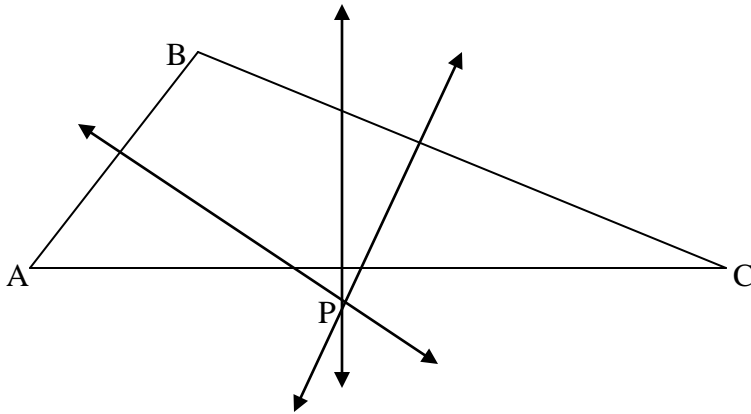


Circumcenter of a Triangle: the point where the triangle's perpendicular bisectors intersect

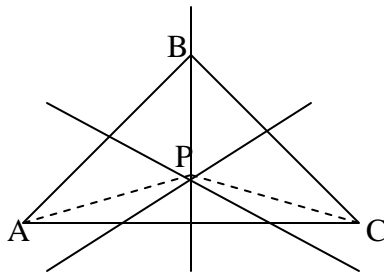
Perpendicular Bisector: a line segment that is perpendicular to another line segment at its midpoint

The perpendicular bisectors of the sides of a triangle are concurrent at a point that is equidistant from the vertices of the triangle. This point is called the circumcenter.



Note: The circumcenter of a right triangle lies on its hypotenuse

Theorem: A point is on the perpendicular bisector of a line segment if and only if it is equidistant from the endpoints of the line segment.



Since point P lies on the perpendicular bisector, then $AP = PC = BP$

Exercises:

1. The perpendicular bisectors of $\triangle ABC$ intersect at P. $AP = 5 + x$, $BP = 10$, and $CP = 2y$. Find x and y.

2. The perpendicular bisectors of $\triangle ABC$ are concurrent at P. $AP = 2x - 4$, $BP = y + 6$, $CP = 12$. Find x and y.

3. The circumcenter of $\triangle ABC$ is point P. If $AP = x + 2y$, $BP = 20$, and $CP = x + 4$, find x and y.

4. The circumcenter of $\triangle QRS$ is point Y. If $QY = 2x - 5$, $RY = -7 + 4y$, and $SY = 3x - 8$, find x and y.