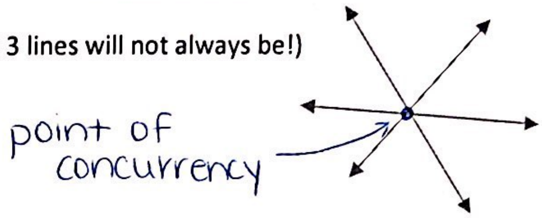
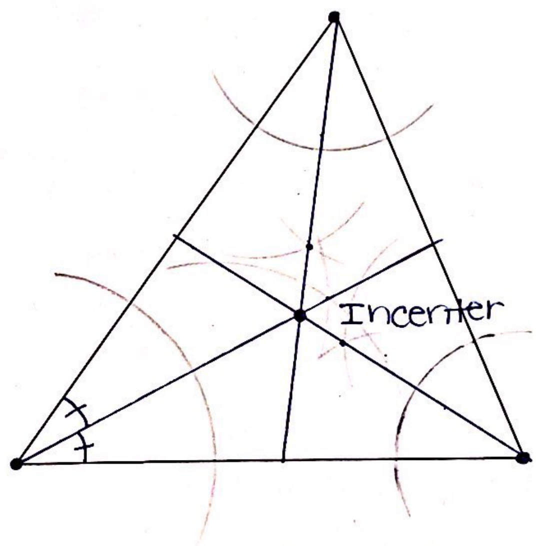
H.Geometry – Chapter 3 – Definition Sheet

Section 3.8	
Definition of concurrent lines	Lines (or segments or rays) that intersect in a single point. (Two lines are ALWAYS concurrent, but 3 lines will not always be!) 
Angle Bisector Concurrency Conjecture	The three angle bisectors of a triangle are concurrent. 
Incenter of a triangle	The point of concurrency of the ∠ bisectors of a triangle

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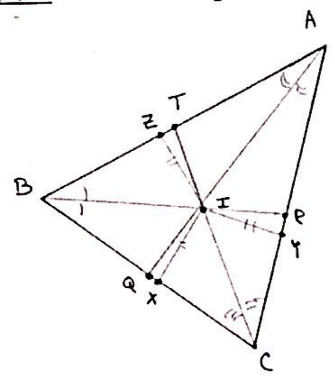
$\perp$ bisectors **Concurrency Conjecture**	The three $\perp$ bisectors of a triangle are concurrent.
circumcenter **of a triangle**	The point of concurrency of the $\perp$ bisectors of a triangle.
Altitude **Concurrency Conjecture**	The three altitudes of a triangle are concurrent.
Orthocenter **of a triangle**	The point of concurrency of the altitudes of a triangle.
Incenter **Conjecture**	The incenter of a triangle is equidistant from the triangles 3 sides. (recall: angle bisector conjecture in lesson 3.4) **COROLLARY:** The *incenter* is the center of the triangles inscribed circle (touches each side in exactly one point.) 
Circumcenter **Conjecture**	The circumcenter of a triangle is equidistant from the triangles 3 vertices (recall: perpendicular bisector conjecture in lesson 3.2) **COROLLARY:** The *circumcenter* is the center of the triangles circumscribed circle (passes through each vertex of the triangle.)