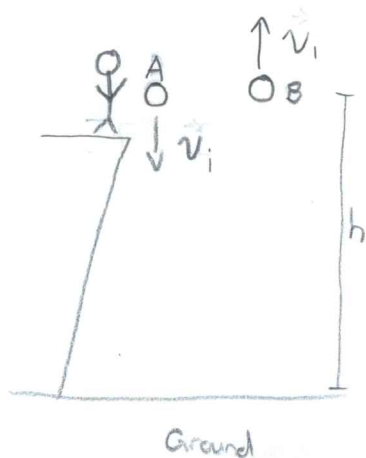


Ex. 5.



On Earth.

If I throw ball A down and ball B up with speed v_i , then the final speed (v_f) of both balls when they hit the ground is the same.

Solⁿ:

True. $v_{iA} = v_{iB} = v_i$

The final speed when A hits ground is given by the equation:

$$v_{fA}^2 = v_{iA}^2 + 2a\Delta d$$

So

$$v_{fA} = \sqrt{(-v_i)^2 + 2(-9.8)(-h)} = \sqrt{v_i^2 + 19.8h}$$

The final speed of B is given by

$$v_{fB}^2 = v_{iB}^2 + 2a\Delta d$$

So

$$v_{fB} = \sqrt{v_i^2 + 2(-9.8)(-h)} = \sqrt{v_i^2 + 19.8h}$$

Since $v_{fA} = v_{fB}$, they have the same final speeds when hit ground.



PRACTICE: Prove true or false: $a, b, c, d \in \mathbb{Z}$

1) $a \mid (-a)$

(True)

2) If $a \mid b$ and $b \neq 0$, then $|a| \leq |b|$

(True)

3) If $a \mid c$ and $b \mid d$, then $ab \mid cd$.

(True)

4) If $a \leq b$, then $a \mid b$.

(False)