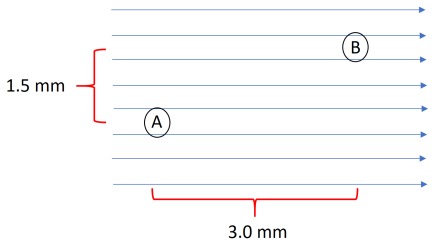
Electric Potential Discussion

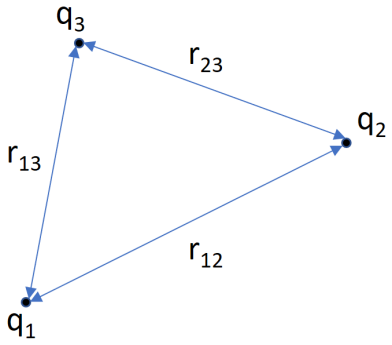
PHYSICS 202

NAME: SECTION:

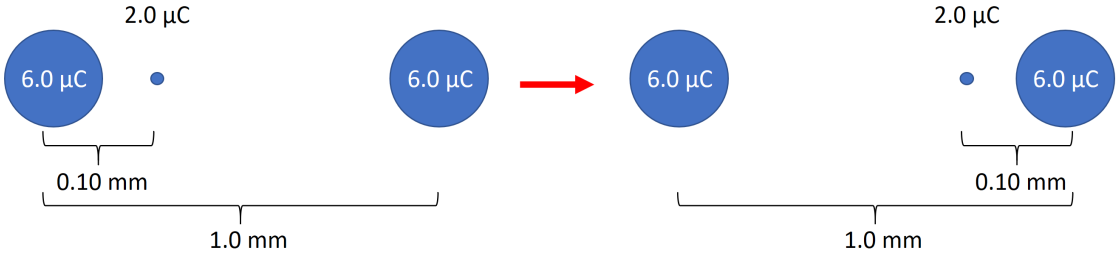
Problem 1. Consider a charge of $6.0nC$ in a uniform electric field of $4.0 \times 10^3 V/m\ \hat{x}$. What are (a) the potential difference between points A and B in the figure and (b) the work required to move the charge from point A to point B?



Problem 2. Suppose you have three charges with $q_1 = 6.0\ \mu$C, $q_2 = 3.0\ \mu$C, $q_3 = 2.0\ \mu$C, $r_{12} = 9.0$ mm, $r_{23} = 7.0$ mm, and $r_{13} = 7.0$ mm. Calculate the electric potential energy of the configuration (a) in Joules and (b) in electron volts.



Problem 3. Consider a point charge of 2.0 μC located between 2 point charges of 6.0 μC such that the 6.0 μC charges are 1.0 mm apart and the 2.0 μC charge is 0.10 mm from the leftmost charge. Calculate the work done in moving the 2.0 μC charge to a position of 0.10 mm from the rightmost charge.



Problem 4. At a certain distance from a charged particle, the magnitude of the electric field is 200 V/m and the electric potential is -8.00 kV. (a) What is the distance to the particle? (b) what is the magnitude of the charge?