

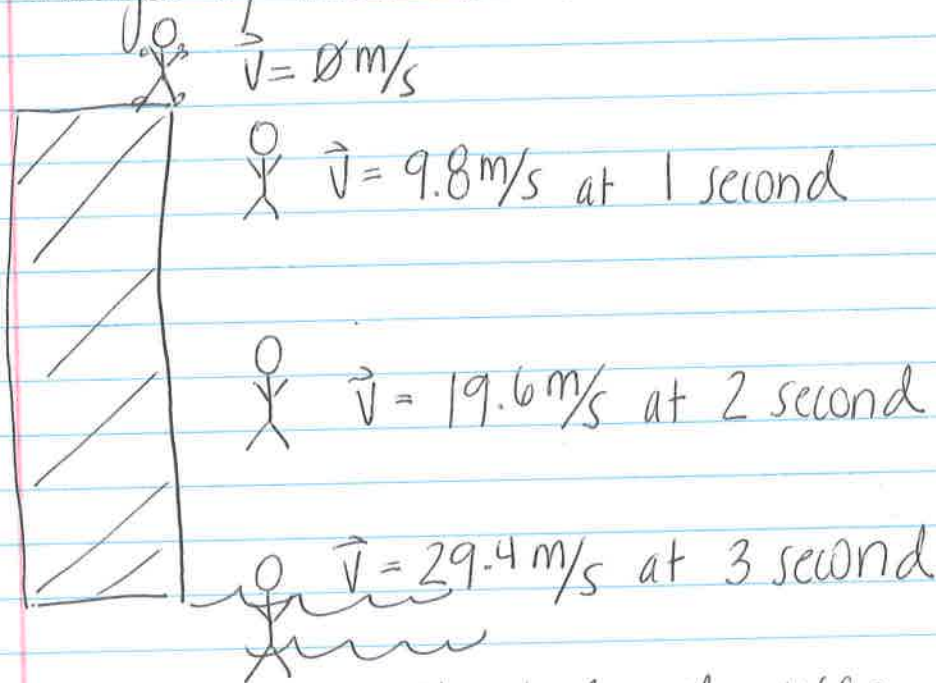
## Free Fall

An object is in free fall if it is accelerating due to gravity and has no other forces acting upon it.

$\vec{a}$  due to Earth's gravity is  $9.8 \frac{m}{s^2}$

Also known as "g"

constant acceleration - an object's speed changes by the same amount each second



How high is the cliff?

$$\vec{d} = v_i t + \frac{1}{2} a t^2 \quad \vec{d} = \frac{1}{2} (9.8 \frac{m}{s^2}) (3.0s)^2 = 44.1 \text{ m}$$

If an object is traveling in a circle, its velocity is changing direction therefore the object is accelerating even if its speed is constant.

A projectile is an object moving through space affected only by gravity.