

I- Remarkable lines:

Line	Definition	Graph	How to draw?
Median	is a semi straight line issued from the vertex of a triangle and cuts the opposite side at its midpoint		
Altitude (height)	is a semi straight line issued from the vertex of a triangle and is perpendicular to the opposite side		
Bisector	is a semi straight line issued from the vertex of a triangle and cuts the included angles into two equal adjacent parts.		
Perpendicular bisector	is a straight line that is perpendicular to a segment at its midpoint		

a. Property of an angular bisector:

<p>IF $\left\{ \begin{array}{l} [OM) \text{ bisector of } \angle xOy, \\ A \text{ belongs } [OM), \\ [AB) \perp [Ox), \\ \& [AC) \perp [Oy) \end{array} \right\}$ then, $AB = AC$.</p>	
<p>Conclusion: Any point on the bisector of an angle is equidistant from its arms.</p>	

b. Property of a perpendicular bisector:

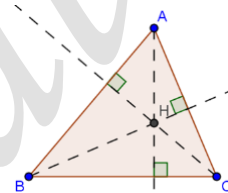
<p>Conclusion: Any point on the perpendicular bisector of a segment is equidistant from its extremities.</p>	
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II- Remarkable points in a triangle:

a- **Center of gravity or centroid:** is the intersection of **medians** in a triangle.

Properties	Geometric figure	Uses
<p>The centroid divides each median in the ratio $\frac{2}{3}$ starting from the vertex That is; $AG = (2/3) AA'$ $A'G = (1/3) AA'$ $AG = 2 A'G$</p>		<p>Center of mass is a point at which the mass of an object is concentrated.</p>

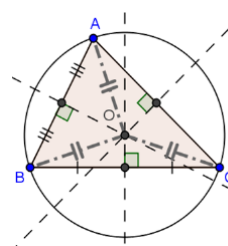
b- **Orthocenter:** is the intersection point of the altitudes in a triangle.



c- **Circumcenter or center of the circumscribed circle:** is the intersection point of the perpendicular bisector.

- ✓ **Uses:** The **circumcenter** is a point at which we can plot the center of the circle that passes through the three vertices of a given triangle.

✓



d- **Incenter or the center of the inscribed circle:** is the intersection point of the bisectors of the angles in a triangle.

- ✓ **Uses:** The **incenter** is a point at which we can plot the center of the circle that remains tangent to all three sides of the given triangle.

