

**Coulomb's Law Lab- 02-28-02 - Mr. Ward and Mr. Gener**

**Name, period** \_\_\_\_\_

1. Open **coulomb**. Record all data below. Make a good sketch of the apparatus. Record the masses of all objects and the charges on them. Record the distance between the spheres on the bar. Record the distance from the large sphere to the small one. Click one single step. Record the angular acceleration. Using acceleration, torque, and the moment of inertia of the dumbbell, find the electrical constant,  $k$ . Don't do this calculation until you are finished with the rest of the labs.

2. Open **two like charges**. Record  $q_1$ ,  $q_2$ , with sign and the  $r$  between them. Don't worry about the charge on the small test charge. Don't worry about its initial position. Predict what the small positive test charge will do.

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**Click run** and check your hypothesis. What happened and why?

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Record the equilibrium position. Calculate this location below using Coulomb's law as Mr. Gener showed on Monday. \_\_\_\_\_

3. Open **two like charges L**. Record the charges with sign. Predict what the test charge will do.

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To check your hypothesis, **single step** using the arrow with bar in the lower left corner. **DON'T** click **run**. What happened and why?

4. Open **two like charges R**. Record the charges with sign. Predict what the test charge will do.

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To check your hypothesis, **single step** using the arrow with bar in the lower left corner. DON'T click **run**. What happened and why?

5. Open **two opposite charges**. Record the charges with sign. Predict what the test charge will do.

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To check your hypothesis, **single step** using the arrow with bar in the lower left corner. DON'T click **run**. What happened and why?

6. Open **two opposite charges L**. Record the charges with sign. Predict what the test charge will do.

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To check your hypothesis, **single step** using the arrow with bar in the lower left corner. DON'T click **run**. What happened and why?

7. Open **two opposite charges R**. Record  $q_1$ ,  $q_2$ , with sign and the  $r$  between them. Don't worry about the charge on the small test charge. Don't worry about its initial position. Predict what the small positive test charge will do.

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**Click run** and check your hypothesis. What happened and why?

Record the equilibrium position. Calculate this location below using Coulomb's law as Mr. Gener showed on Monday. \_\_\_\_\_