Name:_____ Partner:_____ PH2223 -____

Experiment Sheet for Electric Deflection of Electrons

1. Record your accelerating voltages: V_C = _____, and V_B = _____.

   This results in V_{acc} = _____.

2. Using the 5 suggested deflection voltages in the table below measure the corresponding lateral displacement ($x_{experimental}$) on your CRT screen and record them in the table. Then calculate each theoretical lateral displacements (x_{theory}) and record these values in the table below.

V_{def} (V)	$x_{experimental}$ (m)	x_{theory} (m)
5.00		
10.0		
15.0		
20.0		
25.0		

3. Use a separate sheet of graph paper to graph x vs. V_{def} (use the experimental displacement values).

4. Calculate and record all of the intermediate values for one of your deflecting potentials (V_{def}) in the table below. Show your sample calculations on the next page.

V_{def} (V)	v_z (m/s)	E (N/C)	a (m/s^2)	t_1 (s)	v_x (m/s)	x_1 (m)	t_2 (s)	x_2 (m)	x_{theory} (m)

Calculations (show your calculations for the data in the previous table):

Questions:

1. What was the graphical relationship between x and V_{def} in your graph? _____

   (possible answers include squared, exponential, linear, inverse, logarithmic, …)

2. From the equation for the theoretical value of x what should have been the graphical relationship between x and V_{def} ?

   _____ Is this the same as your answer to number 1? _____

3. Calculate the average value of the deflection sensitivity (displacement per unit deflection voltage) for your CRT. Use your experimental displacement values.

   Average deflection sensitivity = _____