

Centers of Triangles

Geometry, Centers of Triangles

Perpendicular bisector- A segment, line, ray or plane that is perpendicular (90 degrees) to a segment at its midpoint. If a point is on the perpendicular bisector of a segment, then it is equidistant from the endpoints of the segment.

Circumcenter- The point of concurrency of the 3 perpendicular bisectors of a triangle. The circumcenter is equidistant from the vertices of a triangle. The circumcenter will lie inside an acute triangle, at the midpoint of the hypotenuse of a right triangle, or outside an obtuse triangle. The circumcenter can be used to construct a circumscribed circle around the triangle, intersecting all 3 of the triangle's vertices.

Angle bisector- A ray that divides an angle into two adjacent congruent angles. If a point is on the bisector of an angle, then it is equidistant from the two sides of the angle. **Incenter-** The point of concurrency of the 3 angle bisectors of a triangle. The incenter of a triangle is equidistant from the sides of the triangle. The incenter can be used to construct the inscribed circle (inside the triangle, touching all 3 sides.)

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

Centroid- The point of concurrency of the 3 medians of a triangle. The centroid is two thirds of the distance from each vertex to the midpoint of the opposite side. The centroid is the center of balance of a triangle.

Altitude of a triangle- perpendicular segment from a vertex to the opposite side or to the line that contains the opposite side. An altitude can lie inside (if an acute triangle), on (if a right triangle), or outside the triangle (if an obtuse triangle). **Orthocenter-** The point of concurrency of the 3 altitudes of a triangle. The orthocenter lies inside an acute triangle, on the hypotenuse of a right triangle, or outside an obtuse triangle. **Midsegment-** line segment connecting the midpoints of 2 sides of a triangle. **Midsegment Theorem-** The segment connecting the midpoints of 2 sides of a triangle is parallel to the 3rd side and half as long. ..

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