$1 \, m^{-2} = 10 \, cm$

$\frac{1 \, Gm}{10^3 \, Mm}$ $\quad 0.00073 \, \mu m \times \frac{1 \, mm}{10^3 \, \mu m}$ $\quad 1.5 \times 10^4 \, cm^2 \times \frac{1 \, m^2}{10^4 \, cm^2}$

$0^2 \times 10^{-3} \, Gm$ $\quad = 7.3 \times 10^{-4} \times 10^{-3} \, mm$ $\quad = 1.5 \, m^2$

$\times 10^{-1} \, Gm$ $\quad = 7.3 \times 10^{-7} \, mm$

the relative (percent) uncertainty in the following time measurement: [1]

= 15.38 ± 0.02 s $\quad$ $\% \, unc = \frac{0.02 \, s}{15.38 \, s} \times 100\% = 0.1\%$

e resultant length and its absolute uncertainty: [1]

$= L_1 + L_2 - L_3$ $\quad L_1 = 15.2 \pm 0.2$ cm , $L_2 = 47.3 \pm 0.2$ cm , $L_3 = 5.4 \pm 0.1$ cm

$nt = 15.2 + 47.3 - 5.4$ cm $\quad \pm (0.2 + 0.2 + 0.1)$ cm

$= 57.1 \pm 0.5$ cm

e volume and its percent uncertainty. [1]

= L x W x H $\quad$ L = 6.34 m ± 2.0 % , W = 3.97 m ± 1.0 % , H = 4.28 m ± 1.0 %

$(6.34 \times 3.97 \times 4.28) \, m^3 \quad \pm (2.0 + 1.0 + 1.0)\%$

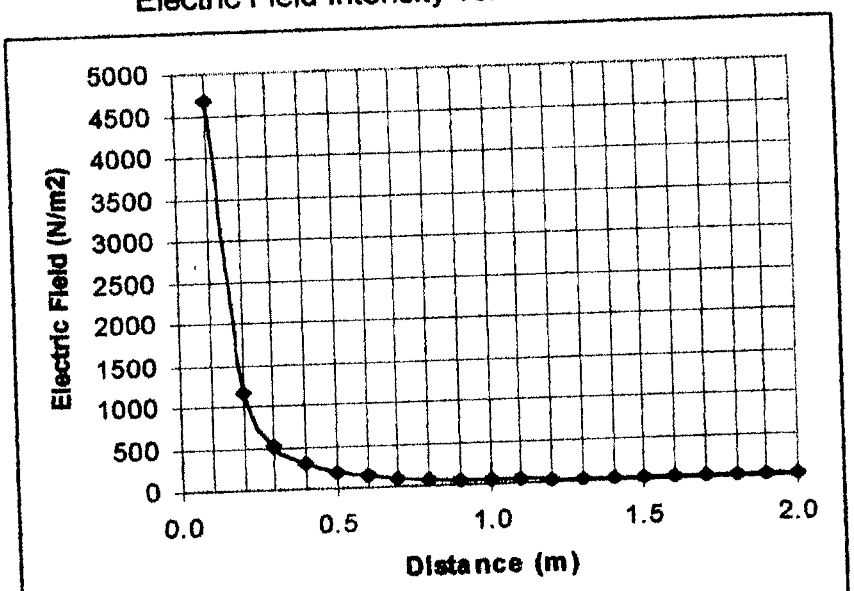
$= 108 \, m^3 \pm 4\%$

raph below shows the result of an experiment to investigate the variation of electric field sity (E) with distance (D) from a point charge. Discuss:

) The possible relationship between electric field and distance demonstrated by the plot. [1]

) How you would analyze the data to test your hypothesis. [3]

Electric Field Intensity vs. Distance



relationship is inverse (Field drops off non linearly with distance) as the dropoff rate is rapid we can hypothesize an inverse square relationship ($E \propto 1/D^2$)

reate a table of E vs 1/D. + plot ~~the~~ a second graph of E vs 1/D. if a linear trend results then we know this relationship holds.