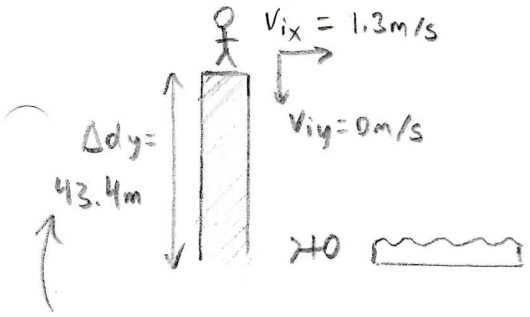
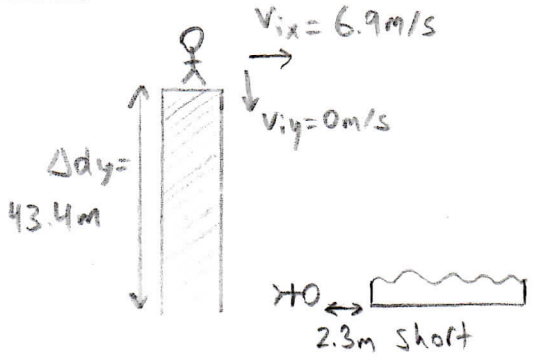
Crime Scene #2: Hotel Jumper





14 ~~stories~~ high × $\frac{3.1m}{\text{~~story~~}}$

$= 43.4m$

+y ↑

Walking

$v_{ix} = 1.3 m/s$

$v_{iy} = 0 m/s$

$\Delta d_y = -43.4m$

$\vec{a} = -9.8 m/s^2$

$\Delta y = v_{iy}\Delta t + \frac{1}{2} a \Delta t^2$ ($v_{iy} = 0$)

$-43.4 = \frac{1}{2}(-9.8)\Delta t^2$

$\frac{-43.4}{-4.9} = \Delta t^2$

$\sqrt{8.84} = \Delta t$

$2.9 sec = \Delta t$

$\Delta d_x = v_{ix} \cdot \Delta t$

$\Delta d_x = 1.3(2.9)$

$\Delta d_x = 3.77m$

* This would be distance from the building if he committed suicide (assuming starting from rest/walking)

Running

$v_{ix} = 6.9 m/s$

$v_{iy} = 0 m/s$

$\Delta d_y = -43.4m$

$\vec{a} = -9.8 m/s^2$

$\Delta y = v_{iy}\Delta t + \frac{1}{2} a \Delta t^2$ ($v_{iy} = 0$)

$-43.4 = \frac{1}{2}(-9.8)\Delta t^2$

$\frac{-43.4}{-4.9} = \Delta t^2$

$\sqrt{8.84} = \Delta t$

$2.9 sec = \Delta t$

$\Delta d_x = v_{ix} \Delta t$

$\Delta d_x = 6.9(2.9)$

$\Delta d_x = 20.0m$

* distance if running

* notice how the time of drop is the same, doesn't matter if he is walking or running

∴ He sprinted and jumped since the pool was 22m from the building, if he was running and jumped, he would have landed at 20.0m + 2.3m (being short) which would have landed him in the pool