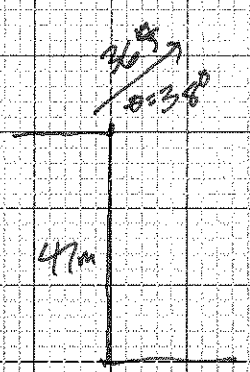
Worksheet - Asymmetric Projectiles

1. 

$V_x = 28.36 \frac{m}{s}$

$V_y = 22.6 \frac{m}{s}$

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

$-47 = 0 + 22.6t - 4.9t^2$

$\boxed{t = 6.1\ s}$

$h = \frac{V_i^2}{2g}$

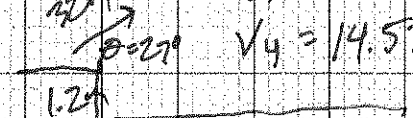
$= \frac{22.6^2}{19.6}$

$\boxed{h = 25.1\ m \text{ or } -72.1\ m}$

$d_x = V_x t$

$= 6.1(28.36)$

$\boxed{d_x = 173\ m}$

2. 

$V_x = 28.5 \frac{m}{s}$

$V_y = 14.53 \frac{m}{s}$

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

$-1.2 = 0 + 14.53t - 4.9t^2$

$\boxed{t = 3.05\ s}$

$h = \frac{V_i^2}{2g}$

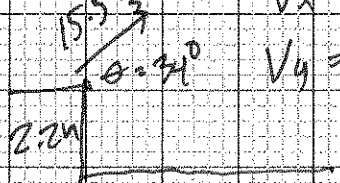
$= \frac{14.53^2}{19.6}$

$\boxed{h = 10.77\ m}$

$d_x = V_x t$

$= 28.5(3.05)$

$\boxed{d_x = 86.9\ m}$

3. 

$V_x = 12.85 \frac{m}{s}$

$V_y = 8.67 \frac{m}{s}$

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

$-2.2 = 0 + 8.67t - 4.9t^2$

$\boxed{t = 2.0\ s}$

$d_x = V_x t$

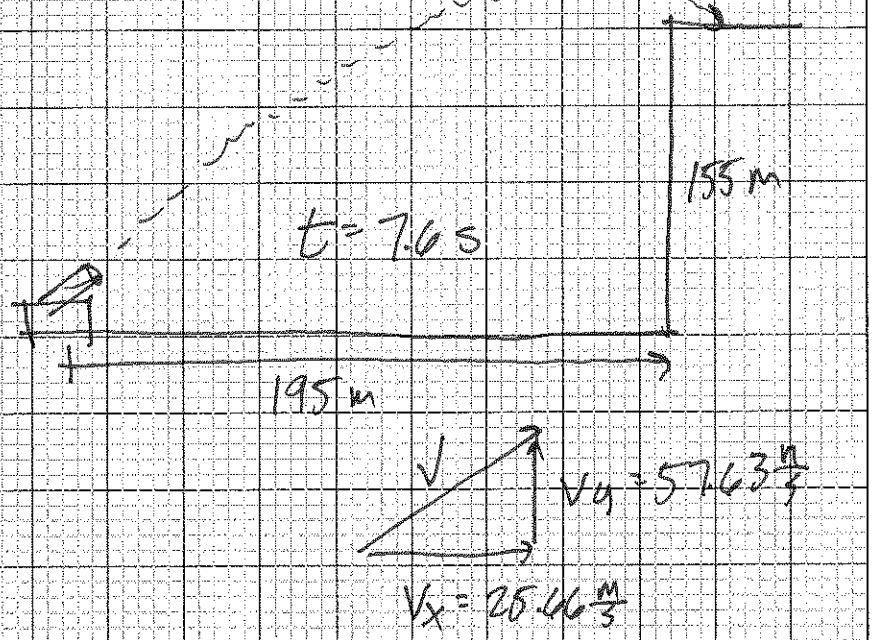
$= 12.85(2)$

$\boxed{d = 25.7\ m}$

4.

$V_i =$

$\theta =$



["x" direction]

$d_x = V_x t$

$195 = V_x(7.6)$

$\boxed{V_x = 25.66\ m}$

["y" direction]

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

$155 = 0 + V_i(7.6) - 4.9(7.6)^2$

$155 = 7.6 V_i - 283$

$\boxed{V_y = 57.63 \frac{m}{s}}$

$V^2 = V_x^2 + V_y^2$

$= 25.66^2 + 57.63^2$

$* \quad \boxed{V_i = 63.1 \frac{m}{s}}$

$\tan\theta = \frac{57.63}{25.66}$

$* \quad \boxed{\theta = 66^\circ}$