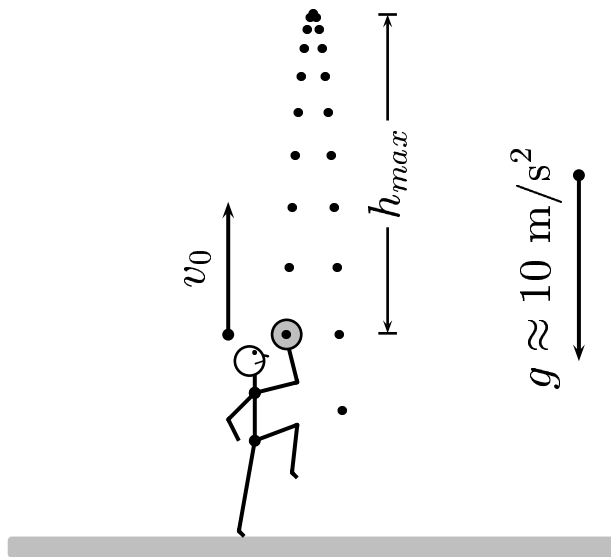


Given: The initial vertical velocity is $v_0 = 30$ m/s.
Throw a ball up to a maximum height h_{max} .



The maximum height h is

- A) $h \approx 45$ m.
- B) $h \approx 60$ m.
- C) $h \approx 75$ m.
- D) $h \approx 90$ m.

Applying the constant acceleration equation $v_f^2 = v_0^2 + 2 a \Delta y$ for the motion from O to B gives

$$0 = v_0^2 + 2(-g)h, \quad \text{so}$$
$$h = \frac{v_0^2}{2g} \approx \frac{(30 \text{ m/s})^2}{2(10 \text{ m/s}^2)} \approx 45 \text{ m}.$$

Answer **A**.