

Physics 12 U7 Electro Statics Worksheet #3

Name: _____

- Remember that E looks similar to Ep
- Remember that Ep sounds similar to V

Coulombs Law $F = KQq/R^2$ vector

Electric field = $E = F/q = Kq/R^2$ vector

Ep= electric potential energy = KQq/r scalar

V = electric potential = $Work/q = E \times d = KQ/r$ scalar

1. These problems are based on a stationary $+ 8 \mu\text{C}$ charge.

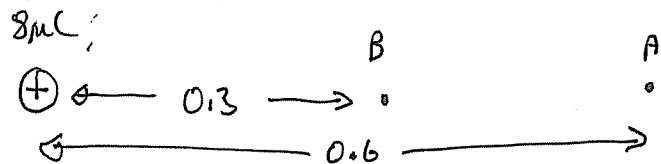
a) Find E (electric field) at $d = 0.3 \text{ m}$

b) Find potential (voltage) at $d = 0.4 \text{ m}$

c) Draw the field lines around the charge including direction

d) If I put a $+ 2 \mu\text{C}$ at $d = 0.25 \text{ m}$ find F

e) What is the potential difference between pt A ($d = 0.6 \text{ m}$) and pt B ($d = 0.3 \text{ m}$)

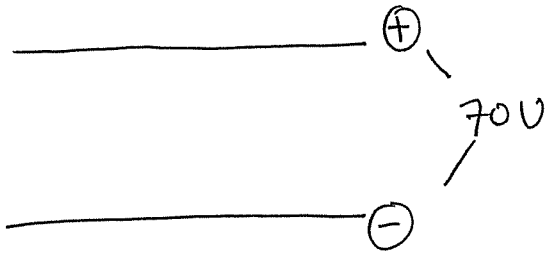


f) If an electron is allowed to start at pt A ($d = 0.6 \text{ m}$) and accelerate to pt B ($d = 0.3 \text{ m}$), how fast will it be going when it reaches pt B?

g) How much energy (PE) is stored if I put an electron at $d = 0.4 \text{ m}$?

h) How much work is done to move a proton from ∞ (infinity) to $d = 0.4 \text{ m}$?

2. These problems are based on two plates separated by 0.3 m and attached to a 70 V source.



a) Find E between the plates, magnitude and direction.

b) Find the force on a proton between the plates, and direction of the force

c) Find how much work it would take to move an electron from the top plate to the bottom.

d) If an electron was released at the bottom plate, how fast would it be going when it hit the top plate?

e) If an proton was released at the top plate, how fast would it be going when it hit the bottom plate?

f) Why can you ignore gravity for all of the above?