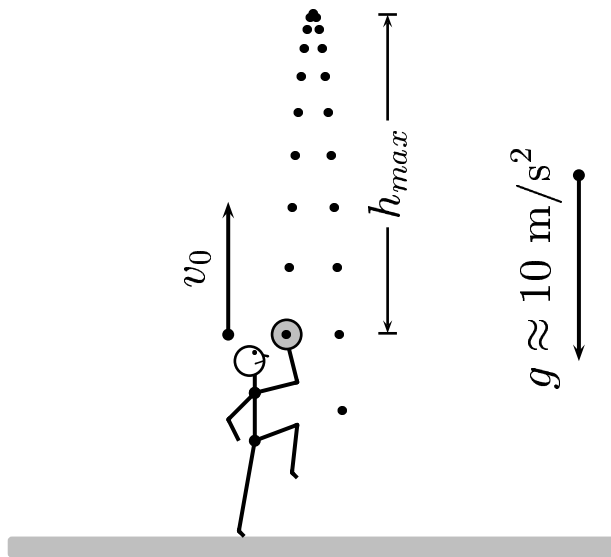


Given: The initial vertical velocity is  $v_0 = 30$  m/s.  
Throw a ball up to a maximum height  $h_{max}$ .



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.

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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**.