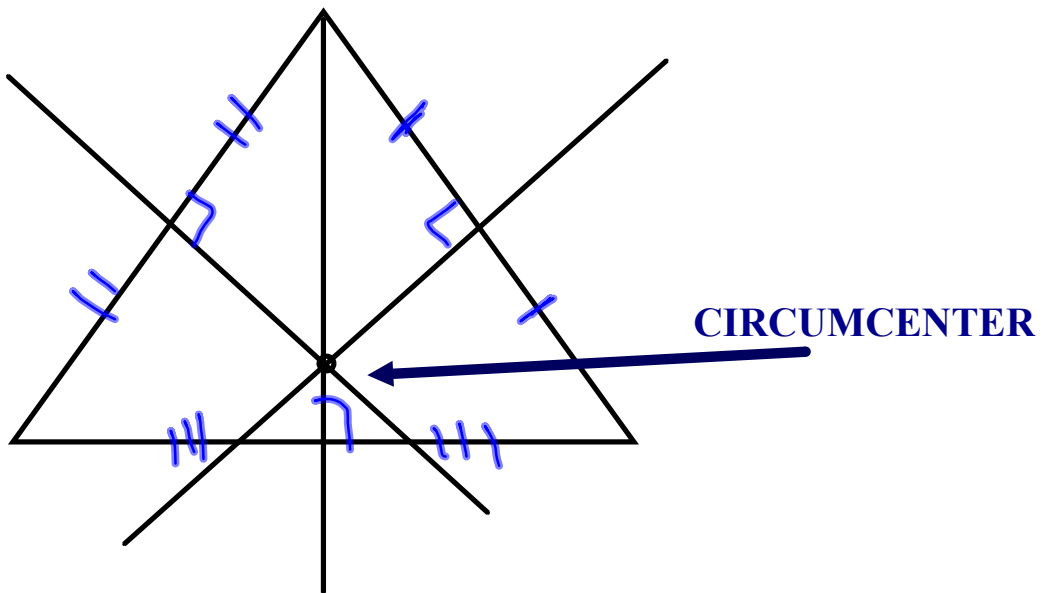


PERPENDICULAR BISECTOR

- Any line, segment, or ray that passes through the midpoint of a side creating a right angle.



- The point at which three perpendicular bisectors meet is called the **CIRCUMCENTER**.



- The *CIRCUMCENTER* of a triangle is equidistant from the vertices of the triangle.

