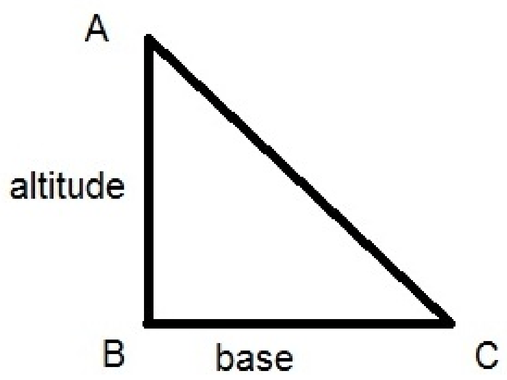
NCERT Class 9 Solutions: Triangles (Chapter 7) Exercise 7.3 – Part 3

Altitude of triangle



In geometry, an altitude of a triangle is a line segment through a vertex and perpendicular to (i.e.. forming a right angle with) a line containing the base (the opposite side of the triangle) . This line containing the opposite side is called the extended base of the altitude.

Q-4 BE and CF are two equal altitudes of a triangle ABC. Using RHS congruence rule, prove that the triangle ABC is isosceles

Solution:

Given, BE and CF are two equal altitudes.

- In ΔBEC and ΔCFB , $\angle BEC = \angle CFB = 90°$ (Altitudes) $BC = CB$ (Common) $\mathrm{BE} = CF$ (Common)
- Therefore, $\Delta BEC \cong \Delta CFB$ by RHS congruence condition.
- Now, $\angle C = \angle B$ (by Corresponding Parts of Congruent Triangles) Thus, $AB = AC$ as sides opposite to the equal angles are equal.

Q-5 ABC is an isosceles triangle with $AB = AC$. Draw $AP \perp BC$ to show that $\angle B = \angle C$.

Solution:

- Given,

  $AB = AC$

In ΔABP andΔACP, $\angle APB = \angle APC = 90°$ (AP is altitude) $AB = AC$ (Given) $AP = AP$ (Common line)

- Therefore, $\Delta ABP \cong \Delta ACP$ by Right Angle-Hypostenuse-Side congruence condition.
- Thus, $\angle B = \angle C$ (by Corresponding Parts of Congruent Triangles)