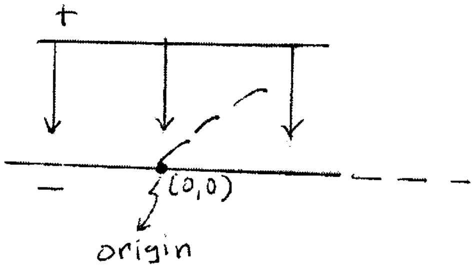
$+q = +10^{-6}C, \quad v_0 = 1.00\times10^5\ m/s, \quad \theta = 37.0^0$



Let us compute the maximum height.

$$v_y^2 = v_{y0}^2 + 2a_y(y - y_0)$$

and with $v_{y0} = v_0 \sin 37^0$, $a_y = -qE/m$, $y_0 = 0$, and

$a = \frac{qE}{M}$ negative

$v_y = 0$ at $y = y_{max}$, we have

why is $a = -qE/M$, I'm not sure why there's a negative

$$0 = (v_0 \sin 37^0)^2 - 2\frac{qE}{m}(y_{max} - 0) \Rightarrow \frac{2qEy_{max}}{m} = (v_0 \sin 37^0)^2$$

$$y_{max} = \frac{m(v_0 \sin 37^0)^2}{2qE} = \frac{2\times10^{-16}(10^5 \sin 37^0)^2}{2(10^{-6})(2000)} = 1.81\times10^{-4}\,m \times \frac{1000mm}{1m} = 0.181mm$$

which is much less than D = 10.0 mm. Hence it will hit the lower plate. To get where at the lower plate it will hit,

How does $0 = t(v_0 \sin\theta - \frac{qE}{2m}t)$ become $t = (v_0 \sin\theta \frac{2m}{qE})$

$$y = y_0 + v_{y0}t + \frac{1}{2}a_y t^2 \Rightarrow 0 = 0 + v_0 \sin\theta t - \frac{1}{2}\frac{qE}{m}t^2 = 0 = t\left(v_0 \sin\theta - \frac{qE}{2m}t\right) \text{ so}$$

$$t = (v_0 \sin\theta)\frac{2m}{qE} \text{ so } x = v_{x0}t = v_0 \cos\theta t = v_0 \cos\theta \frac{v_0 \sin\theta 2m}{qE} = \frac{mv_0^2 \sin 2\theta}{qE}$$

what happend to cos

$$= \frac{2.00\times10^{-16}(10^{-5})^2 \sin(2\cdot37^0)}{10^{-6}(2000)} = 9.61\times10^{-4} = 0.961mm \text{ from}$$

starting point

<u>DO RA 8 CPS QUESTION #1</u>

<u>TURN OFF KEYPADS!!!</u>

II. <u>Electric Field Lines:</u>