

Name KEY

Physics 161

Lab Time _____

Quiz – Voltage and Electric Fields

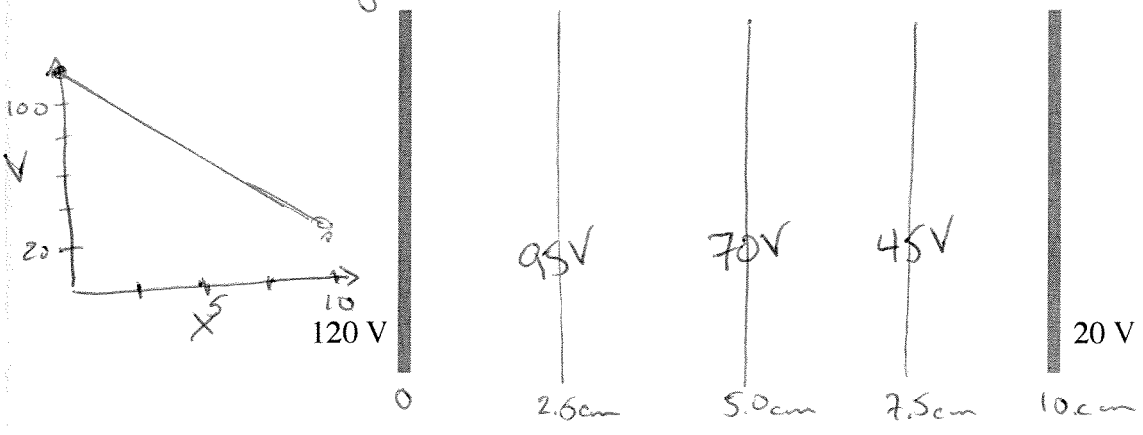
April 8, 2011

- This is a closed book and closed note examination.
- Show all work and thoughts!

Two metal plates are placed parallel to each other and are separated by 10 cm. One plate is held at a voltage of 20 V and the other plate is held at 120 V.

1. Draw three voltage lines between the two plates. Identify the voltage for the line in the middle of the plates.

Voltage lines show a uniform voltage drop

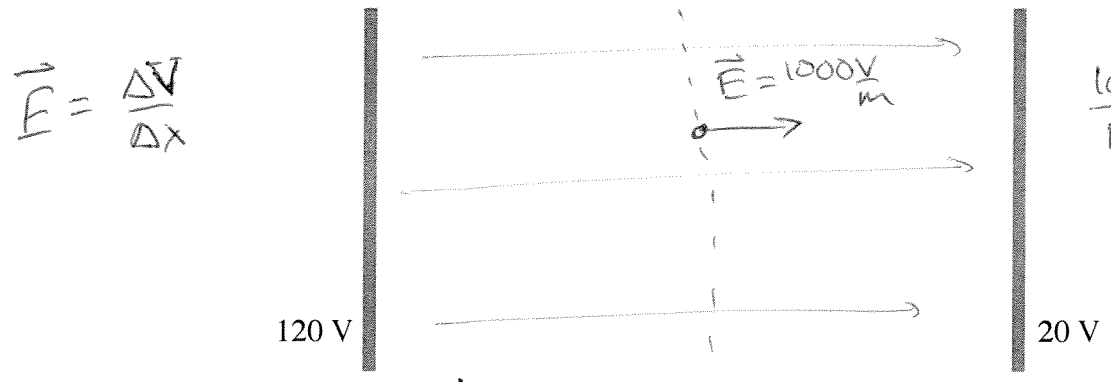


$$\Delta V = 120V - 20V = 100V$$

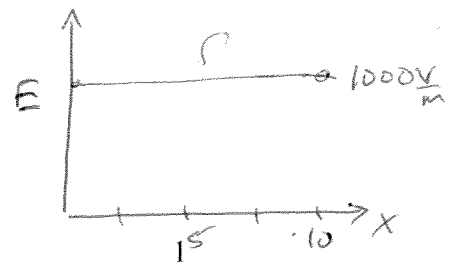
70 V between plates – right in the middle

2. Draw the electric field lines between the two plates. Determine the magnitude (and direction) of the electric field in the middle of the plates.

Electric Field is uniform between parallel plates



$$\frac{100V}{10cm} = \frac{100V}{0.1m} = 1000 \frac{V}{m}$$



\vec{E} points from high voltage towards low voltage

Quiz