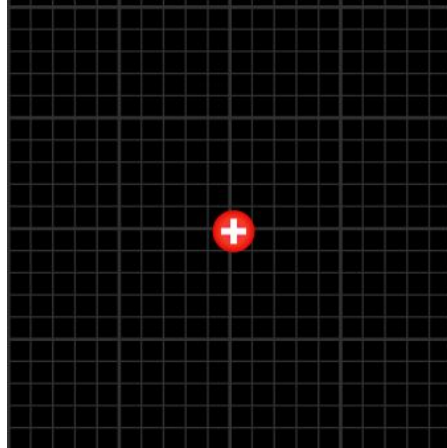


Electric Field Lab

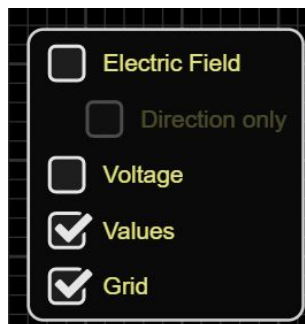
Go to the following site:

https://phet.colorado.edu/sims/html/charges-and-fields/latest/charges-and-fields_en.html

- 1.) Place one charge in the middle of the screen as shown below.



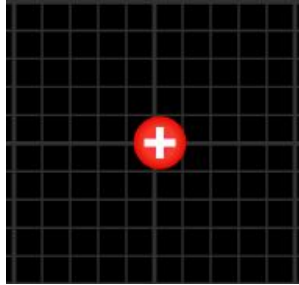
- 2.) Use physics to determine the electric field at a distance of 1 m from the charge.
- 3.) Check the following settings.



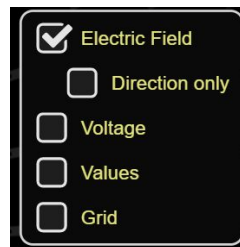
- 4.) Use sensors to measure the electric field at a distance of 1 m away. How close did you come? (Remember, 1 N/C is equivalent to V/m)
 - A.) Use proportional reasoning to determine the electric field at a distance of 2 m from the charge. Measure to see how close you came.

B.) Use proportional reasoning to determine the electric field at a distance of 3 m from the charge. Measure to see how close you came.

4.) Put one charge in the middle of the screen as shown below.



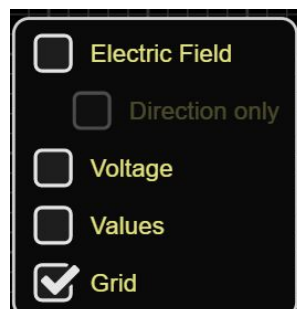
Use the following settings:



A.) Describe the direction of the electric field.

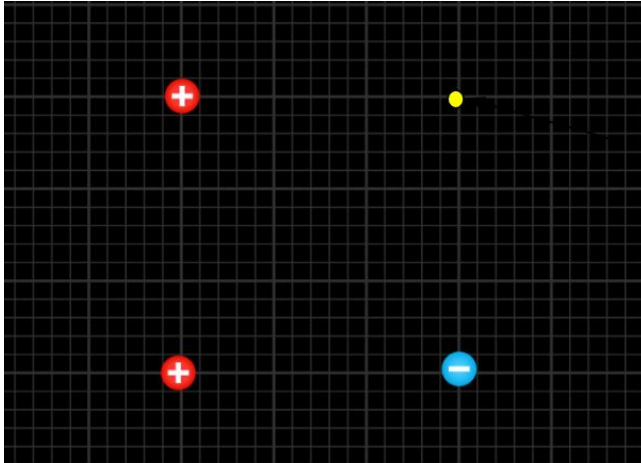
B.) How do the arrows show the magnitude of the electric field? Explain.

5.) Use the following settings:



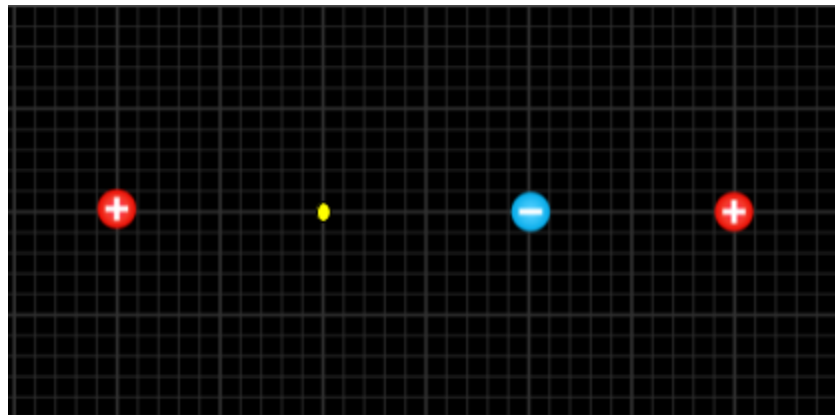
A.) Place 3 charges as shown below:

Predict the magnitude (size of the arrow) and direction of the electric field at the location of the yellow dot.



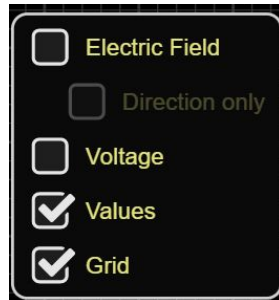
Use the sensor button to measure the electric field at this point and compare it to your results. We are only interested the size and direction of the arrow rather than the actual value.

6.) Place the following three charges on the screen as shown below:



A.) Use physics to find the magnitude (actual value) of the electric field at the location of the yellow dot.

B.) Set the following.



C.) Use the sensors to measure the electric field at the location of the yellow dot. How close did you come?

D.) Check the Electric Field Box under settings.

E.) Give a few observations of the direction of the electric field. Check a few of the arrows for accuracy. Were they correct?

F.) Move around the sensors button to find out where the electric field is strongest. Explain conceptually why this is the strongest location.