

## #8 Electric field and the lines with equal voltage

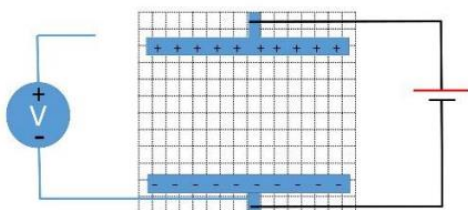
### The purpose of the experiment:

- 1-To learn about the concept of electric field.
- 2 -Finding lines with the same voltage.
- 3 -Study the relation between lines with the same voltage and lines of electric field.

### The apparatus:

Voltage source (battery), high-resistance carbon paper, voltmeter, volt measuring sensors, connectors.

### Electric circuit:



### Equations:

$$E_{BA} = (V_B - V_A) / d_{AB}$$

$$U_A = q \times V_A$$

$$W_{BC} = q \times (V_C - V_B)$$

Symbol	Meaning	Unit
$V_A$	The voltage of point A	Volt
$E_{AB}$	Electric field between point A and B	Volt/m or N/c
$U_A$	The potential energy at point A	Joule
$W_{AB}$	The work needed to move the charge from point A to point B	Joule
$e$	Electron charge	C
$q$	The charge	C

Point and its coordinates	Potential or voltage	Distance between points	Electric field
A ( , )			$E_{AB} =$
B ( , )			$E_{BC} =$
C ( , )			$E_{CD} =$
D ( , )			$E_{DE} =$
E ( , )			$E_{EF} =$
F ( , )			$E_{FG} =$
G ( , )			$E_{GA} =$
$e = 1.6 \times 10^{-19} \text{ C}$		$U_A =$	$W_{AB} =$

