



## Wider Curriculum Unit Plan for Home learning

**Subject:** Science

**Unit:** Electricity

**Year:** 6

Session

Session 1

**What do we know about electricity?**

- In year 4, you learnt about appliances that run on electricity. Look around your home for different devices that run on electricity. Using a Venn diagram, sort them into those that use mains electricity (they are plugged in) and those that use batteries.
- Look at the diagrams in the session resources. For each circuit, identify and name the different elements.
- Looking more closely at circuits 1 and 2, what is the difference between them? What difference will that make to the bulb? Why?
- Challenge: answer the question in the session resources about why the car did not work.

Session 2

**How much do we rely on electricity?**

- Follow the video lesson [here](#). You will need paper and something to write with.
- You learnt about electrical appliances in Year 4. This is revision of that work.

Session 3

**Electrical components**

- Follow the video lesson [here](#). Start at 4 minutes 12 seconds. You will need paper and something to write with.

Session 4

**How do electrical components function?**

- Look at what the children on the concept cartoon have said (session resources). Which statements do you agree and disagree with and why?
- Read through the information in the session resources about electronic toys and games (or research your own online). What electrical components could have been used? How is the part moving/lighting up/making a noise? Why are the parts moving/lights lighting up/sounds being made only some of the time?
- Sketch an idea for your own game – firstly, decide what electricity could enable your game to do (e.g. what could move/light up/make a sound?). Annotate with where you will use bulbs, motors and buzzers and what these will do.

Session 5

**What are circuit diagrams?**

- Follow the video lesson [here](#). You will need paper and something to write with.

Session 6

**How do scientists communicate about electricity?**

- Watch the [video](#) showing electrical circuits being made and installed in everyday objects.
- Look at the diagram in the session resources. What does it show? Match up the symbols with the components.
- Watch the video and complete the activities [here](#).
- Draw circuit diagrams for the circuits shown in the session resources.

Session 7	<b>How does voltage affect brightness?</b> <ul style="list-style-type: none"> <li>• Work through the lesson page by page in the session resources.</li> <li>• Watch the <a href="#">video</a>.</li> </ul>
Session 8	<b>What happens when we change the components in a circuit?</b> <ul style="list-style-type: none"> <li>• Follow the video lesson <a href="#">here</a>. You will need paper and something to write with.</li> <li>• You learnt about conductors and insulators in Year 4.</li> </ul>
Session 9	<b>What is static electricity?</b> <ul style="list-style-type: none"> <li>• Follow the video lesson <a href="#">here</a>. You will need paper and something to write with.</li> <li>• You learnt about forces in Year 3 and Year 5.</li> </ul>
Session 10	<b>Assessment</b> <ul style="list-style-type: none"> <li>• Assess what you understand about electricity through our work in this unit using the questions in the session resources.</li> <li>• The answer are given at the end of the assessment for you to check your own work.</li> </ul>

## Resources

### Session 1

1.



2.



3.

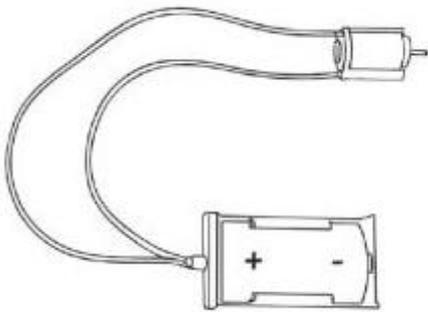


4.



