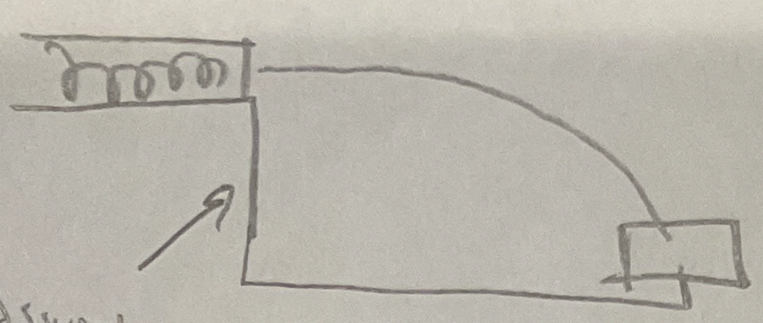
Question 9 - Physics 1250 Final - Luciano Frissora

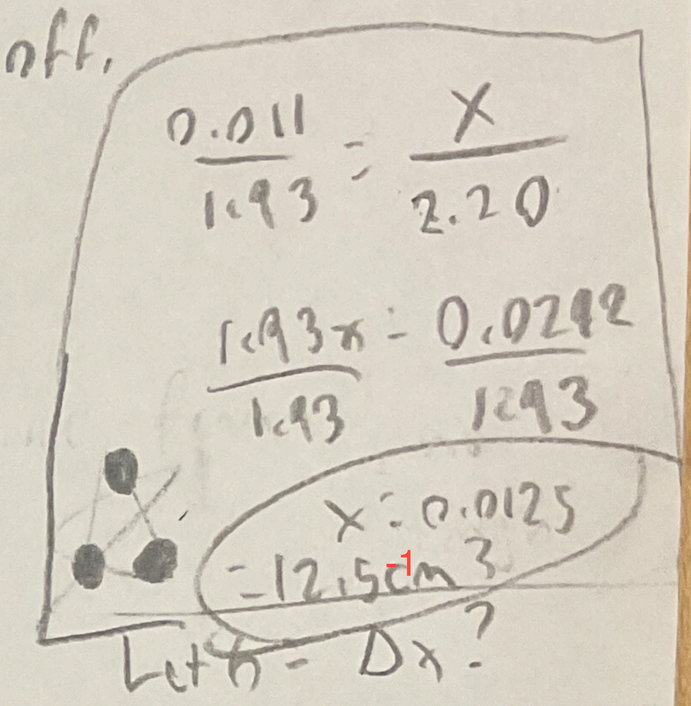


Assume Height = 1m for ease of calculations?

Compressed 11cm = 0.011m.

$\Delta x = 1.93$ → 0.27m off.

$v_y \neq v_x$



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

$\sqrt{2gh} = \sqrt{v^2} \rightarrow v = \sqrt{2gh}$

$v = \sqrt{2(10)(1.93)}$

$v = 6.2128 m/s$ ✗?

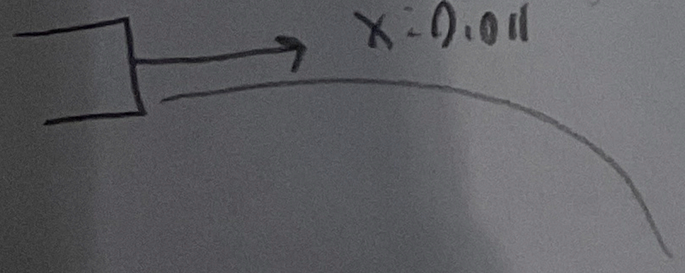
$\frac{1}{2}kx^2 = \frac{1}{2}mv^2$

$\frac{1}{2}k(0.011)^2 = \frac{1}{2}m(6.21288)^2$

$\frac{1.93}{6.2128} = \frac{6.2128\Delta t}{6.2128}$

$0.310 = \Delta t$?

$mgh + \frac{1}{2}mv_i^2 + \frac{1}{2}kx^2 = \frac{1}{2}mv_f^2 + \frac{1}{2}kx^2$ (first term 0)



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

Let $m_{ball} = 0.1kg$

$\Delta h = 1m$?

$0.5(10)(1) + \frac{1}{2}k(0.011)^2 = \frac{1}{2}(0.1)v_f^2$

? !!