

Name: _____

Date: _____

Physics Virtual Lab: Coulomb's Law

http://employees.oneonta.edu/viningwj/sims/coulombs_law_s.html

Electrostatic Force

We've already played with static electricity and found that charged particles exert a force on each other: like charges repel and opposite charges attract. Today we're going to figure out how the that force is affected by the magnitude of the charges involved and the distance between the charges. These relationships can be put together into an equation that we call **Coulomb's Law**.

Magnitude of Charge #1

Let's test how the magnitude of charge #1 affects the force. Do not move the charges, but on the left side use the up/down arrows to change the magnitude of the "stationary ion" (red one). Do not touch the settings for the "mobile ion" (blue one) At the bottom of the simulation it says "Force of _____"; this is where you find the force between the charges. A force of attraction is **negative** and a force of repulsion is **positive**. Fill in the table below with your data and then graph it on the axes to the right.

Charge of charge #1 (C)	Force (N)
+1	
+2	
+3	
0	
-1	
-2	
-3	



What is the relationship between the charge of charge #1 and the force between charges? Try writing it in words AND in a proportionality statement.

Magnitude of Charge #2

Now let's test how the magnitude of charge #2 affects the force. Do not move the charges, but on the left side use the up/down arrows to change the magnitude of the "mobile ion" (blue one) Do not touch the settings for the "stationary ion" (red one). Fill in the table below with your data and then graph it on the axes to the right.

Charge of charge #2 (C)	Force (N)
+1	
+2	
+3	
0	
-1	
-2	
-3	



What is the relationship between the charge of charge #2 and the force between charges? Try writing it in words AND in a proportionality statement.

Distance Between Charges

Now leave the magnitude of the charges alone but pick up the blue charge and move it around. On the right the simulation will graph Force vs. Distance for you. What is the relationship between the force and the distance between charges? Is it linear? If not linear, what could it be? Hint: this is a lot like the Law of Universal Gravitation.