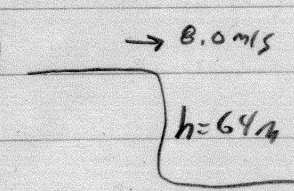
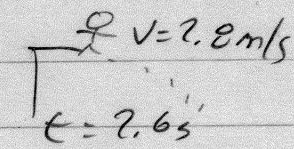
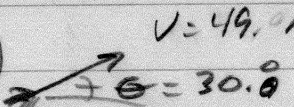


Phy C-7.2 Hw 39, 41, 42, 46, 47

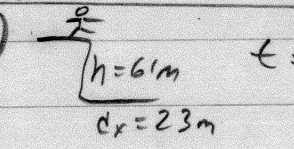
39)  $d = d_0 + v_0 t + \frac{1}{2} a t^2$
 $t = \sqrt{\frac{2h}{g}} = \sqrt{\frac{2(64\text{m})}{9.80\text{m/s}^2}} = 3.614\text{s}$
 $d_x = v_x t = (8.0\text{m/s})(3.61\text{s}) = 28.91\text{m} (= 29\text{m})$

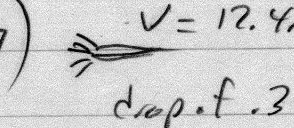
41)  $v = 2.8\text{m/s}$
 $t = 2.6\text{s}$
 $h = \frac{T^2 g}{2} = \frac{(2.6\text{s})^2 (9.80\text{m/s}^2)}{2} = 33\text{m}$
 $d_x = v_x t = (2.8\text{m/s})(2.6\text{s}) = 7.28 = 7.3\text{m}$

42)  $v = 49.0\text{m/s}$
 $\theta = 30.0^\circ$
 $v_x = 49\text{m/s} \cos 30.0^\circ = 42.4\text{m/s}$
 $v_y = 49\text{m/s} \sin 30^\circ = 24.5\text{m/s}$

a) $v^2 = v_0^2 + 2 a d$ $\Delta d = \frac{v^2 - v_0^2}{2a} = \frac{(0\text{m/s}^2) - (24.5\text{m/s})^2}{2(-9.80\text{m/s}^2)} = 30.6\text{m} = 31\text{m}$

b) $d = d_0 + v_0 t + \frac{1}{2} a t^2$ $0\text{m} = 0\text{m} + (24.5\text{m/s})t + \frac{1}{2}(-9.80\text{m/s}^2)t^2$
 $t = 5.0\text{s}$ $d_x = v_x t = (42.4\text{m/s})(5.0\text{s}) = 210\text{m}$

46)  $h = 61\text{m}$
 $d_x = 23\text{m}$
 $t = \sqrt{\frac{2h}{g}} = \frac{2(61\text{m})}{9.80} = 3.522\text{s}$
 $d = v t$ $v = \frac{d}{t} = \frac{23\text{m}}{3.522\text{s}} = 6.5\text{m/s}$

47)  $v = 12.4\text{m/s}$
 $\text{drop of } 32\text{m}$
 $d_x = ?$
 $t = \sqrt{\frac{2h}{g}} = \sqrt{\frac{2(32\text{m})}{9.80\text{m/s}^2}} = 2.556\text{s}$
 $d_x = v_x t = (12.4\text{m/s})(2.556\text{s}) = 3.2\text{m}$