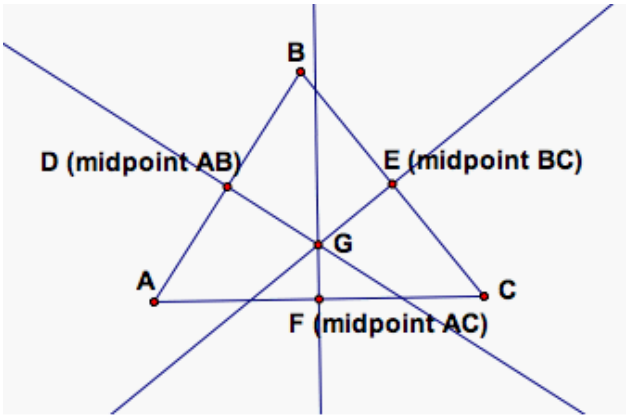
NCERT Class 9 Solutions: Triangles (Chapter 7) Exercise 7.5 – Part 1

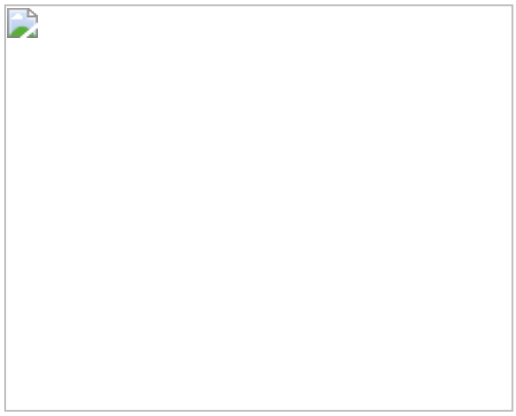
Perpendicular bisector



To find this point, you will construct three perpendicular bisectors, one for each side of the triangle. The point where all three perpendicular bisectors intersect is called the Circumcenter. Using this center point, we can draw a circle that passes through all three vertices.

1. ABC is a triangle. Locate a point the interior of $\triangle ABC$ which is equidistant from all the vertices of $\triangle ABC$

Solution:



- Draw perpendicular bisectors PQ and ₹ of sides AB and BC respectively of triangle ABC. Let PQ bisects AB at M and ₹ bisects BC at point N.
- Let PQ and ₹ intersect at point O. Join OA, OB and OC.
- Now in $\triangle$ AOM and $\triangle BOM$,

AM $= MB$ [By construction]

$\angle AMO = \angle BMO = 90°$ [By construction]

$OM = OM$ [Common]

$\therefore \triangle AOM \cong \triangle BOM$ [By SAS congruency]

$\Rightarrow OA = OB$ [By Coorresponding Parts of Congruent Triangles] ... equation (1)

- Similarly, $\triangle BON \cong \triangle CON$

$\Rightarrow OB = OC$ [By Corresponding Parts of Congruent Triangles.] ... equation (2)

- From eq. (1) and (2) ,

$$OA = OB = OC$$

- Hence O, the point of intersection of perpendicular bisectors of any two sides of $\triangle ABC$ equidistant from its vertices.