CAIE Physics IGCSE

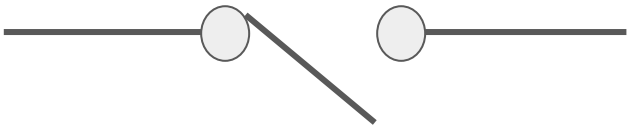
Topic 4.3 - Electric Circuits

Flashcards

Draw the circuit symbol for a switch and explain its function

Draw the circuit symbol for a switch and explain its function

Closed

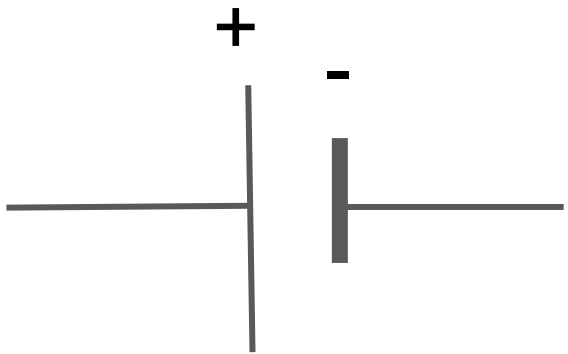


Open

Used to turn a circuit on and off.

Draw the circuit symbol for a cell and explain its function

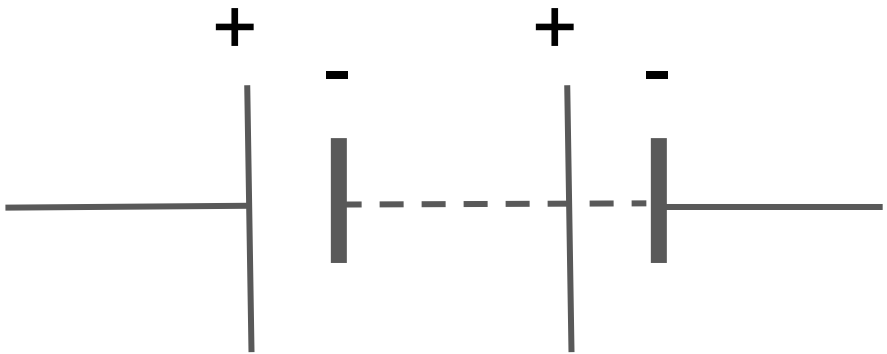
Draw the circuit symbol for a cell and explain its function



A source of electrical energy from its chemical energy.

Draw the circuit symbol for a battery and explain its function

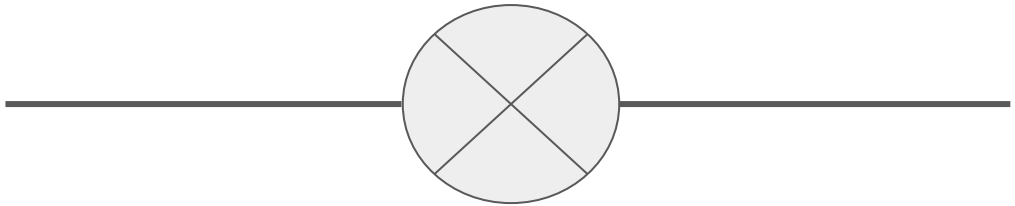
Draw the circuit symbol for a battery and explain its function



Multiple cells combined into one energy source.

Draw the circuit symbol for a lamp and explain its function

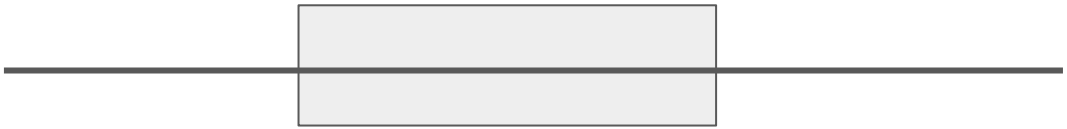
Draw the circuit symbol for a lamp and explain its function



Convert the electric current into light using a filament, which is heated by the current.

