17. An object is thrown upward from the edge of a building with a velocity of 20 m/s. Where will the object be 3s after it was thrown?

−22m

16m

22m

−16m

Solution:

The dependence of the height on time is given by

$$h(t) = v_0 t - \frac{gt^2}{2},$$

where v_0 – is the initial velocity, $g = 9.8 \frac{m}{s^2}$ – is the acceleration of free fall.

Since $v_0 = 20 \frac{m}{s}$, we obtain

$$h(3s) = 20 \frac{m}{s} \cdot 3s - \frac{9.8 \frac{m}{s^2} \cdot 9s^2}{2} = 16m$$

Answer: 16m.