A boy aims a target at a horizontal distance of 60 m. If the muzzle speed of bullet is 600 m/s, then the height above the target which he should aim is 1) 5 cm 2) 10 cm 3) 15 cm 4) 20 cm.

Solution

The acceleration of gravity $g = 10\frac{m}{s^2}$.

The time to cover 60 m

$$t = \frac{s}{v} = \frac{60\text{ m}}{600\text{ m/s}} = 0.1\ s.$$

The downward distance moved in this time

$$h = \frac{gt^2}{2} = \frac{10\frac{m}{s^2} * (0.1\ s)^2}{2} = 0.05\ m = 5\text{ cm}.$$

Answer: 1) 5 cm.