**Sample Problem Set 03**

**Relevant topic: [*Textbook Section 24.2*: Potential difference in a uniform electric field]**

**SP 3.1**

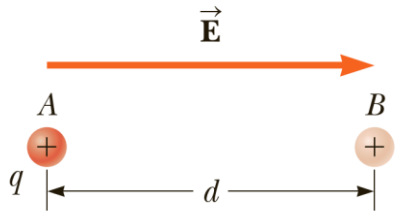
A point charge $q = 20.0\ \mu C$ moves from A to B separated by a distance $d = 0.12\ \text{m}$ in the presence of an external electric field $\vec{E}$ of magnitude 250 N/C directed toward the right as in the following figure.

(a) Obtain the electric force exerted on the charge.

(b) Obtain the work done by the electric force.

(c) Obtain the change in the electric potential energy of the charge.

(d) Obtain the potential difference between A and B.




**Relevant topic: [*Textbook Section 24.3*: Electric potential and electric potential energy due to point charges]**

**SP 3.2**

In the following figure, the two charges are fixed and separated by a distance, $d = 6.00\ \text{cm}$. The positions of the two charges and point A form an equilateral triangle.

(a) Obtain the electric potential at point A.

(b) Obtain the electric potential at point B, which is halfway between the charges.