

Coulomb Force Lab Prequestions

1. Draw a series of diagrams that show the process for charging in this lab. (Be sure to indicate the relative size of the charges on each object.)
2. At what point do you discharge and recharge the ping pong ball?
3. Explain the purpose of doing the 10 cm run twice?
4. Why does each trial need to be done quickly?
5. What happens if the ball on the torsion balance swings around and touches the metal supports? What do you do if this happens?
6. Why should you not touch either of the ping-pong balls with your hands?
7. How do you obtain a force reading using a torsion balance?
8. Should you find the average of your trials before graphing? Why or why not?

Coulomb Force Lab Post-Questions

1. Explain why the ball on the torsion balance is initially attracted to the ball on the meter stick and repelled after contact.

2. In the lab, you found that the electric force is related to the separation distance of the charges by a power function ($F = a r^n$). The value of “a” was a constant (approximately) during the experiment. What should the value of “a” depend on? Why?

3. Describe (include diagrams) how you could reduce the net charge on one of the ping-pong balls by half. You can use other objects if your answer requires.

4. What would happen to the force between the balls if:
 - a. the ball on the meter stick had its charge reduced by one-half of its original value?

 - b. the charge on each ball was reduced by one-half of its original value?

5. Round your value for n to the closest integer. What should the SI units be for “a”?