Draw the circuit symbol for a fuse and explain its function

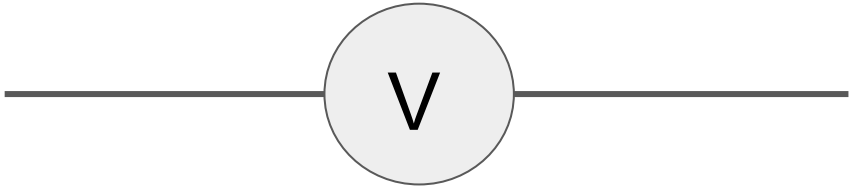
Draw the circuit symbol for a fuse and explain its function



Cut off the power supply if there is a surge in current by melting their thin metal wire.

Draw the circuit symbol for a voltmeter and explain its function

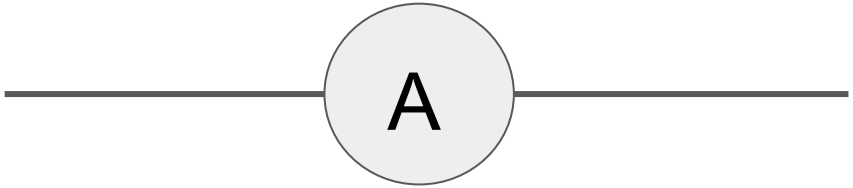
Draw the circuit symbol for a voltmeter and explain its function



Measure potential difference across a component.

Draw the circuit symbol for an ammeter and explain its function

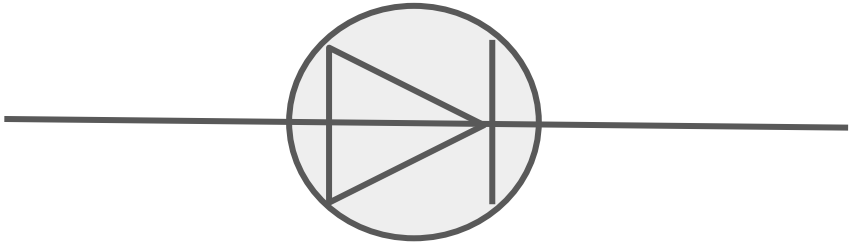
Draw the circuit symbol for an ammeter and explain its function



Measure the current.

Draw the circuit symbol for a diode and explain its function (supplement)

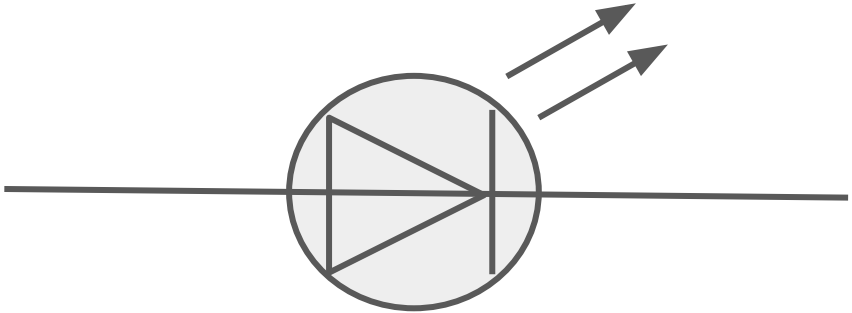
Draw the circuit symbol for a diodeand explain its function (supplement)



A component which only allows current to flow in one direction (as the resistance in the other direction is too high).

Draw the circuit symbol for an LED and explain its function (supplement)

Draw the circuit symbol for an LED and explain its function (supplement)



A diode which allow current to flow in only one direction by having high resistance to flow in the opposite direction and emits light in doing so.

