## Question

Ravi has a plane triangular plot ABC in which AB = 9m, BC = 7m and CA = 8m. A Flag is hoisted at the midpoint M of the side AC. If the top of the Flag subtends an angle 15° at the corner B of the plot, determine the height of the Flag From the ground.
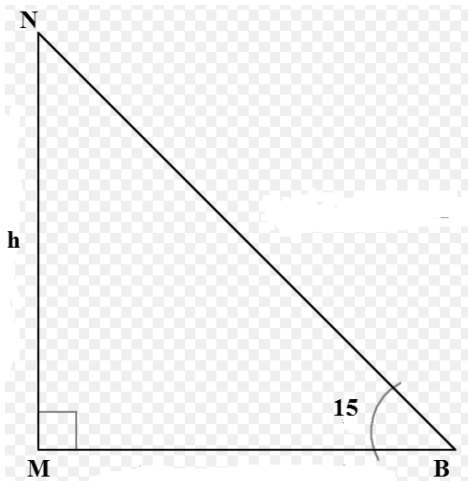
## Solution
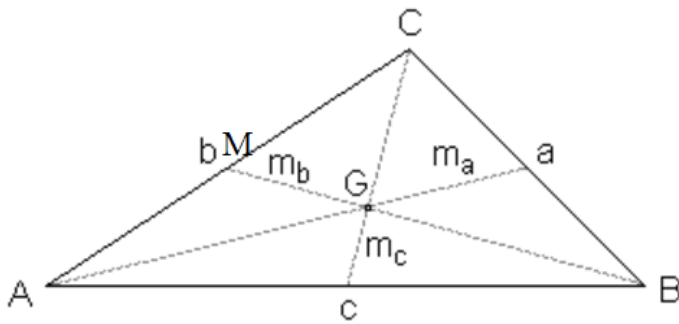


The general formula for the length of median is

$$BM = m_b = \frac{1}{2}\sqrt{2(a^2 + c^2) - b^2}$$

Given *M* is the midpoint of the side *AC*. The length of median *BM* is

$$BM = \frac{1}{2}\sqrt{2(7^2 + 9^2) - 8^2} = 7\,m.$$



Let *N* be the top of the Flag, $\angle MBN = 15°$ is given. From the right triangle *NMB* the height of the Flag from the ground is

$$h = NM = BM\tan 15° = 7 \cdot \tan 15° = 1.8756\,m.$$

**Answer: 1.8756 m.**