

Combined Science - Physics - Key Stage 4 - Electricity

Diodes

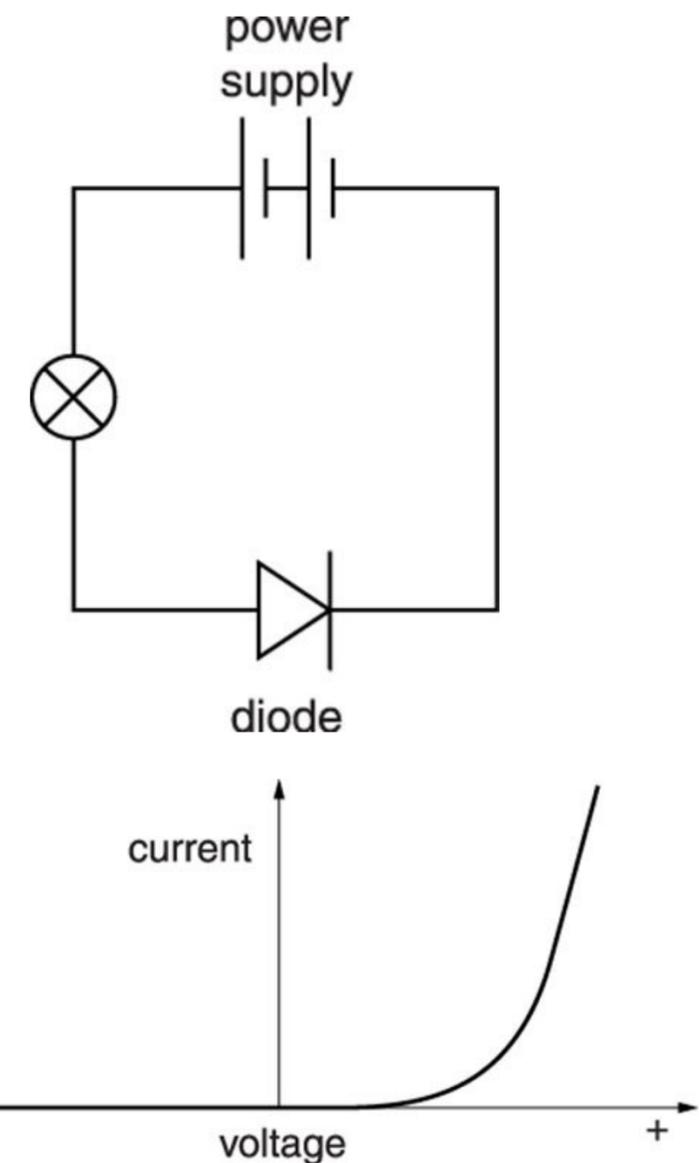
Worksheet

Miss Walrond



Q1.

The diagram shows a circuit with a silicon diode.
Look at the current-voltage graph for this diode.
Use the graph to explain why the current passes through this diode.



[2]



Answers



Q1. Answers

1. Any two from:

Current flows when the threshold voltage has been reached.

The current is flowing in the correct direction for the diode.

When the voltage is positive the resistance is low.



In lesson questions



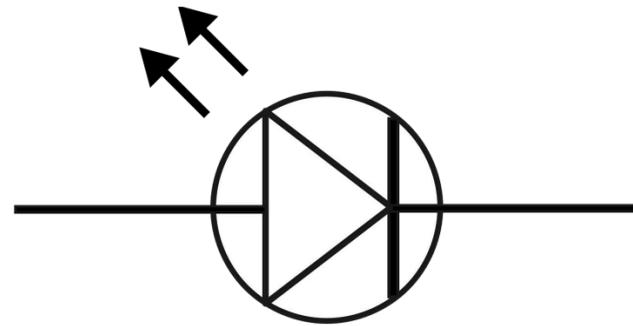
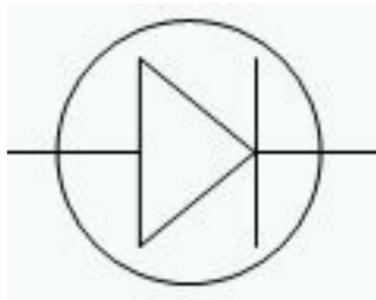
Conventional Current

- 1) **What charge do electrons have?**
- 2) **Which way should electrons flow around a circuit?**
Electrons move from _____ to _____ in an electrical circuit.
- 3) **Describe conventional current.**



Independent Task: Diodes and LEDs

1) Copy the circuit symbols for a diode and an LED. Label them.



2) Complete the sentences below:

Diodes are components that allow the _____ to flow in one direction only. LED stands for _____, this component emits light when the current flows through them in the correct _____.



