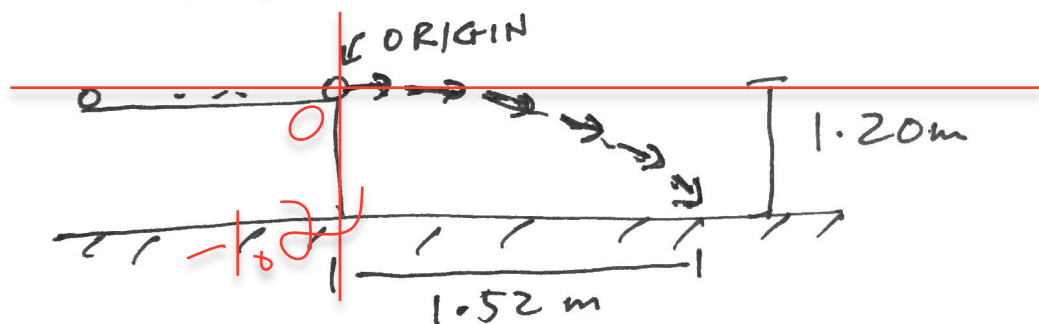


Example 2 .

A small ball rolls horizontally off the edge of a tabletop that is 1.20m high. It strikes the floor at a point 1.52m horizontally from the table edge.

- a) How long is the ball in the air?
b) what is its speed at the instant it leaves the table?



Proj: x | y
I: 0 | 0
F: 1.52 | -1.2

considering vertical motion:

a) $a = -g$

$$y - y_0 = v_{0y}t + \frac{1}{2}a_y t^2$$

$$-1.2 - 0 = 0 - \frac{1}{2}g t^2$$

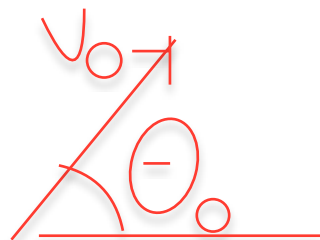
$$t = \boxed{}$$

b) Horizontal speed stays constant.

$$x - x_0 = (v_0 \cos \theta_0) t$$

$$1.52 - 0 = v_0 t$$

$$v_0 = \boxed{} \text{ ms}^{-1}$$



$\theta_0 = 0^\circ$

A diagram showing a ball leaving the edge of a table with an initial velocity v_0 at an angle $\theta_0 = 0^\circ$. The ball's path is indicated by a dashed line.

$$v_{0x} = v_0 \cos \theta_0 = v_0$$
$$v_{0y} = v_0 \sin \theta_0 = 0$$