## Challenge

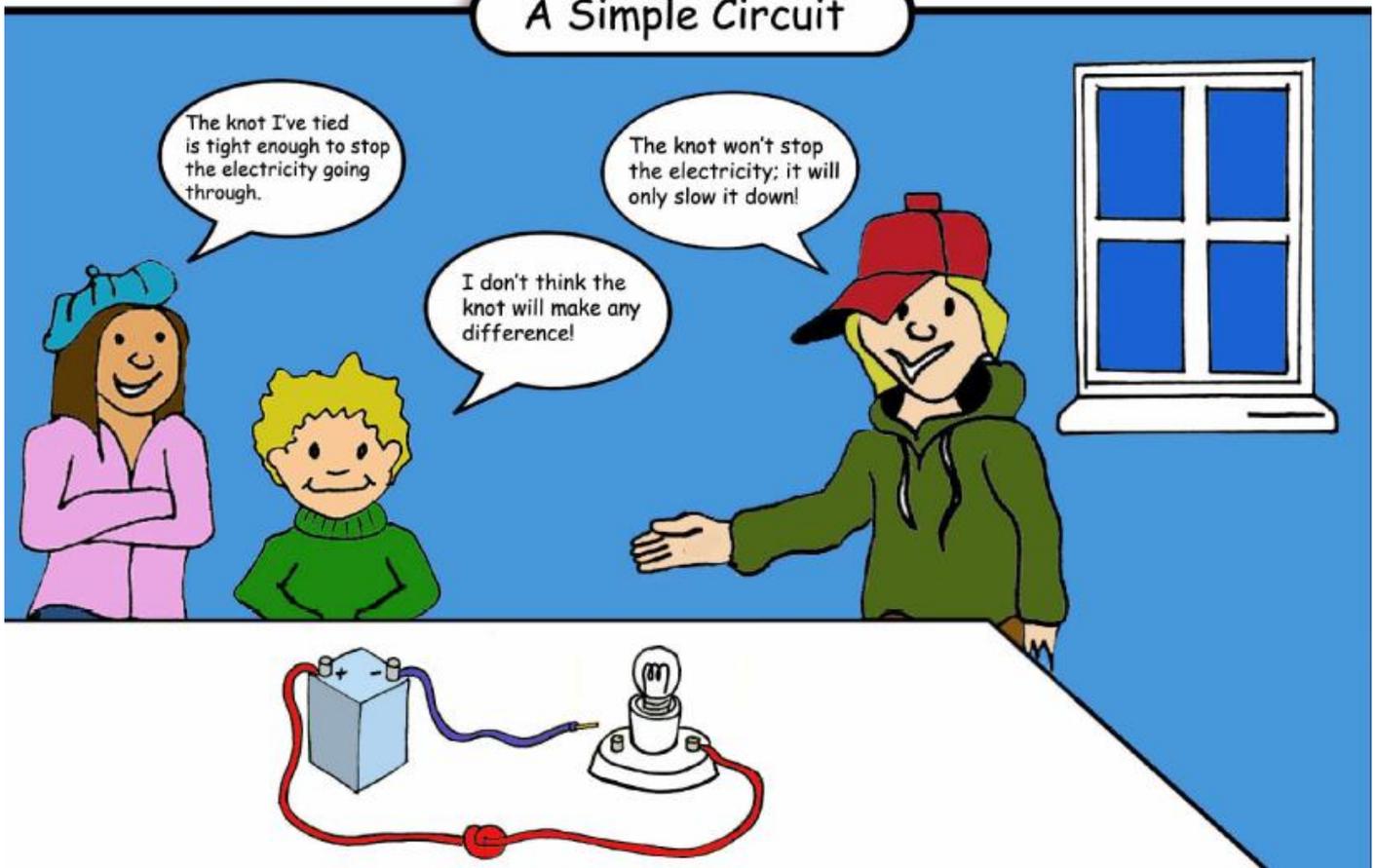
To make the car move, they connected a battery to an electric motor.



The motor did not work. Explain why.

Session 4

## A Simple Circuit



Robo Alive Lizard



A robotic lizard toy that runs across the floor.

Flick the switch on this lizard and its hind legs will spring to life, sprinting forward at a rapid pace just like a real reptile.

Catch up to the lizard and tilt its head upwards to pause the action, allowing you to pick it up by its lifelike rubber tail.

Operation



Your patient Cavity Sam is feeling a bit under the weather. Can you "operate" and make him better, or will you get the buzzer? Grab the tweezers and try with all of your might to take out all of his funny ailments. Can you help him with his pulled muscle or the frog in his throat? Operate with your steadiest hand, but don't forget to steer clear of the sides and avoid lighting the light!

