Quiz 7b

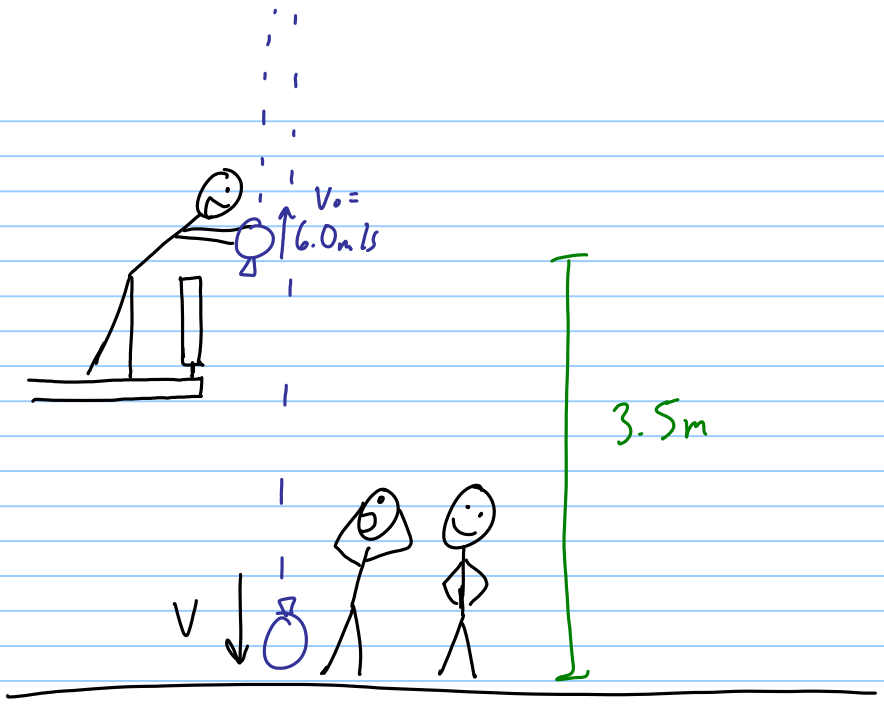
Note Title 27/09/2012

Mr Trask is playing a mean trick on his students. He stands on Branco's balcony which is 3.5 m above the ground. He then throws a water balloon straight upwards at 6.0 m/s. The balloon goes up then all the way down to burst on the ground below.

a. How much time does it take to hit the ground?

b. How fast is it traveling when it hits the ground?

c. If Mr Trask threw a second balloon straight downwards at 6.0 m/s would it hit the ground traveling faster, slower or the same speed as the first balloon?



a.) $V =$
$V_0 = 6.0 m/s$
$a = -9.8 m/s^2$
$d = -3.5 m$
$t =$

Remember:
It fell down 3.5m.

$d = V_0 t + \frac{1}{2} a t^2$ ← WARNING!!! This is a quadratic...

Options:

1. Quadratic formula
2. Graph it!
3. Do part b first then go back ← I like this one...

b) $V^2 = V_0^2 + 2ad$ ✓

$V = \pm\sqrt{V_0^2 + 2ad}$

$= \pm\sqrt{(6.0)^2 + 2(-9.8)(-3.5)}$

$= \pm 10.227 m/s$ (reject +)

$= \boxed{-10. m/s}$ ✓

a.) $V = V_0 + at$ ✓

$t = \frac{V - V_0}{a}$

$= \frac{-10.227 - 6.0}{-9.8}$

$= 1.656$

$= \boxed{1.7 s}$ ✓

c.) Final speed would be exactly the same. ✓