# Coulomb's Law Lab

**Procedure**

Briefly, but completely, describe the procedure for this lab – and include a labeled sketch.

**Data**

| m | θ |
|---|---|
|   |   |
|   |   |
|   |   |
|   |   |

| r | θ |
|---|---|
|   |   |
|   |   |
|   |   |
|   |   |
|   |   |

Sphere Charge = _____

**Add columns for quantities needed for linear graphs**

**Graphs**

Using appropriate scales, labels and units, graph **τ** vs **θ** and $F_e$ vs $1/r^2$. Draw best-fits lines for each linear graph.

**Questions**

1) Complete your data table with the values needed to graph **τ** vs **θ**. Show an example of each calculation here.

2) Use your graph to find the torsion constant, **κ**, for the Coulomb balance. Show your work.

3) Complete your data table with the values needed to graph $F_e$ vs $1/r^2$. Show an example of each calculation here.

4) Find the <u>equation</u> of your best fits line for your $F_e$ vs $1/r^2$ graph. Show your work.

5) Use values from your best fits line, and other data collected, to find your experimental value for Coulomb's constant, $k_c$. Show your work.

6) Find the percent error between your experimental value for $k_c$, and the accepted value.

**Error Analysis**

Thoroughly explain what the main sources of error are for this lab, and how you would correct them.