Classic operation game challenges you to remove parts without setting off the buzzer.

13 plastic ailments parts.

Nose lights up when you touch the sides.

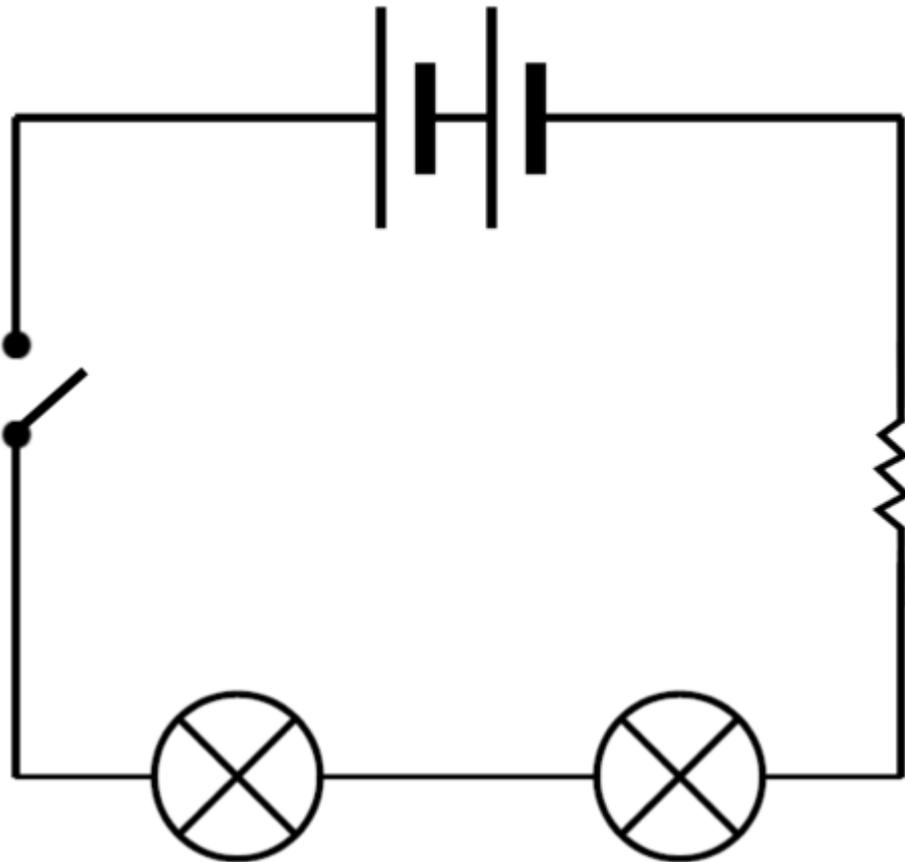
Remove the most parts to win.

Toy helicopter

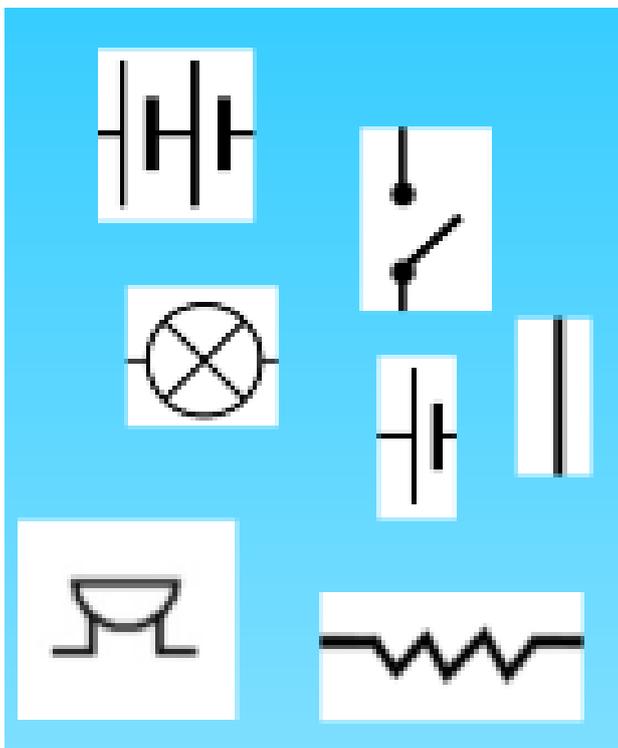


Every day is an adventure with this colourful mini helicopter toy! This highly-interactive toy will give kids years of enjoyment as they become 'hero of the day' in their own imaginative world. Special features include a winch, moving rotor, opening doors, lights, and sounds.

