

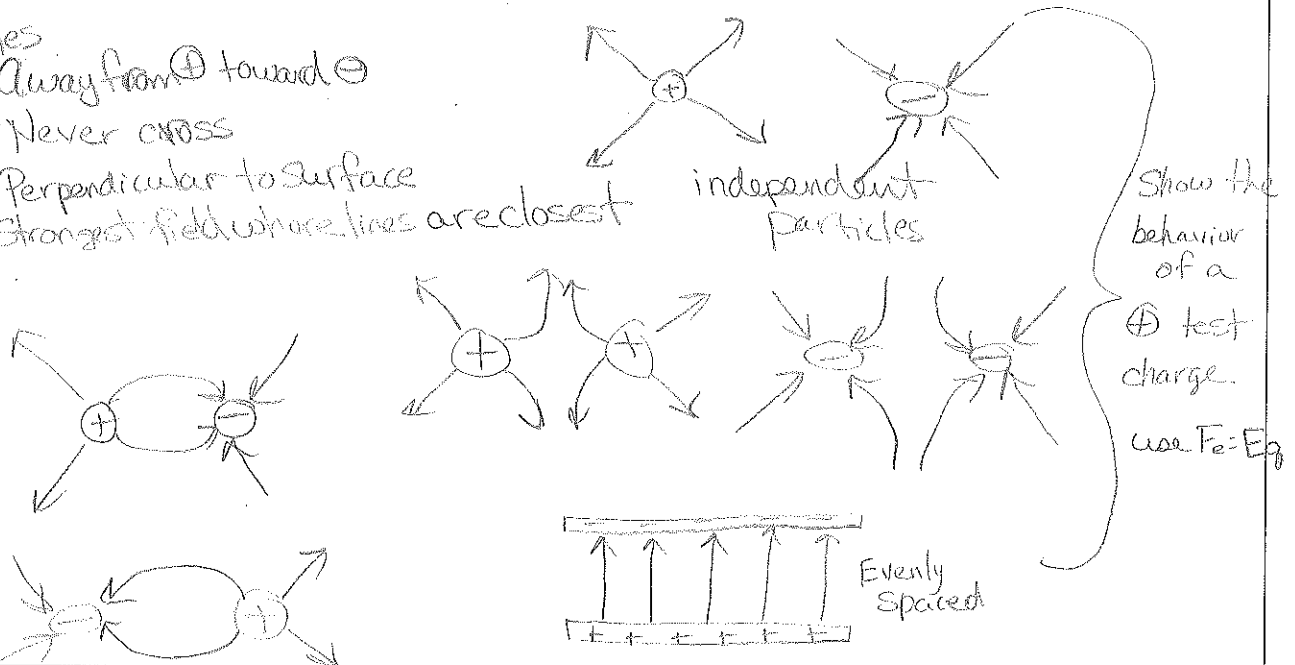
Topic 5A: Electric Charge, Fields and Force

Skill 36: Electric Field Lines

Electric Field lines represent the motion of a free POSITIVE test particle. What would Positive Do? $\oplus$ charges follow field line (Negative particles go opposite field lines)

Rules

- Away from $\oplus$ toward $\ominus$
- Never cross
- Perpendicular to surface
- Strongest field where lines are closest



Skill 37: Electrical Energy/Work/Potential Difference

It requires work to move a charge against the electric field

- Work done on the charge becomes electrical energy as either
 - potential energy (stored)
 - KE of electron

To gain potential work must OPPOSE the field, To lose potential an object is released in a field (loss of PE becomes KE)

Work & Energy are the same thing - represented by W

The difference in energy between any 2 points is known as potential difference (AKA voltage)

$$W = Vq$$

measured in Joules, eVs or VC

$$V = \frac{W}{q}$$

measured in $\frac{J}{C}$ or Volts

amount of energy (or work done) on each unit of charge

$$1\text{eV} = 1.6 \times 10^{-19}\text{J}$$

electron volt is the amount of energy required to move elementary charge through 1V

you can have a partial eV