

Week 19 - Electrostatics

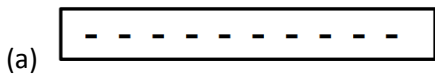
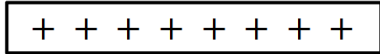
Read Page 221-222 (Electric Fields)

TQ1. What is the equation for electric field strength, E ? And what are the units?

QQ2. What is the electric field strength of an electron that experiences an electric force of $8.0 \times 10^{-15} \text{ N}$?

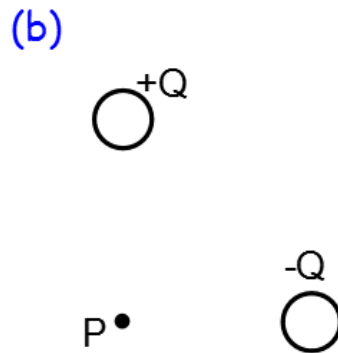
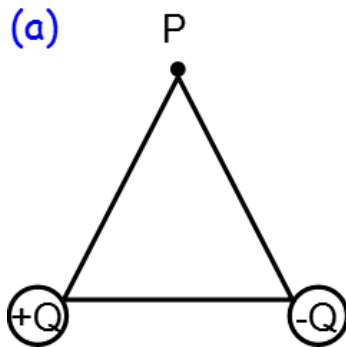
QQ3. If a proton is in an electric field of strength $4.0 \times 10^{-15} \text{ N/C}$, what electric force does it experience?

CQ4. Draw the electric field lines for each case: (Draw at least 8 arrows for each case)



(b)

CQ5. Show the direction of the net electric field in both cases at point P: (use an arrow and label E_{net})



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Read Page 226 and 228 (Electric Potential Difference and Parallel Plates)

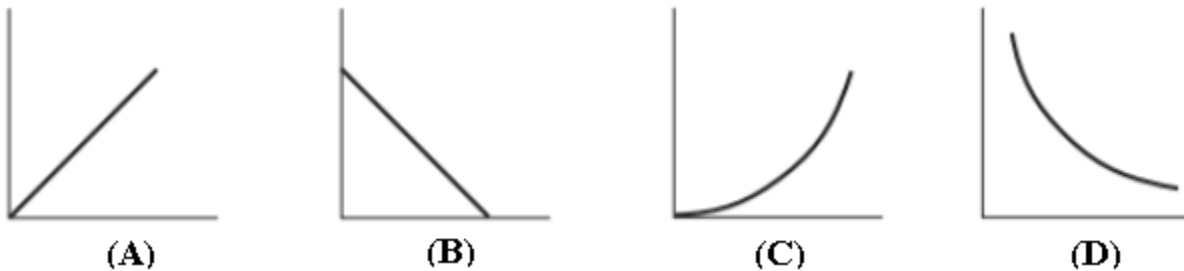
TQ6. What is the definition of electric potential difference or Voltage?

QQ7. If an electron requires 8.0×10^{-19} J of work to move it from point A to B, what is the potential difference?

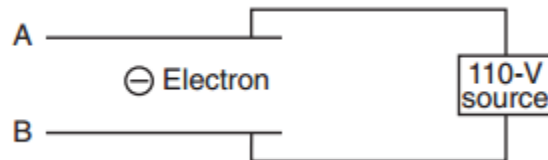
QQ8. If a 9 V battery passes 1.875×10^{18} electrons each second, how much energy in Joules is present in this battery?

TQ9. What is the equation for the electric field in terms of Voltage and distance?

CQ10. Which graph best represents the potential difference (V) and the distance between two plates?



CQ11. The electron is attracted to plate B. What is the sign of the charge on plate A as well as plate B? What is the direction of the electric field between the plates?



CQ12. An electron beam is directed into a region of two oppositely charged parallel plates as shown below. Draw the direction of the electron beam inside of the parallel plates. Also, draw the electric field lines between the two parallel plates.