Independent Task: I -V Characteristics of a Diode part 1

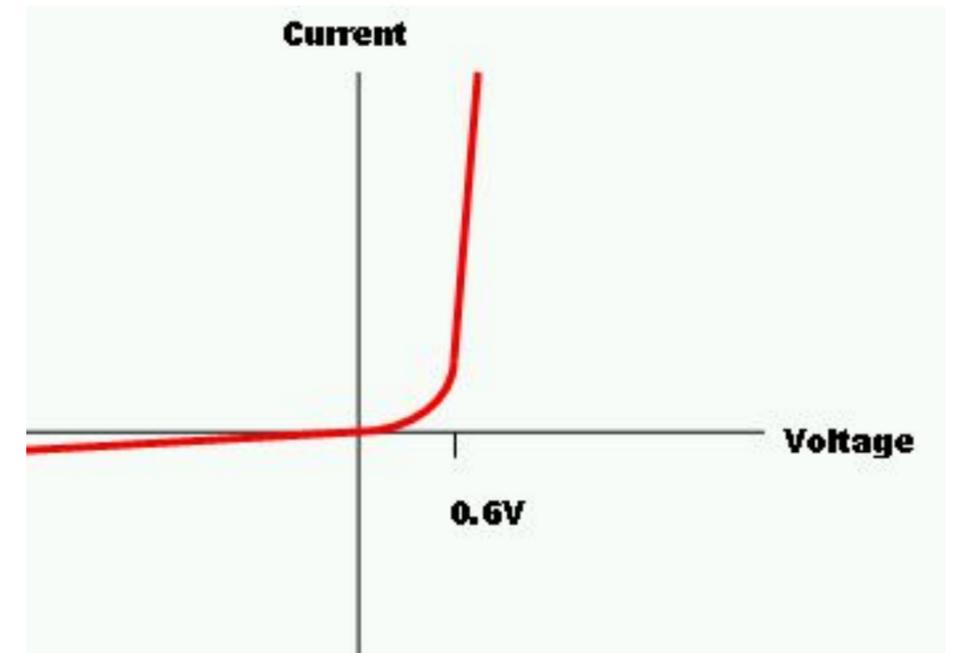
Fill in the gaps.

Set up the electrical circuit as shown. Measure the current with the _____ and the potential difference with the _____. Adjust the _____ and take new values of current and potential difference. Repeat to collect 5 readings. Then swap the wires around the _____. This will allow you to collect results with negative current and potential difference. In the negative direction the reading on the ammeter is _____.



Independent Task: I -V Characteristics of a Diode part 2

- 1) Sketch the I-V graph shown.
- 2) Label where the diode has a high resistance.
- 3) Label where the diode has a low resistance.



Answers



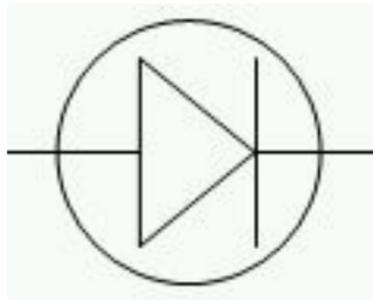
Review: Conventional current

- 1) Electrons have a **negative charge**.
- 2) Electrons move from **negative** to **positive** in an electrical circuit.
- 3) Conventional current is the flow of current from **positive** to **negative**.

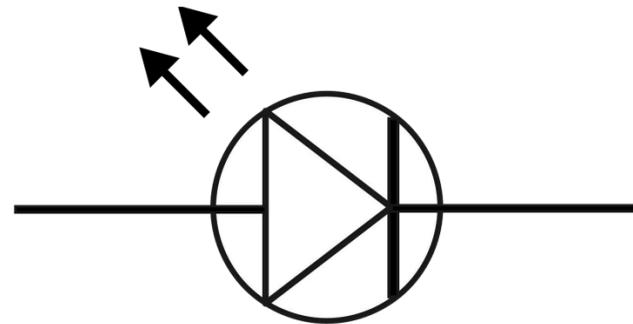


Review - Independent Task: Diodes and LEDs

1) Copy the circuit symbols for a diode and an LED. Label them.



Diode



LED

2) Complete the sentences below:

*Diodes are components that allow the **current** to flow in one direction only. LED stands for **Light Emitting Diode**, this component emits light when the current flows through them in the correct **direction**.*



Independent Task: I -V Characteristics of a Diode part 1

Fill in the gaps.

*Set up the electrical circuit as shown. Measure the current with the **ammeter** and the potential difference with the **voltmeter**. Adjust the **variable resistor** and take new values of current and potential difference. Repeat to collect 5 readings. Then swap the wires around the **battery**. This will allow you to collect results with negative current and potential difference. In the negative direction the reading on the ammeter is **zero**.*



Review: I-V Characteristics of a Diode part 2

