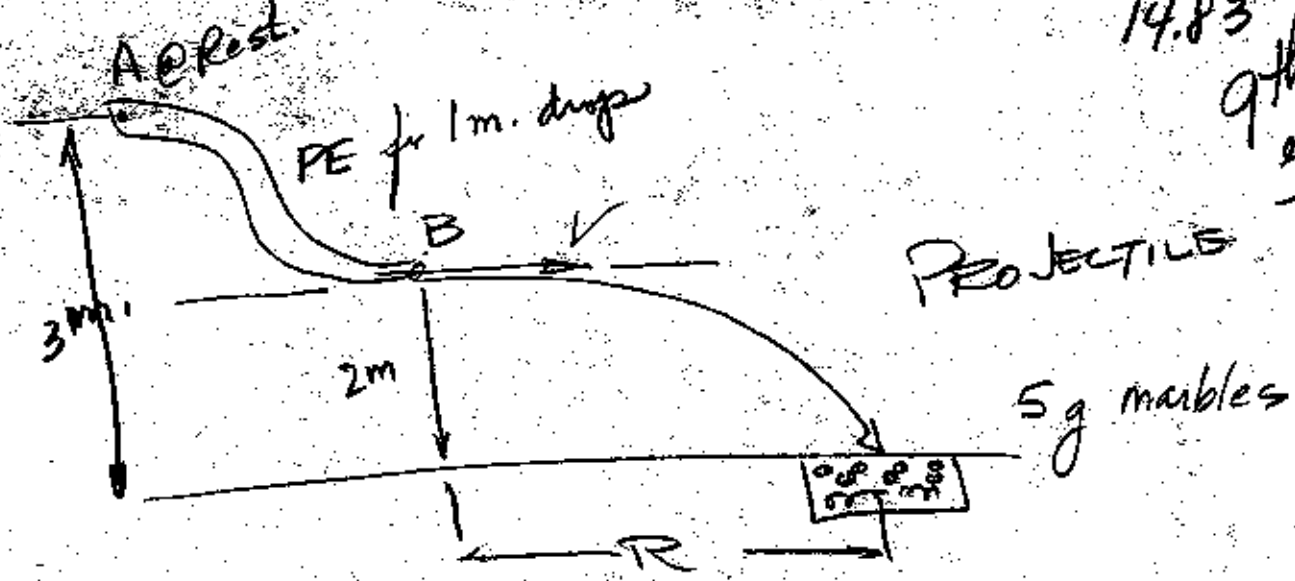
14.83 9th ed.



@ B PE ⇒ KE ⇒ projectile

$(5g)(9.81\frac{m}{s^2}) = 4.905\times10^{-2} N\,(1m) = 4.905\times10^{-2} N\text{-}m = PE$

$= \frac{1}{2}m(V_2^2 - V_1^2)$ V_2 = stop

$-mgh = -\frac{1}{2}mV_1^2$

$(9.81)(1)(2) = V^2 \Rightarrow \boxed{V_x = 4.43\frac{m}{s}}$

$y = y_0 + V_{y_0}t - \frac{1}{2}at^2$

$-2 = -\frac{1}{2}(9.81)t^2$

$\boxed{t = .6385\ s.}$

$V_{f_y} = V_0 + at$

$V_{f_y} = -9.81(.6385)$

$\boxed{V_{f_y} = 6.264}$

$R = x_0 + V_0t + 0$

$= 4.43\frac{m}{s}(.6385s)$

$R = 2.828$

$\boxed{R = 2.83m}$

$V_{TOT} = \sqrt{4.43^2 + 6.264^2}$