Session 6



Match the symbols to the components:



- cell
- battery
- switch
- wire
- bulb
- buzzer
- resistor

Session 7 resources

<https://www.q1e.co.uk/data/dynamic/spaw/documents/Session%207%20resources.pdf>

Session 10

## Electricity assessment

1. Join these symbols to their labels.

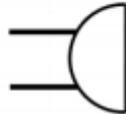
lamp/bulb



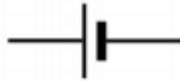
cell



open switch



closed switch



buzzer



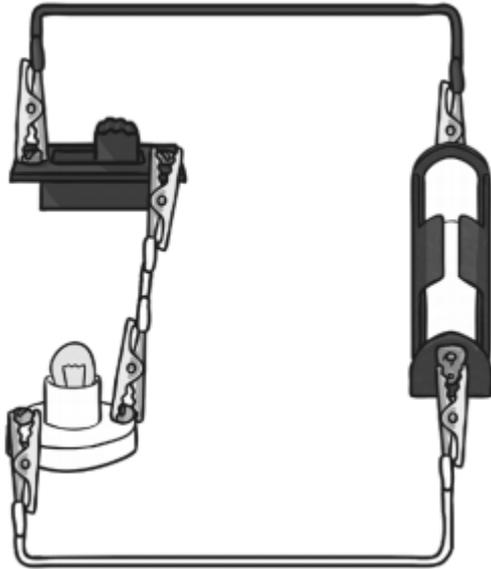
battery



voltmeter



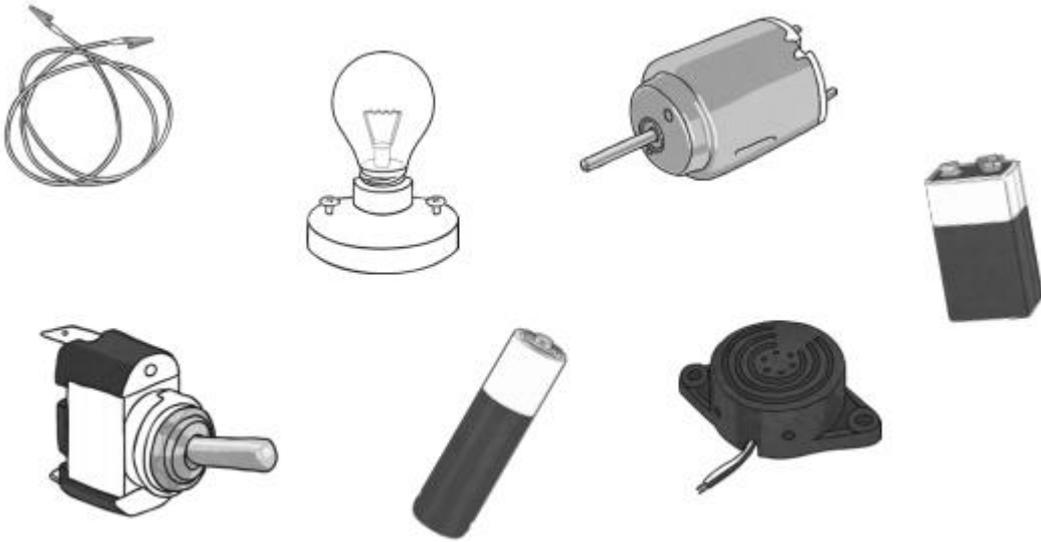
2. Draw a circuit diagram (using symbols) of the circuit below with an unlit bulb.



