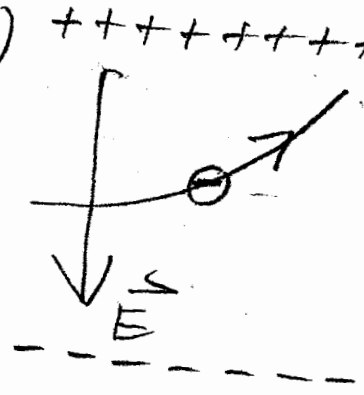
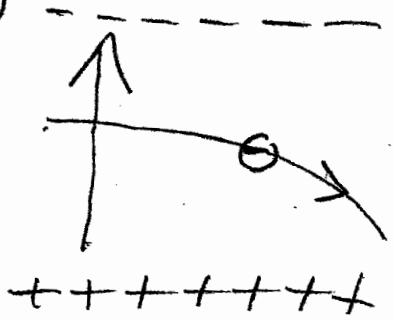
Solution Key Lab 1

(1.)



electron attracted to positive plate, repelled by negative.

(2)



electrons attracted to positive as above

(3)

$$v_y = \frac{(-1.60\times10^{-19}\,C)\begin{bmatrix}12.00\\8.00\\4.00\end{bmatrix}\frac{N}{C}}{9.11\times10^{-31}\,kg}(0.550\times10^{-9}\,s)$$

$$= -1.16\times10^{6}\,\frac{m}{s}$$

$$= -7.73\times10^{5}\,\frac{m}{s}$$

$$= -3.86\times10^{5}\,\frac{m}{s}$$

} 3 sig figs

(4), (5)

$$\left(\frac{e}{m}\right)_{exp} = \frac{(0.0261)\cdot 2}{(0.550\times10^{-6})^2}\frac{C}{kg}$$

(3 sig Fig)

$$= 1.758\times10^{11}\frac{C}{kg} = 1.76\times10^{11}$$

AFTER ROUNDING

$$\%\ \text{error} = \left|\frac{(1.758 - 1.725)}{1.725}\right| \times 100\,\%$$

accepted ($\times10^{11}$)

$$1.758 - 1.725 = 0.033$$

$$= \left|\frac{0.033}{1.725}\right| \times 100\,\% = 1.9\,\%$$

1 sig. Fig.

$$= 2\,\%$$

1 sig. Fig.