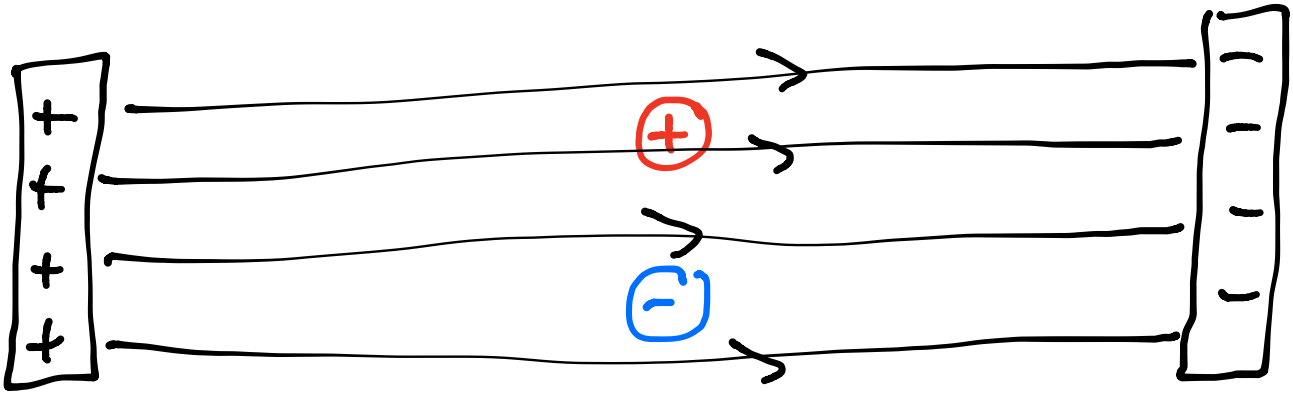
Electric Potential Notes

The position of a charge in an electric field is going to give the charge potential energy.

- Charges will move from high PE to Low PE, just like a ball on a ramp moves from high PE to low PE.
- Biggest difference is that ⊕ charges and ⊖ charges will move in opposite directions.



Positive charge would move right, negative will move left.

We can find how much Energy each charge has by $\frac{\text{Electric PE}}{q}$

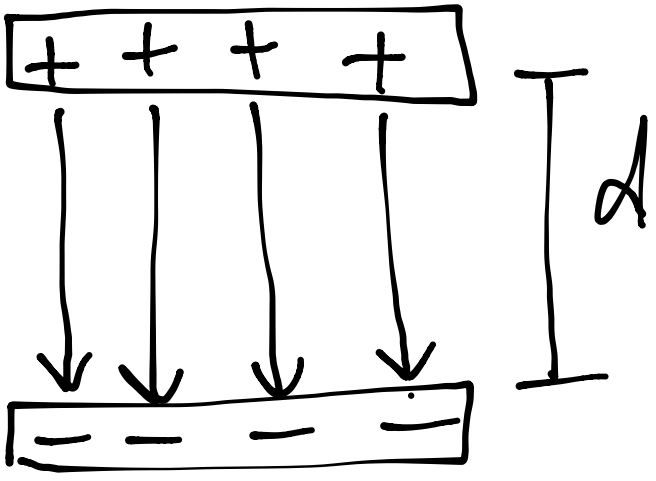
Electric Potential or Voltage
- the energy per charge
- units = Volts (V) - scalar - symbol V
- when the Electric Potential between two points $\neq \emptyset V$ charges will move.
- It takes Work to move like charges together or to move $\oplus$ against an E. field

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

$W = F \cdot d$

$$V = \frac{W}{q_{TEST}} = \frac{\frac{kq_1 \cdot q_{TEST}}{r^2}}{q_{TEST}} \cdot r = \frac{kq_1}{r}$$

$$\boxed{V = \frac{kq}{r}}$$ voltage from a point charge



For parallel plates

$\vec{V} = \vec{E} \cdot d$

When conductors are connected across, charges move, If the circuit is complete then the voltage acts as an

Electromotive force $\mathcal{E}$.