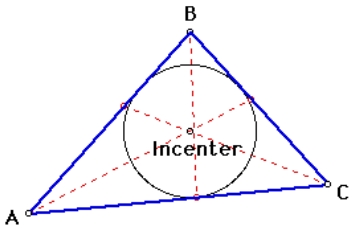
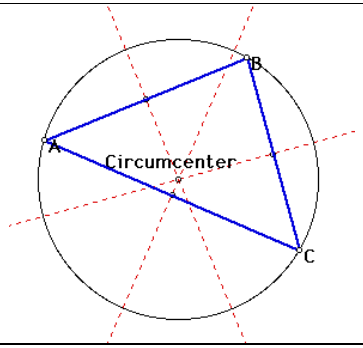
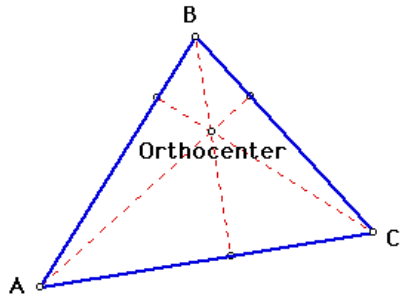
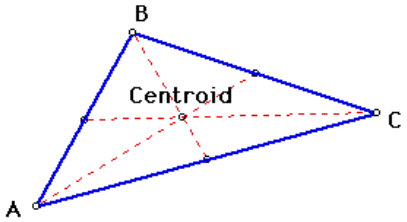
Points of Concurrency in Triangles

Point of Concurrency	*Picture*	*Formed By?*	*Special Properties*
incenter		Angle bisectors of the vertex.	The incenter is the center of the inscribed circle of the triangle, the circle that has exactly one point on each side of the triangle. The incenter is equidistant from the sides of the triangle. The incenter is ALWAYS located inside of the triangle.
circumcenter		Perpendicular bisectors of the sides.	The circumcenter can be inside the triangle, on the triangle, or outside the triangle. The circumcenter is the center of the circumscribed circle, the circle that included all three vertices of the triangle. The circumcenter is equidistant from the vertices of the triangle.
orthocenter		Altitudes of the triangle. Altitudes are the lines that connect each vertex to the opposite side and are perpendicular to the opposite side.	A line called the Euler Line connects the orthocenter, the circumcenter, and the centroid of the same triangle. The orthocenter can be located inside the triangle, on the triangle, or outside of the triangle.
centroid		Medians of the triangle. Medians are the lines that connect each vertex to the midpoint of the opposite side.	This point is the center of mass for the triangle. In other words, you could balance the triangle using this point. The centroid divides the medians into segments with a 2:1 ratio. The areas of all 6 sub-triangles are equal. The centroid is ALWAYS located inside the triangle.