3. Fill in the table to say what will happen to the bulb in each of these circuits:

	Bulb Lights	Bulb does not light	Bulb is dimmer than normal	Bulb is brighter than normal
A circuit with a battery, a bulb and an open switch.				
A circuit with two batteries, a closed switch and a bulb.				
A circuit with a closed switch, a buzzer, a battery and a bulb				
A circuit with a motor, a bulb and a closed switch.				
A circuit with a closed switch, a battery, a motor, a buzzer and a bulb.				

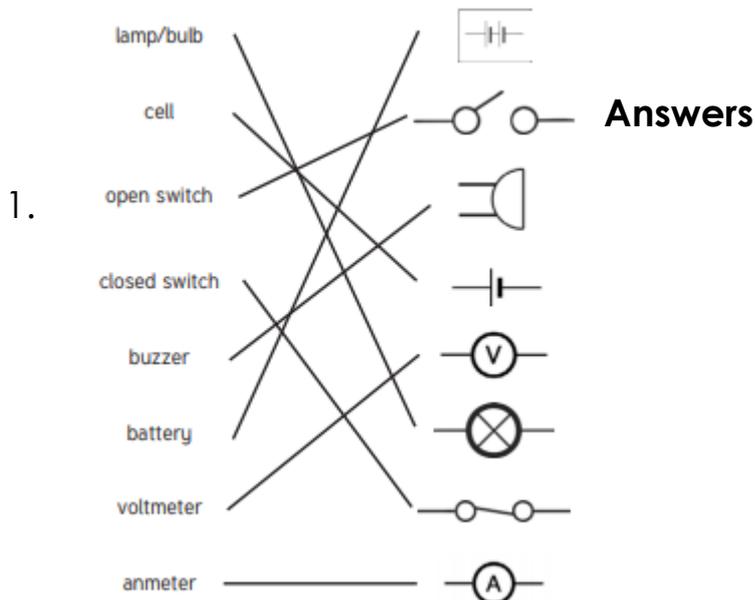
4. You are planning an investigation on how the amount of voltage affects the volume of the buzzer. Which of the items below would you need to carry out that investigation?



5. When you carry out the test, what one variable would you change (the independent variable)?
6. What variables would stay the same (the dependent variables)?
7. Looking at the results table below, what is the missing column heading?

Test Number		Volume 1	Volume 2	Volume 3
1	3V	51db	49db	52db
2	6V	60db	58db	61db
3	9V	33db	70db	71db

8. Why has the volume been tested three times for each voltage?
9. Which result looks like an anomaly (an unexpected result)?
10. What is a possible reason for the anomaly?
11. What conclusions could you draw from the results in the table?



2. You should have an open switch, bulb and a battery symbol (not a cell).

3.

	Bulb Lights	Bulb does not light	Bulb is dimmer than normal	Bulb is brighter than normal
A circuit with a battery, a bulb and an <b>open switch</b> .		✓		
A circuit with <b>two batteries</b> , a <b>closed switch</b> and a bulb.	✓			✓
A circuit with a <b>closed switch</b> , a <b>buzzer</b> , a battery and a bulb	✓		✓	
A circuit with a motor, a bulb and a closed switch ( <b>no battery</b> ).		✓		
A circuit with a <b>closed switch</b> , a battery, a <b>motor</b> , a <b>buzzer</b> and a bulb.	✓		✓	

4. You should have chosen: wires with crocodile clips, a buzzer, the two different batteries.

5. The variable you could change is the voltage or the amount of batteries/cells.

6. The variables that would stay the same are: length of wires, types of buzzer, distance of sound monitor from buzzer, batteries (the number and type).

7. The missing label is voltage or amount of voltage.

8. This is to improve accuracy, check results or to work out a mean or average.

9. 33dB

10. The reading was taken incorrectly; the result was written down incorrectly; the buzzer didn't work correctly; the batteries started to lose power.
11. The higher the voltage, the louder the buzzer. The lower the voltage, the quieter the buzzer.