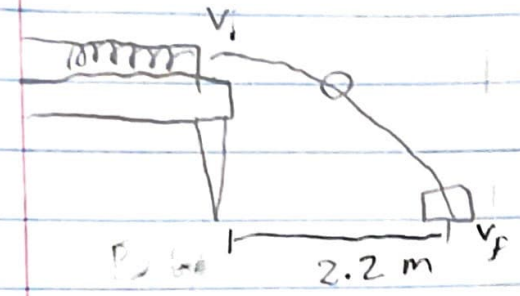
SW #1 Max Cirino (9) Xine Han



$\frac{1}{2}mv^2 + mgh = \frac{1}{2}mv_f^2$

$\frac{1}{2}v_i^2 + gh = \frac{1}{2}v_f^2$

$h = \frac{\frac{1}{2}v_f^2 - \frac{1}{2}v_i^2}{g}$

$\Delta x_{spring} = .011\,m$

$\Delta x_{Bobby} = 1.93m$

$a_y = -10\,m/s^2 \quad a_x = 0$

$U_s = \frac{1}{2}kx^2$

$mgh + \frac{1}{2}kx^2 = \frac{1}{2}mv^2 + mgh$

$\frac{1}{2}kx^2 = \frac{1}{2}mv^2$

v_x is constant

$v_{o_y} = 0$

$\frac{1}{2}kx^2 = \frac{1}{2}mv^2$

$\sqrt{\frac{kx^2}{m}} = \sqrt{v^2}$

$v_i = \sqrt{\frac{kx^2}{m}}$ the moment the ball releases v_i all in x so $v_i = v_{ox}$

$\Delta x = v_{x_o}t + \frac{1}{2}a_x^{\,0}t^2$

$\Delta x = v_{x_o}t + 0$

$\frac{\Delta x}{t} = \sqrt{\frac{kx^2}{m}}\frac{t}{t}$

$\left(\frac{\Delta x}{t}\right)^2 = \left(\sqrt{\frac{kx^2}{m}}\right)^2$

$\frac{\Delta x^2}{t^2} = \frac{kx^2}{m} \cdot \frac{m}{k}$

$\sqrt{\frac{m\Delta x^2}{kt^2}} = \sqrt{x^2}$

$x = \sqrt{\frac{m\Delta x^2}{kt^2}}$

* don't know how to find a numerical answer