$V = 3.0 \times 10^8\ m/s$

$V = \lambda f$

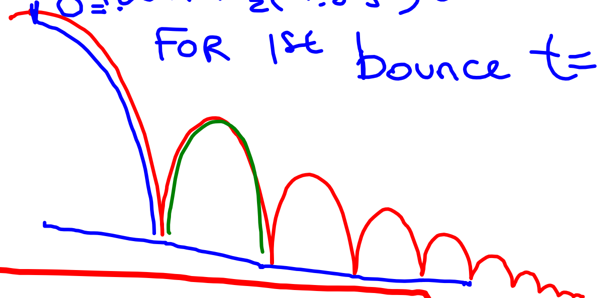
$3.0 \times 10^8\ m/s = \lambda\left(1070000/sec\right)$ $\quad 103.3 \times 10^6/s$

$280\ m = \lambda$

$\lambda_{FM} = 2.9\ m$

$0 = 1.00\,m + \frac{1}{2}(-9.8\,m/s^2)t^2$

FOR 1st bounce $t = \sqrt{\frac{2y_0}{9.8\,m/s^2}}$



$$\boxed{y = y_0 + V_0 t + \frac{1}{2}at^2}$$

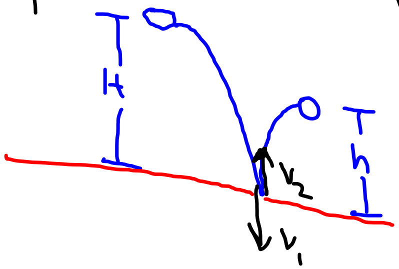
For each of the next 4 bounces

$$0 = 0 + V_0 t + \frac{1}{2}(-9.8\,m/s^2)t^2$$

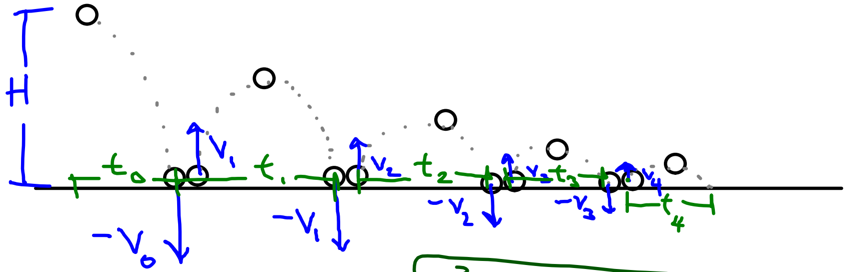
$$\Rightarrow \frac{2V_0}{9.8} = t$$

But the initial V_0 will be less because of the coefficient of restitution.

$$C = \frac{-V_2}{V_1} \quad \text{or} \quad C = \sqrt{\frac{h}{H}}$$



ASIDE: FLUBBER has $C > 1$



$$t_0 = \sqrt{\frac{2H}{9.8\,m/s^2}}$$

$$\boxed{v^2 = v_0^2 + 2a\Delta d}$$

$$v_0 = \sqrt{2(9.8)H}$$

$$t_1 = \frac{2v_1}{9.8\,m/s^2} = \frac{2c}{g}\sqrt{2gH}$$

$$C = \frac{-v_1}{v_0} \Rightarrow v_1 = C\sqrt{2gH}$$

Let $g = 9.8\,m/s^2$

$$t_2 = 2c^2\sqrt{\frac{2H}{g}}$$

$$C = \frac{-v_2}{v_1} \Rightarrow v_2 = C^2\sqrt{2gH}$$

$$t_3 = 2c^3\sqrt{\frac{2H}{g}}, \quad t_4 = 2c^4\sqrt{\frac{2H}{g}}$$

So the total time $t = t_0 + t_1 + t_2 + t_3 + t_4$

$$t = 2\sqrt{\frac{2H}{g}}\left(\frac{1}{2} + c + c^2 + c^3 + c^4\right)$$

For your experiment the only thing you varied was H (note again $C = \sqrt{\frac{h}{H}}$)

Function will appear as $t = k\sqrt{H}$

OR "y" $= k$ "x"$^{1/2}$