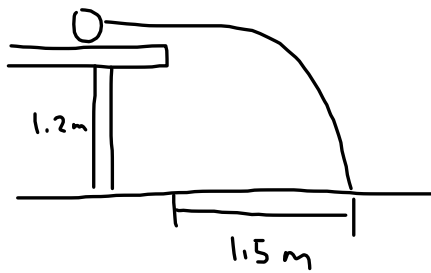


A marble is rolling along a table that is 1.2 m high. The marble lands 1.5 m away from the table. What was the speed of the marble on the table?

$$v = ?$$



Vertical

$$\vec{\Delta d}_y = 1.2 \text{ m [down]}$$

$$\vec{a}_y = 9.8 \text{ m/s}^2 \text{ [down]}$$

$$\vec{v}_{iy} = 0$$

$$\Delta t = ?$$

$$\vec{\Delta d} = \vec{v}_i \Delta t + \frac{1}{2} a (\Delta t)^2$$

$$1.2 = 0 + \frac{1}{2} (9.8) \Delta t^2$$

$$1.2 = 4.9 \Delta t^2$$

$$\frac{1.2}{4.9} = \Delta t^2$$

$$\Delta t = 0.495 \text{ s}$$

Horizontal

$$\vec{v}_x = ?$$

$$\vec{\Delta d}_x = 1.5 \text{ m}$$

$$\Delta t = 0.495 \text{ s}$$

$$\vec{v} = \frac{\vec{\Delta d}}{\Delta t}$$

$$\vec{v}_x = \frac{1.5 \text{ m}}{0.495 \text{ s}} = 3.0 \text{ m/s}$$

Attachments



<http://www.youtube.com/watch?v=zMF4CD7i3hg>