Name _____ Date _____ Period _____

Extending Concepts

1. A proton is placed in an electric field between two parallel plates separated by a distance of 1.00 cm. A potential difference of 1.00×10^2 V is placed across the plates.
   a. What force acts on the proton?

   b. What is the acceleration of the proton if it starts from rest on the positive plate?

   c. What will be the speed of the proton when it strikes the negative plate?

2. Two charged spheres, each carrying a charge of 1.00 μC, are located at opposite ends of a meter stick.
   a. Calculate the electric field strength at the 0.25-m mark.

   b. Where on the meter stick is the electric field strength equal to zero?

   c. If the charged sphere located at the 1.00-m mark is replaced by a charged sphere carrying – 1.00 μC, what will be the strength of the electric field at the 0.50-m mark?

3. Three capacitors, C_1, C_2, and C_3, each have an electric potential of 3.0 V. The charges on the capacitors are q, $2q$, and $3q$, respectively.
   a. Compare the capacitance of C_3 to that of C_1.

   b. If the second capacitor, C_2, carries a charge of 6.0 μC, what is the capacitance of C_1?