Electric Field Hockey fun.

Bring up the the following website: https://phet.colorado.edu/en/simulation/electric-hockey

And run the Field Hockey simulation.

Spend a few minutes dragging charges down from the "bucket of charges" and, using the Show Field option (lower right hand corner).. view the changing electric field. Remember, the electric field we "see" illustrates the direction of force that a positive test charge will experience in that field.

Go ahead and START the demonstration, which releases the "test charge" into the field.

To hand in to Clark.

1. Using no more than ten (10) positive and ten (10) negative charges, construct a field which guides the test charge between the obstacles and into the goal (using difficulty level 1). Make sure the [show trace] feature is ON (so you can record the path of the "ball") and that the [show field] is also ON (so we can see the E- field vectors in the background). Use the [print screen] feature to print that screen out.
2. Redo the experiment but this time, increase the mass (to two or three times the original value) but leaving everything else the same. Use the [print screen] feature to print that screen out.

Use the space below to answer these questions.

1. How does the direction of the force vectors from any individual charge (pos or neg) compare to the direction of the total electric field at the location of the "test charge/soccer ball". How can you explain the differences?

2. How does the increasing of mass (doubling or tripling) affect the forces felt by the "test-charge/soccer ball"? Why?

3. How does the increasing of mass (doubling or tripling) affect the trajectory of the "test-charge/soccer ball"? Why?