Practice Problem

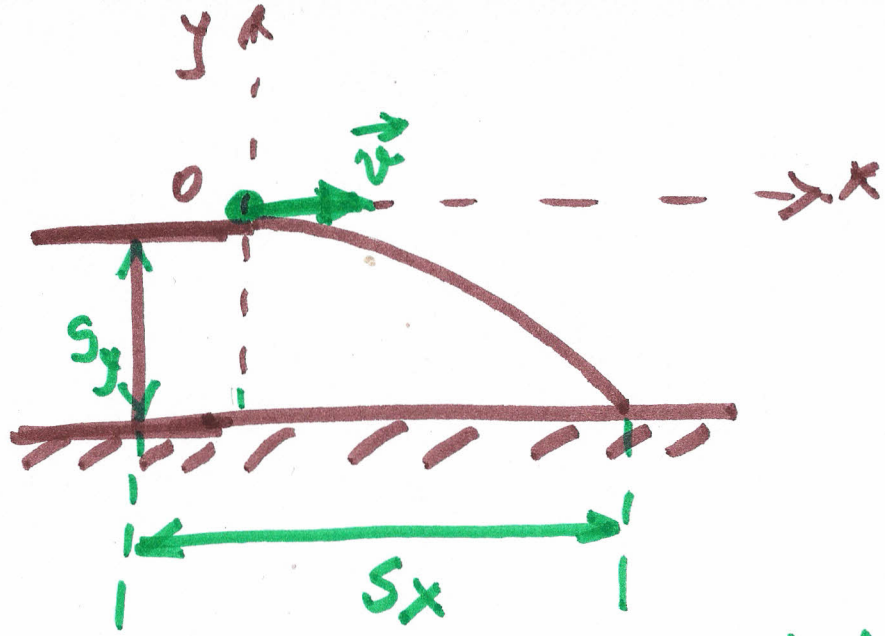
- A marble rolls across a horizontal table with a speed of 3.75 $m \cdot s^{-1}$. If the table is 1.65 m high, how far away from the edge of the table will the marble land?

X-direction	Y-direction
$v = 3.75\ m \cdot s^{-1}$	$u = 0$
$s = ?$	$v =$
$t = ?$	$a = 9.81\ m \cdot s^{-2}$
	$s = 1.65\ m$
	$t = ?$

$v = 3.75\ m \cdot s^{-1}$

$S_y = 1.65\ m$

$S_x = ?$



The motion on horizontal direction is uniform (velocity = constant)

$$S_x = v \cdot t$$

On the vertical direction the motion is accelerated and the initial vertical component of velocity is zero

$$S_y = \frac{1}{2} g \cdot t^2$$

$$t = \sqrt{\frac{2 \cdot S_y}{g}}$$

$$t = \frac{S_x}{v} = \frac{v \cdot \sqrt{\frac{2 \cdot S_y}{g}}}{v}$$