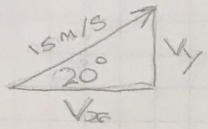
#1



$V_x = 15 \times \cos 20^\circ$
$V_x = 6.12\ m/s$

$V_y = 15 \times \sin 20^\circ$
$V_y = 13.69\ m/s$

knowns

$V_i = 13.69\ m/s$

$\vec{a} = -9.80\ m/s^2$

$d = 0m$

unknown
$t = ?$

$d = v_i t + \frac{1}{2} a t^2$

$0 = 13.69t + 0.5(-9.80)t^2$

$0 = 13.69t + (-4.9)t^2$

$0 = (t)(13.69 - 4.9t)$

$0 = 13.69 - 4.9t$

$\frac{13.69}{4.9} = \frac{4.9t}{4.9}$

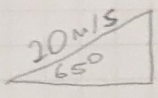
$2.79 = t$

$d = v_i t$

$d = 6.12(2.79)$

$d = 17.07m$

#1



$V_x = 20 \times \cos 65°$
$V_x = -11.25 \text{ m/s}$

$V_y = 20 \times \sin 65°$
$V_y = 16.54 \text{ m/s}$

Knowns

$V_i = 16.54 \text{ m/s}$

$\vec{a} = -9.80 \text{ m/s}^2$

$d = 0 \text{ m}$

$d = V_i t + \frac{1}{2} a t^2$

$0 = 16.54t + 0.5(-9.80)t^2$

$0 = 16.54t + (-4.9)t^2$

$0 = (t)(16.54 - 4.9t)$

$0 = 16.54 - 4.9t$

$\frac{16.54}{4.9} = \frac{4.9t}{4.9}$

$3.38 = t$

$d = V_i t$

$d = -11.25(2.79)$

$d = -31.39$

$d = 31.39 \text{ m}$

∴ Billy threw the football further.

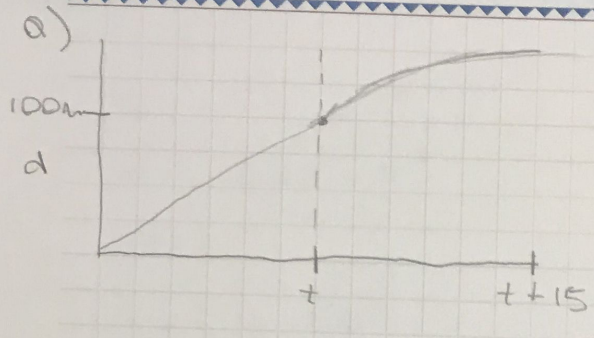
#2 #2

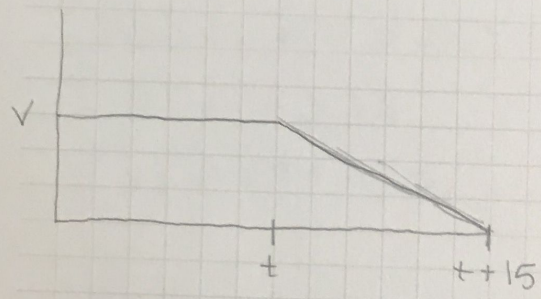
Priority

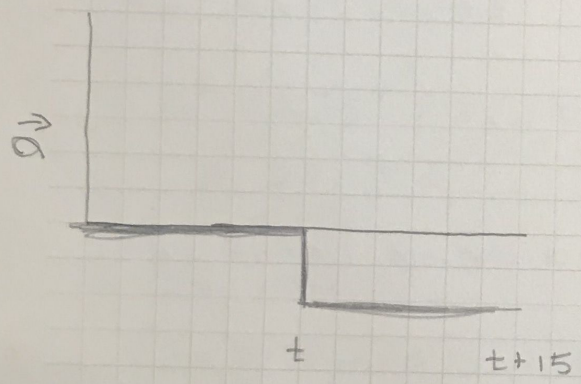
CORRESPONDENCE/NOTES

b)

a)







#2

Priority

CORRESPONDENCE/NOTES

b)

a) $V_i = ?$

$a = -0.25\ m/s^2$

$V_f = 0$

$V_f = V_i + at$

$0 = V_i + (-0.25)(15)$

$0 = V_i - 3.75$

$V_i = 3.75\ m/s$

$V_f^2 = V_i^2 + 2ad$

$0^2 = 3.75^2 + 2(-0.25)(d)$

$d = 28.13\ m$

∴ the total displacement is $28.13_m + 100\ m = 128.13\ m$

b) $V_f = 3.75\ m/s$ $\quad d = \left(\frac{V_i + V_f}{2}\right) t$

$V_i = 0\ m/s$

$d = 100\ m$

$a = 0\ m/s^2$ $\quad 100 = \left(\frac{0 + 3.75}{2}\right) t$

$t = 53.33\ s$

∴ the total time is 53.33 seconds plus 15 second = 68.33 s

#2

b)

c) $V_{avg_1} = \frac{0+3.75}{2}$

$= 1.89 \text{ m/s}$

$V_{avg_2} = \frac{0+3.75}{2}$

$= 1.89 \text{ m/s}$

∴ the average velocity for the total motion is 1.89 m/s