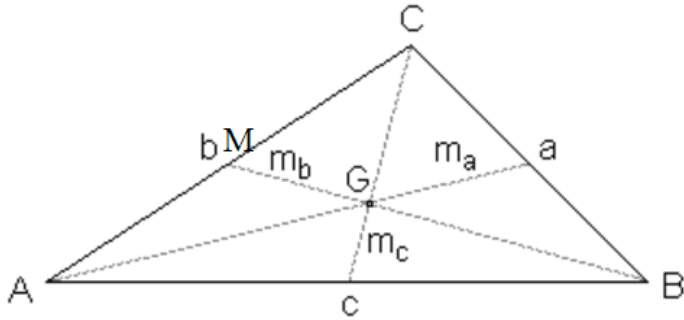


Answer on Question #57196 – Math – Trigonometry

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

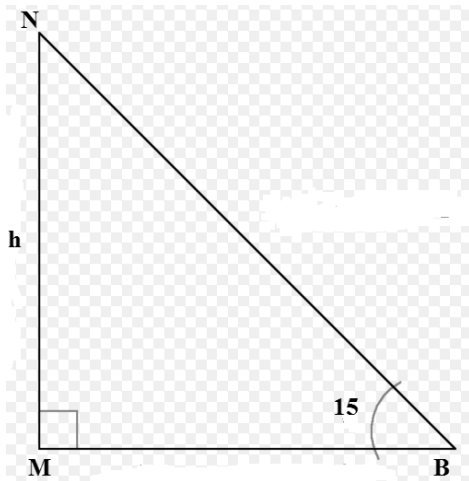


The general formula for the length of median is

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

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

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



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

$$h = NM = BM \tan 15^\circ = 7 \cdot \tan 15^\circ = 1.8756 \text{ m.}$$

Answer: 1.8756 m.