

Current = The rate of flow of charge

Charge = A property of particles where it flows past a point when there is current of 1A

Power = The rate of energy transfer per unit time

Convectional current = Current from a positive terminal towards a negative one

Electrolytes = Liquids that can carry an electric current

Number density = Number of free electrons per cubic metre of material

Mean drift velocity = The average velocity of the electrons as they travel down the wire, colliding with positive metal ions

Potential difference = Measure of the transfer of energy by charge carriers

Electromotive Force = Energy transferred from chemical energy to electrical energy per unit charge

Thermionic emission = Emission of electrons through the action of heat

Resistance = The ratio between voltage and current

Resistivity = Product of the resistance of a component and its cross-sectional area, divided by length, at a given temperature of a material

Series circuit = A circuit with only one path for current, from one terminal to another

Parallel circuit = A circuit that provides many paths for current

Potential divider circuits = Circuits that can vary the p.d. across an output when connected to an output

Potentiometer = Variable resistor that can give a continuously variable output voltage

Ohm's law = A Metallic conductor kept at a constant temperature, the current in the wire is directly proportional to the potential difference across it

Kirchhoff's 1st law = Sum of currents into point is = to sum currents out that point, w/ conservation charge

Kirchhoff's 2nd law = Sum of EMF is = to sum p.d.s. around a closed loop, w/ conservation energy

$$e = 1.6 \times 10^{-19} \text{ C}$$

$I \uparrow$  if  
- # of  $e^-$ /s past  
- given point  
- Same # of  
- pass than  $V \uparrow$

$$\sum I_{in} = \sum I_{out}$$

$$\sum \mathcal{E} = \sum V$$

in closed loop

$$V = IR$$

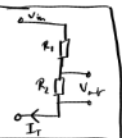
$$I = Anev$$

$$Q = \pm ne$$

$$I = \frac{\Delta Q}{\Delta t}$$

$$R = \rho \frac{L}{A}$$

$$V = \frac{W}{Q}$$
$$\mathcal{E} = \frac{W}{Q}$$

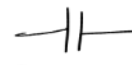
$$V_{out} = \left( \frac{R_2}{R_1 + R_2} \right) V_{in}$$
$$\frac{V_1}{V_2} = \frac{R_1}{R_2}$$


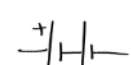
$$E = \frac{1}{2} mv^2$$


Series	Parallel
$R_T = R_1 + R_2 + \dots$	$R_T = \left( \frac{1}{R_1} + \frac{1}{R_2} + \dots \right)^{-1}$
$V_T = V_1 + V_2 + \dots$	$V_T = V_1 = V_2 = V_3$ ↳ in a loop
$I_T = I_1 = I_2$ ↳ in a loop	$I_T = I_1 + I_2 + \dots$

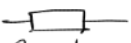
$$\mathcal{E} = V + Ir$$
$$\mathcal{E} = I(R + r)$$

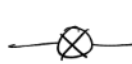
$$P = IV \quad P = \frac{W}{t}$$
$$P = I^2 R \quad W = VQ$$
$$P = \frac{V^2}{R} \quad W = VIt$$


 Capacitor


 Battery


 Fuse


 Resistor


 Lamp

 LED

 Diode

 Variable Resistor

 LDR

 Thermistor

Anode = +ve  
Cathode = -ve