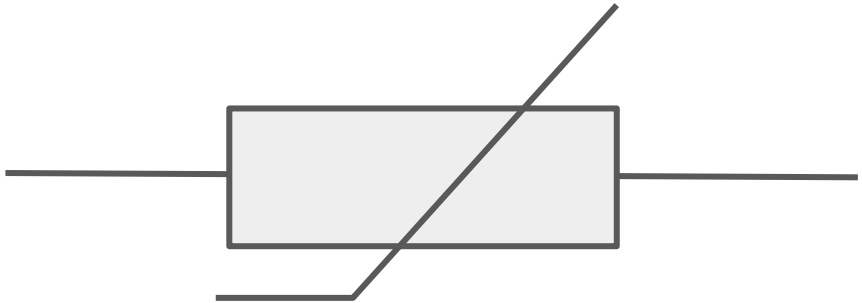
Draw the circuit symbol for a resistor and explain its function

Draw the circuit symbol for a resistor and explain its function

Restrict or limit the flow of electrical current.

Draw the circuit symbol for a thermistor and explain its function

Draw the circuit symbol for a thermistor and explain its function



A resistor in which resistance **decreases** as temperature **increases**.

Draw the circuit symbol for a variable resistor and explain its function

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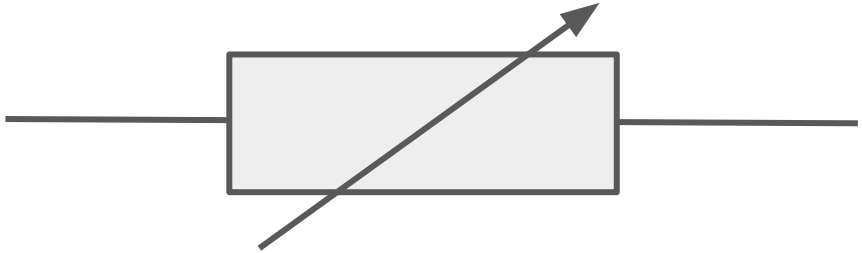
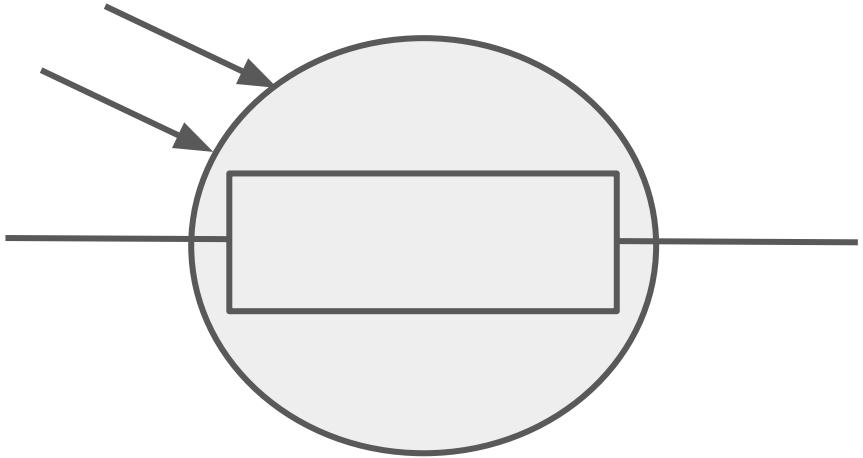


A resistor with variable resistance.

Draw the circuit symbol for an LDR and explain its function

Draw the circuit symbol for an LDR and explain its function



A resistor in which resistance decreases as light intensity increases.

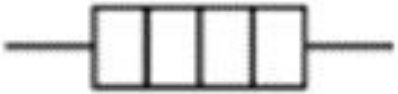
Draw the circuit symbol for a relay and explain its function

Draw the circuit symbol for a relay and explain its function

Switches on a circuit with a high current, using a circuit with a small current.

