

Jeavons Wood Primary School – Science Knowledge Organiser

Topic: Electricity

Year:6

Strand: Physics

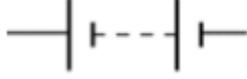
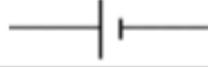
Big Question: How can circuits be changed?

What should I already know?

- Electricity is a form of energy that can be carried by wires and is used for heating and lighting, and to provide power for devices.
- *Sources of light and sound may need electricity to work.
- *Where electricity comes from. Which appliances need electricity
- *What a circuit is, the components of a circuit and how it works.
- *What electrical conductors and insulators are.
- *What happens when a switch is added to a circuit.
- *What forces and resistance are.

What will I know by the end of the unit?

Circuit symbols

| Symbol | Component |
|-------------------------------------------------------------------------------------|-----------------|
|  | ammeter |
|  | battery |
|  | bulb |
|  | buzzer |
|  | cell |
|  | motor |
|  | resistor |
|  | switch (open) |
|  | switch (closed) |

- *Associate the brightness of a lamp or the volume of a buzzer with the number and voltage of cells used in the circuit.
- *Compare and give reasons for variations in how components function, including the brightness of bulbs, the loudness of buzzers and the on/off position of switches.
- *Use recognised symbols when representing a simple circuit in a diagram.

Where will my learning go next?

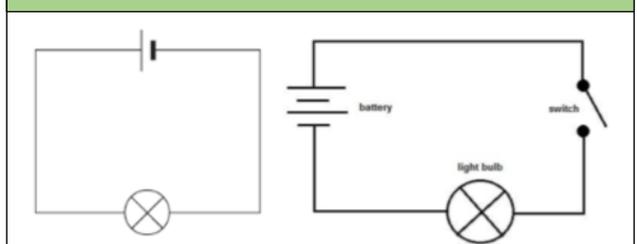
In Year 7 pupils will be taught:

Electrical currents, measured in amperes, in circuits, series and parallel circuits. Currents add where branches meet and current as a flow of charge. Measuring in volts. Battery and bulb rating, resistance, measured in ohms. Differences in resistance. Static electricity- the separation of positive or negative charges when objects are rubbed together. Force between charged objects. Electrical field and forces acting across the space between objects not in contact.

Vocabulary

| | |
|-------------|------------------------------------------------------------------------------------------------------------------------------------------------------|
| ammeter | measures the current in a circuit |
| appliances | a device or machine in your home that you use to do a job such as cleaning or cooking. Appliances are often electrical. |
| battery | small devices that provide the power for electrical items such as torches (more than one cell) |
| bulb | the glass part of an electric lamp, which gives out light when electricity passes through it. |
| buzzer | an electrical device that is used to make a buzzing sound |
| cell | a single device that provides power for an electrical circuit. (multiple cells are called a battery) |
| circuit | a complete route which an electric current can flow around |
| component | the parts that something is made of |
| conductor | a substance that heat or electricity can pass through or along |
| current | a flow of electricity through a wire or circuit |
| device | an object that has been invented for a particular purpose |
| electricity | a form of energy that can be carried by wires and is used for heating and lighting, and to provide power for devices |
| energy | the power from sources such as electricity that makes machines work or provides heat |
| fuel | a substance such as coal, oil, or petrol that is burned to provide heat or power |
| generate | cause it to begin and develop |
| insulator | a non-conductor of electricity or heat |
| mains | where the supply of water, electricity, or gas enters a building |
| motor | a device that uses electricity or fuel to produce movement |
| power | Power is energy, especially electricity, that is obtained in large quantities from a fuel source and used to operate lights, heating, and machinery. |
| resistance | a force which slows down a moving object or vehicle |
| resistor | a part of an electric circuit that provides resistance to some of the current |
| source | where something comes from |
| switch | a small control for an electrical device which you use to turn the device on or off |
| voltage | the force of an electric current as measured in volts |
| wires | a long thin piece of metal that is used to fasten things or to carry electric current |

Diagrams



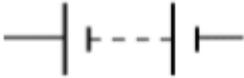
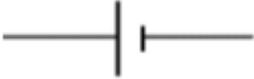
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Big Question: How can circuits be changed?

| Question 1: Write the name for the component that each of these symbols represent. | Start of unit: | End of unit: |
|------------------------------------------------------------------------------------|----------------|--------------|
|  | | |
|  | | |
|  | | |
|  | | |
|  | | |
|  | | |

| Question 4: Explain what will happen if another bulb is added to a working circuit. | Start of unit: | End of unit: |
|-------------------------------------------------------------------------------------|----------------|--------------|
| | | |

| Question 5: Shorter wires will make bulbs brighter. True or False? | Start of unit: | End of unit: |
|--------------------------------------------------------------------|----------------|--------------|
| true | | |
| false | | |

| Question 6: Explain what a conductor will do when added to a circuit. | Start of unit: | End of unit: |
|-----------------------------------------------------------------------|----------------|--------------|
| | | |

| Question 7: A circuit will not work if.... (tick three): | Start of unit: | End of unit: |
|----------------------------------------------------------|----------------|--------------|
| there is no battery | | |
| the switch is off | | |
| there is a break in the circuit | | |
| there is no switch | | |

| Question 8: What is the function of an ammeter in a circuit? | Start of unit: | End of unit: |
|--------------------------------------------------------------|----------------|--------------|
| measures the length of the wires in a circuit | | |
| measures the current in a circuit | | |
| measures how heavy the components are | | |

| Question 4: Explain what will happen if another bulb is added to a working circuit. | Start of unit: | End of unit: |
|-------------------------------------------------------------------------------------|----------------|--------------|
| | | |

| Question 5: Shorter wires will make bulbs brighter. True or False? | Start of unit: | End of unit: |
|--------------------------------------------------------------------|----------------|--------------|
| true | | |
| false | | |

| Question 6: Explain what a conductor will do when added to a circuit. | Start of unit: | End of unit: |
|-----------------------------------------------------------------------|----------------|--------------|
| | | |

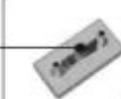
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| <p>Question 8: Imagine you only have this equipment. Draw a circuit using circuit symbols featuring this equipment.</p> <div style="display: flex; justify-content: space-around; align-items: center;"> <div style="text-align: center;"> <p>1 switch</p>  </div> <div style="text-align: center;"> <p>6 wires</p>  </div> </div> <div style="display: flex; justify-content: space-around; align-items: center; margin-top: 10px;"> <div style="text-align: center;"> <p>3 cells (batteries)</p>  </div> <div style="text-align: center;"> <p>1 bulb</p>  </div> </div> | Start of unit: | End of unit: |
| | | |

| | | |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------|--------------|
| <p>Question 9: Look at this circuit. The buzzer is currently not very loud. What could you do to make it louder?</p> <div style="text-align: center; margin-top: 10px;">  </div> | Start of unit: | End of unit: |
| | | |