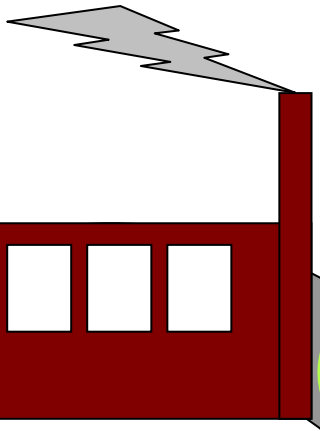
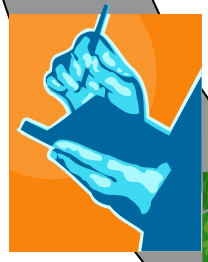


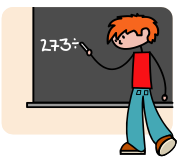
TESCO

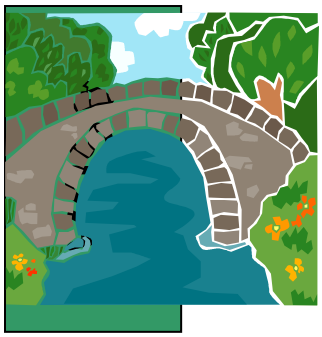
A town called CIRCUIT

ASDA



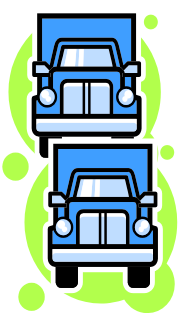
BOOTHS

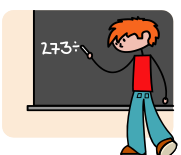




SPAR

TESCO





Model	Electricity
Factory	Battery
Lorry	Electrons
Shops	Light bulbs
Road	Wires
One way street	Current goes one way
Counting cars (in the street)	Ammeters (go in series)
In a series circuit the counters all count the same number of lorries	In a series circuit current stays the same.
No. of boxes of mars bars=voltage	Voltage is the ENERGY per CHARGE
Weighbridge (see place at Carlisle) PARALLEL	Voltmeter GOES IN PARALLEL
The boxes of mars bars in our series circuit adds up to what is delivered to each shop	In a series circuit the voltage across each bulb adds up to the total.
The boxes of mars bars in our series circuit adds up to what is delivered to each shop	In a series circuit the voltage across each bulb adds up to the total.
In a 2 branch town the number of mars bars each lorry delivers is the same as the total	IN a parallel circuit the voltage across each branch is the same as the supply.

IN CIRCUIT TO AVOID CONGESTION ALL ROADS ARE ONE WAY!
This means all electrons flow in one direction only.

Circuit was built to provide a route from the factory.
The factory is the cells or battery or power supply and this pushes electrons around the circuit. No factory no lorries.

This is like the power supply. The power supply pushes the charges around the circuit. They provide the energy to the charges. The energy per charge is the voltage.

Voltage is BOXES OF MARS BARS PER LORRY.

Measure the voltage by "sampling a very small number of charges" Voltmeters must go in PARALLEL.
This is like the Weighbridge at Carlisle. Some lorries are taken off and the cargo of mars bars checked.

Shops are equal to component eg lamps, resistors, motors, buzzers.

The factory produces MARS BARS
Mars bars give us ENERGY.

Cells produce energy

If we made the factory bigger it could produce more mars bars, more energy, need more lorries.

The more cells the more energy is produced and the higher the current.

Lorries take the mars bars to the shops.
Electrons or charge take energy to the components.

People count lorries at the side of the road.
Ammeters count the charge flowing each second in the circuit. Ammeters go in series.

In our town of circuit when the shops come one after the other, all the people count the same number of lorries.

In a series circuit the current stays the same.

$$I_t=I_1=I_2=I_3$$

When counting trucks you stand at the side of the road.
When checking mars bars per truck you need to pull off some trucks.

Ammeters go in series, Voltmeters go in parallel.

Mars bars are energy-
Voltage is the energy supplied to each charge or electron
Voltage is also known as potential difference. This is like the difference between the energy each charge has before the component compared to after. (how many boxes of mars bars have been dropped off!)

In our town, the number of boxes of mars bars delivered to each shop adds up to the total on the truck at the factory.

In series the voltage across each lamp adds up to the total from the supply.

$$V_s=V_1+V_2+V_3$$

In parallel in our town, the number of trucks in each branch adds up to the total.

In parallel circuit, the current in each branch adds up to the total.

$$I_t=I_1+I_2+I_3$$

In our town in parallel each truck delivers the same number of boxes of mars bars as was given at the factory.

In parallel the voltage across each branch is the same as the supply.

$$V_s=V_1=V_2=V_3$$

Model	What it means
Trucks	charge
Traffic	current
Factory	Cells, power supply, battery
Mars Bars	energy
Counting lorries (at side of the road)	Ammeters (go in series)
Lay-by with weighbridge counting mars bars per lorry	Voltmeter (go in parallel)
Road	Wires/ circuit
One way	All electrons flow in one direction only
Factory extension, would mean more lorries on the road and more mars bars per lorry	Bigger power supply More energy per charge, bigger current and higher voltage
Two street town	Parallel circuit