

A.P. Physics C - Coulomb's Law Lab

Objective: Using a couple balloons of the same size it is possible to charge it up, suspend them from thread and determine the charge & number of electrons exchanged. If the two charged balloons are suspended from the same point they will hang in equilibrium forming a triangle. Knowing the forces are all balanced, one can calculate the electric force; measuring the distance between the two balloons the charge can be calculated.

Procedure:(SHOW ALL CALCULATIONS AND WORK!!!)

- ❑ Blow up balloons.
- ❑ Attach the balloons to the thread.
- ❑ Tie threads together and hang.
- ❑ Charge the balloons and touch together.
- ❑ Determine a procedure for calculating the separation value "r" based on experimental measurements. DON'T MEASURE 'R' .Use Geometry to find it! Make other measurements. Write a clear and understandable method.

- ❑ Show the free body diagram for your experimental setup. Be sure to label all parts.

- ❑ Determine the tension in the thread?

- ❑ What does the Electrostatic force equal in your free body diagram (2 answers here ...1 conceptual, 1 numerical)?

- ❑ Solve for " q " in terms of m , L , θ and available constants.

- ❑ Solve for the numerical value of the charge on each balloon.

- ❑ How many electrons were on each balloon?