Draw the circuit symbol for a heater and explain its function

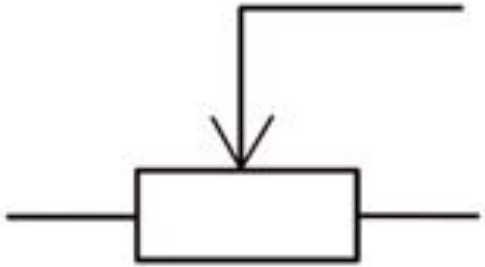
Draw the circuit symbol for a heater and explain its function



Converts the electric current into heat energy.

Draw the circuit symbol for a potential divider and explain its function

Draw the circuit symbol for a potential divider and explain its function



Divide the source voltage into smaller parts to vary the voltage, using resistors.

Draw the circuit symbol for a motor and explain its function

Draw the circuit symbol for a motor and explain its function

Convert electrical energy from the circuit into mechanical energy using the magnetic effect of a current.

Draw the circuit symbol for a generator and explain its function

Draw the circuit symbol for a generator and explain its function

An electrical energy source creating electrical energy from mechanical.

Draw the circuit symbol for a power supply and explain its function

Draw the circuit symbol for a power supply and explain its function

Convert electric energy from a source, to a current with the right voltage.

Draw the circuit symbol for a magnetising coil and explain its function

Draw the circuit symbol for a magnetising coil and explain its function

Store energy in a magnetic field when current flows through them.

Draw the circuit symbol for a transformer and explain its function

Draw the circuit symbol for a transformer and explain its function

Change the magnitude of an alternating voltage. E.g. for an electric current supplied by the power grid to be stepped down before use in houses.

What is a series circuit?

What is a series circuit?

A series circuit is an unbranched loop where the same charge passes through all components, so the current through each component is the same.

What is a parallel circuit?

What is a parallel circuit?

A circuit in which the charge is split between branches.

Describe the current across a series circuit

Describe the current across a series circuit

The current is the same across all points in a series circuit.

Describe potential difference in a series circuit (supplement)

Describe potential difference in a series circuit (supplement)

Potential difference is split between components, according to the ratio of their resistances.

What is combined resistance in a series circuit?

What is combined resistance in a series circuit?

The sum of the resistances from each component.

What is combined e.m.f. in a series circuit with several power sources?

What is combined e.m.f. in a series circuit with several power sources?

The sum of the individual e.m.f.s from each component.

Describe current across a parallel circuit and the difference in current size between branches and source

Describe current across a parallel circuit and the difference in current size between branches and source

The current is divided between the branches of the circuit so the current in the source is larger than the current in each branch.

Describe the relationship between current entering a junction and exiting a junction in a parallel circuit (supplement)

Describe the relationship between current entering a junction and exiting a junction in a parallel circuit (supplement)

The sum of the currents entering a junction in a parallel circuit is equal to the sum of the currents that leave the junction.

Describe potential difference across a parallel circuit (supplement)

Describe the potential difference across a parallel circuit (supplement)

Each branch has a potential difference equal to the potential difference of the supply.

What is the combined resistance in a parallel circuit?

What is the combined resistance in a parallel circuit?

The combined resistance is lower than that of the branch with the lowest resistance.

What equation is the combined resistance in a parallel circuit given by? (supplement)

What equation is the combined resistance in a parallel circuit given by? (supplement)

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

Why is it advantageous to connect lamps in parallel?

Why is it advantageous to connect lamps in parallel?

If one lamp blows, the rest will be unaffected and can still receive current (i.e. the circuit is still complete).

What is a variable potential divider? (supplement)

What is a variable potential divider? (supplement)

A circuit that uses several resistors to divide the source voltage into smaller parts, to vary voltage.

What happens to the potential difference across an electrical conductor if the current is constant and resistance increases?

What happens to the potential difference across an electrical conductor if the current is constant and resistance increases?

Potential difference increases.

P.d. = current x resistance

What equation demonstrates that potential difference is shared between resistors in a ratio determined by their resistances? (supplement)

What equation demonstrates that potential difference is shared between resistors in a ratio determined by their resistances? (supplement)

$$\frac{R_1}{R_2} = \frac{V_1}{V_2}$$