Name:_____

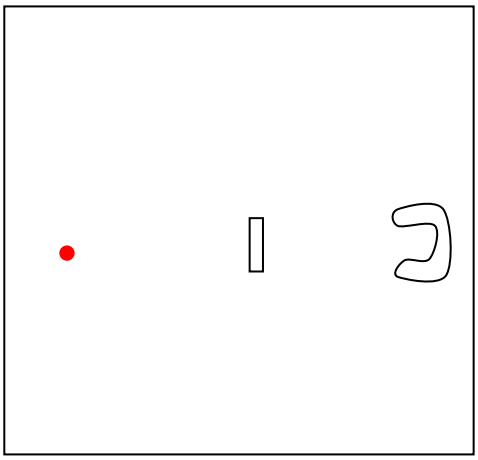
ELECTRIC FORCES AND FLDS LAB (L-103)

One the best ways to get a conceptual feel for electrical phenomenon is to play with them. This lab will require you to do just that using what are called Physlets (these are Applets designed around physics principles).

If you are quick and clever, you will be able to complete your write-up during lab. Work in groups of two. Go to *https://www.compadre.org/Physlets/electromagnetism/*. When the page opens, click "Electromagnetism" in the left-hand column. Find the exercises listed and execute (be careful—there is a difference between illustrations, explorations and problems).

Part A: (Chapter 22—Electrostatics):

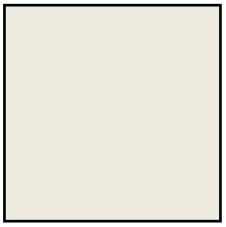
1.) Select Exploration 22.4.
a.) In which animation are the two unknown charges a positive and negative charge of equal magnitude?



2.) Select Exploration 22.6. Find a charge configuration that *uses no more than three charges* and puts the charge shown into the cage. When you get it, draw your configuration along with the path your charge took.

3.) Select Problem 22.2. What is wrong with the animation?

4.) Select Problem 22.4. Draw a picture showing the sign and location of each charge within the grayed area.



Name:_____

Part B: (Chapter 23—Electric Fields)

5.) Select Illustration 23.4. Leaving the charge and velocity as initially set, determine the magnitude of the electric field needed to make the charge hit the green spot (if it doesn't work, tell me the *direction* of the E-fld in Prob 23.6).

6.) Select Problem 23.2. Determine whether the net charge is positive or negative.

7.) Select Problem 23.3. Which of the charge configurations (a, b, c, what?) fit the field produced when you click on E-Field III?

Part C: (Chapter 25—Electrical Potentials)—To be done later . . .

8.) Select Problem 25.1. Run Animation 3. The electron is clearly moving in an unnatural way. Still, assuming that something was motivating it to do so and looking at the system:

a.) Does the *electrical potential energy* increase or decrease as the charge moves? (circle one)

b.) Is the *electrical potential* at the charge's final point *higher* or *lower* than at the charge's original point? (circle one)

9.) Select Problem 25.7. Which animation mimic's the charge's actual expected motion?

10.) Select Problem 25.8. Run Configuration 2. From largest to smallest, rank the magnitude of the electric fields in the regions.

Extra Credit for E.Flds: Do *Part a* of Problem 23.7