

Name:

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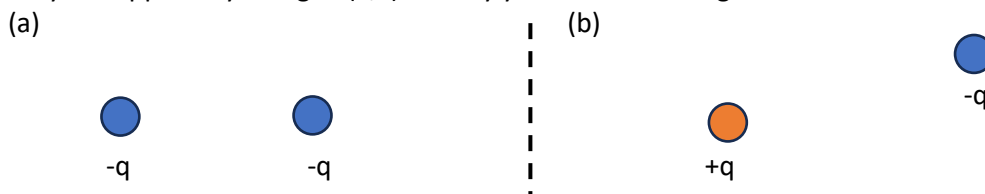
Date:

Physics 2121

Lab Physics for Science & Engineering II

Coulomb's Law: Prelab

1. What is the objective of this week's experiment?
2. Draw arrows in the diagram below to show the direction of the electrostatic forces each of the two charged particles exerts on the other particle for: (a) they are both negative charges and (b) they are oppositely charged (+/-). Justify your answers using Coulomb's Law.



3. Consider the electrostatic force between two charged particles q_1 and q_2 separated by a distance r . What happens to the magnitude of the force if q_1 is doubled while q_2 and r are unchanged? What happens to the force if r is doubled while q_1 and q_2 remain the same?
4. Suppose the data in the table below are measurements of the Coulomb force F between two charged particles taken at various distances r . Create a plot of F vs. $1/r^2$ and apply a linear fit to the data. Give an explanation why the plotting data in the variables F and $1/r^2$ should be linear based on your knowledge of Coulomb's Law. Print and attach your plot to this page.

r (cm)	F (N)
5	4.11
6	2.78
7	2.05
8	1.65
10	0.992
12	0.727
15	0.476
20	0.282

5. The equipment in this experiment uses dangerously high voltage and is very fragile. I affirm that I will not touch/handle the lab equipment without reading and strictly following the lab procedure to ensure safe use of the equipment. Circle your answer.

Yes / No