1 | Question 1

Place a single charge in the working area. Using the E-field sensor (with ”values” selected), and the measuring tape, confirm that the E-field calculated by the PhET simulation agrees with the equation we have used in class. (Note, the units for E-field that we learned in class were N/C. The PhET simulation may express the units differently. But the numerical values should be the same.)

I placed a sensor 1.013 metres away from the -1nC charge. The sensor showed that the the charge had a voltage of 8.78, and my calculations show that, per $\frac{9*1}{1.013^2} N/C$, the electric field should be about 8.8.

2 | Question 2

Place two positive charges in the working area. Where do you expect the E field to be zero? Does the simulation confirm that?

There is a point in between the two electric changes in which the electric field would be 0. And yes, the PHET simulation does show that.

3 | Question 3

Same as above, but use one positive and one negative charge.

None. There should not be given that the two charges are attracting each other.

4 | Question 4

The E field at a given point can be thought of as the force that a +1 C charge would feel if it were placed there. What does ”electric potential” or ”voltage” appear to represent? The units mentioned in #1 may be of interest as you consider this question.

Volts is a unit for Jouls / coulumb

5 | Question 5

Does electric potential appear to be a scalar or a vector?

A scalar, it seems. This makes sense given that energy is a scalar.

6 | Question 6

What or where is the zero-point for electric potential?

When a position and negative charge is present, it seems like the point between the two would have an electric potential of 0 volts.

7 | **Question 7**

What is the relationship between the local E-field vector and a line of constant electric potential? (You can explore this first by moving the voltage sensor drag the little box, not the crosshairs and observing the voltage values, then by plotting lines of constant potential).

It seems like the local e-field vector and the line of constant electric potential are always perpendicular to each other. That is, the vector of the charge does not have a component tangent to the constant field line when the test charge is dropped on it.