4. ELECTRICAL CIRCUITS

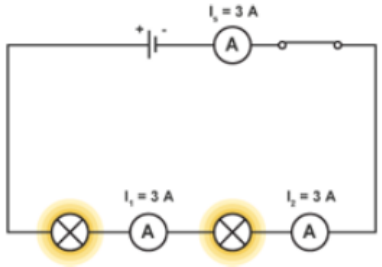
1. Electrical Circuit Symbols

Symbol	Component	Function	Example Application
	cell	providing voltage	combining into a battery
	battery	providing voltage	powering circuits
	lamp	producing light	lighting
	switch	controlling current (on/ off)	various
	resistor	controlling resistance (fixed)	potential dividers
	variable resistor	controlling resistance (variable)	dimmer switch
V	voltmeter	measuring voltage	fault finding
A	ammeter	measuring current	electrical safety

N5 Past Papers to complete:
2014 → MC Q1-3 Section B Q1
2015 → MC Q1-3 Section B Q1
2016 → MC Q3-4 Section B Q2

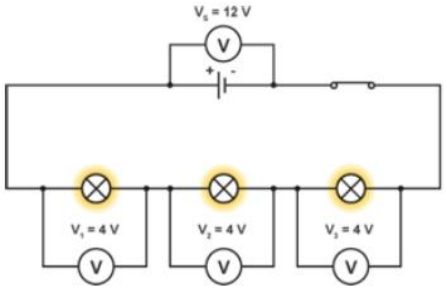
2. Series Circuits

- The **Current** in a series circuit is the same at all points. $I_s = I_1 = I_2$



- The **Voltage** in a series circuit splits up amongst the component in the circuit.

$$V_S = V_1 + V_2 + V_3$$

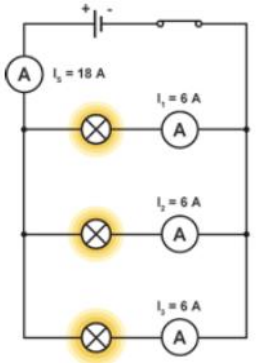


- The total **resistance** in a series circuit is equal to the sum of all the resistances of the components.

$$R_T = R_1 + R_2 + \cdots$$

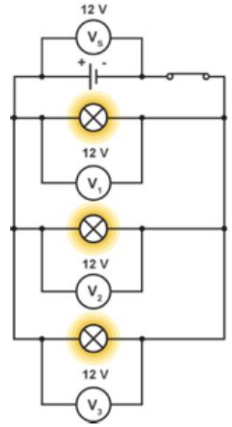
2. Parallel Circuits

- The supply **current** splits up amongst the branches in a parallel circuit. $I_s = I_1 + I_2 + I_3$



- The **Voltage** supply in a parallel circuit is equal to the voltage in each branch.

$$V_S = V_1 = V_2 = V_3$$



- One over the total **resistance** is equal to the sum of one over the resistance of each branch. (Use the x^{-1} button in your calculator for 1 over your resistance and to get R_T at the end)

$$\frac{1}{R_T} = \frac{1}{R_1} + \frac{1}{R_2} + \cdots$$