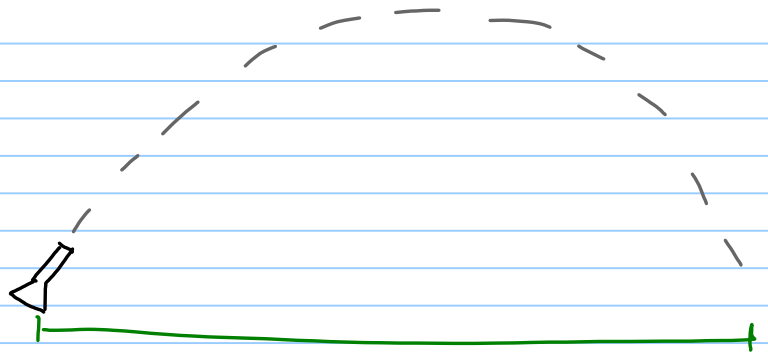
Quiz 5c

Note Title 27/09/2012

A student stomps sternly on a super-sized stomp rocket. They notice that the rocket lands 65 m away in a time of 4.7 s.

Find the total initial velocity (magnitude and direction) of the rocket.



x	y @ $t_{\frac{1}{2}}$
v_x	$v_y = 0$
$d_x = 65m$	$v_{y_0} =$
$t = 4.7s$	$a_y = -9.8 m/s^2$
	d_y
	$t_{\frac{1}{2}} = 4.7 \div 2 = 2.35s$

$$v_x = \frac{d_x}{t} = \frac{65m}{4.7s}$$

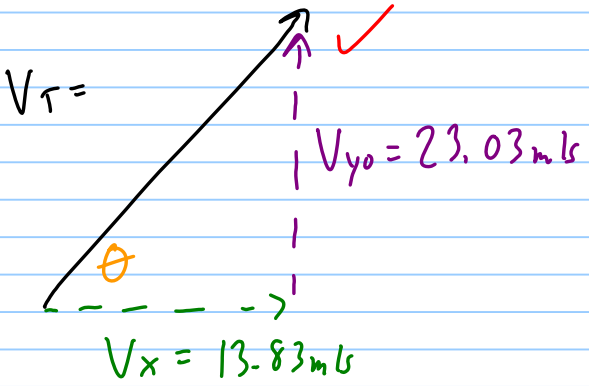
$$= 13.83 m/s \checkmark$$

$$V = V_0 + at$$

$$V_0 = V - at$$

$$= 0 - (-9.8)(2.35)$$

$$= 23.03 m/s \checkmark$$



$$V_T = \sqrt{V_x^2 + V_{y_0}^2}$$

$$= 26.89 m/s$$

$$\theta = \tan^{-1}\left(\frac{23.03}{13.83}\right)$$

$$= 59^\circ$$

$$V_T = 27 m/s \ 59^\circ \text{ (above horizontal)}$$