Science 9 – Physics Topic 3.3 Concept 5: Conductors must form a closed loop to allow current to flow.

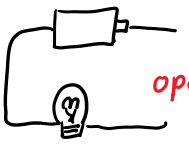
Electrical circuit:

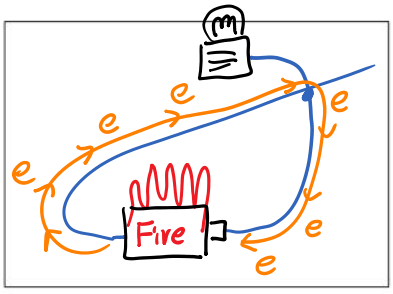
- At a minimum, a circuit must have a Source, a load, and wires.
- In additional, the circuit must form a closed loop to allow current to flow.

Figure 3.19: A closed loop allows current to flow and light the bulb.

- Source (cell)
- Load (light bulb)
- Wires

Open loop: current are not able to flow





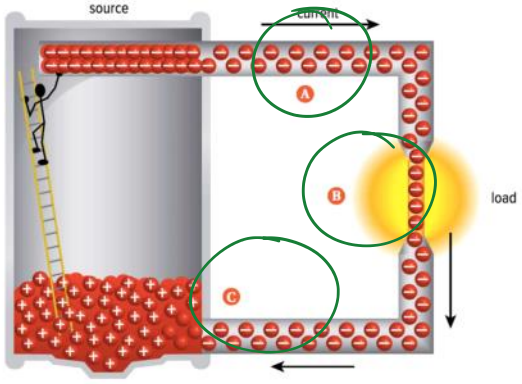
Short Circuits

A circuit with a resistance that is too low, making the current so high that it is dangerous

•Example: If there wasn't a load (light bulb) to resist the flow of current, the current would be so large that the Conductors or source would get very hot and start a fire

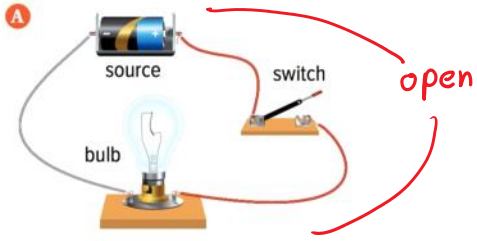
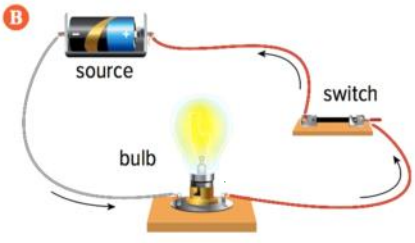
Modelling the Flow of Current (BLM_3_3-7)

Textbook p. 222

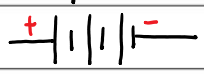
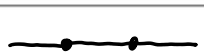


Controlling the Flow of Current

In a typical circuit, a Switch controls current in a circuit

A) The switch is open. The circuit is open so the current Cannot flow.	B) The switch is close. The circuit is closed so the current can flow and the light is on.
	

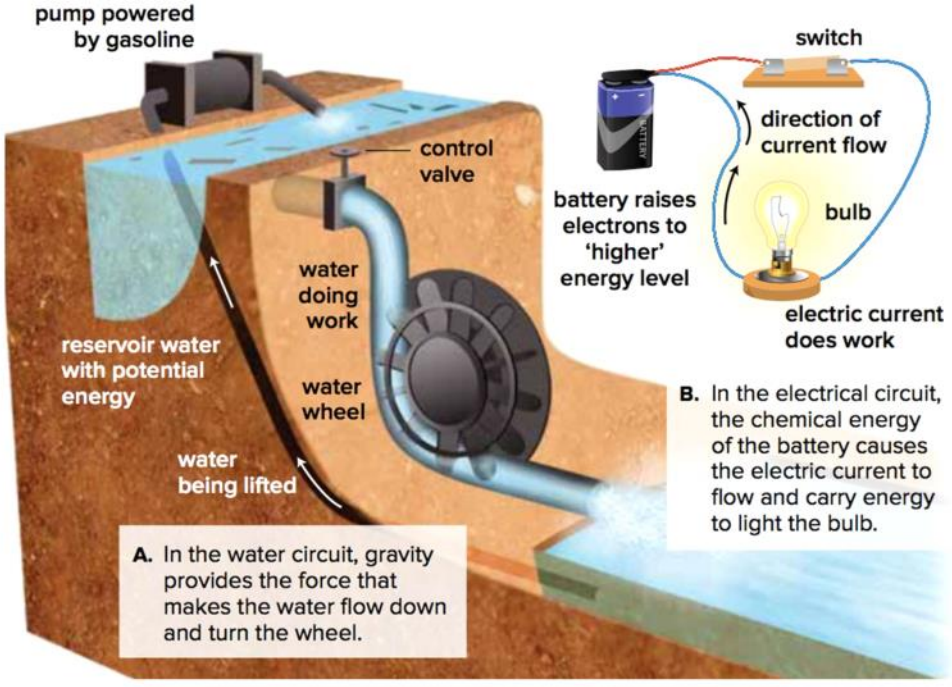
Using Circuit Diagrams

Component		Symbol	Quantity	Unit of Measurement
Source	Cell		Electrical Potential difference (V)	Volt (V)
	Battery			
Conducting Wire			Current (I)	Ampere (A)
Load			Resistance (R)	Ohm (Ω)
Switch	Open			
	Closed			

Light bulb 

Note: the long line the symbols for cells or batteries represents the positive terminal and the short line represents the negative terminal 

Comparison: Water Circuit and Electrical Circuit



- Water circuit: A pump _____ the water to a higher _____ against the pull of gravity
- Electrical circuit: The cell or battery is similar to the pump