

Name:

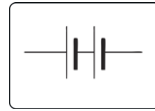
Date:

Science Assessment Year 6: Electricity

Drawing Circuits

1. Join up these symbols to their labels using lines.

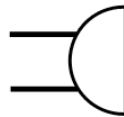
lamp/bulb



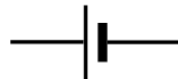
cell



open switch



closed switch



buzzer



battery



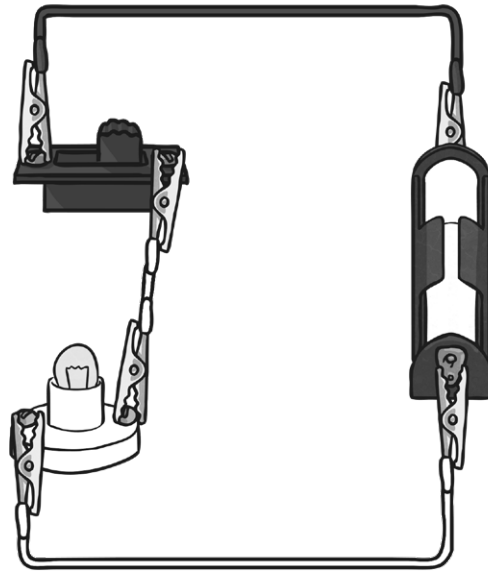
voltmeter



ammeter



2. Draw the diagram of this circuit below with an unlit bulb:



3. Name two ways that electricity can be generated.

.....

3 marks

1 mark

Total for this page

4. Fill in the table by ticking the correct columns to say what happens to the bulb in each of these circuits:

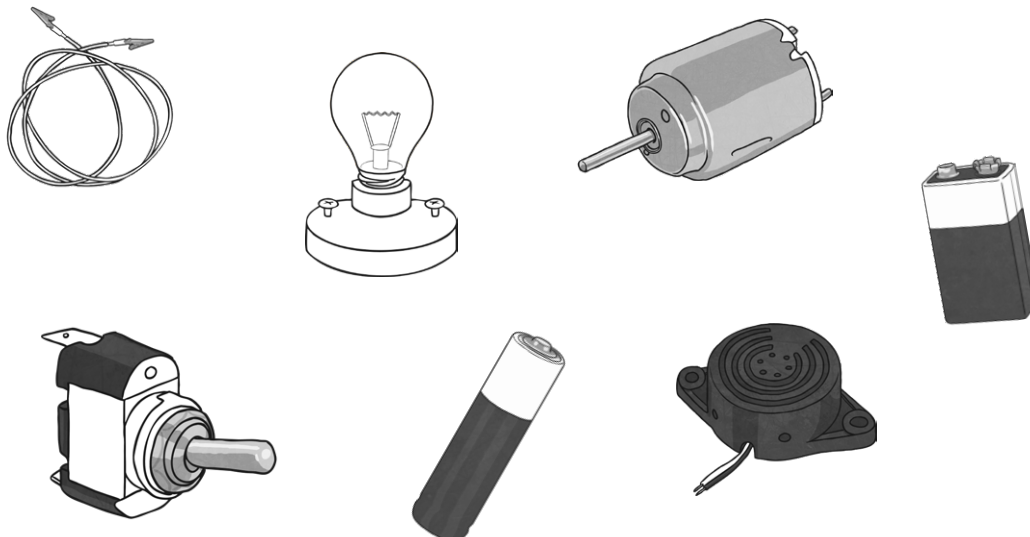
	Bulb Lights	Bulb does not light	Bulb is dimmer than normal	Bulb is brighter than normal
A circuit with a battery, a bulb and an open switch.				
A circuit with two batteries, a closed switch and a bulb.				
A circuit with a closed switch, a buzzer, a battery and a bulb				
A circuit with a motor, a bulb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

5 marks

Planning an Investigation

How does the amount of voltage in a circuit affect the volume of a buzzer?

5. Which of these items would you need to test how the volume of a buzzer is affected by the amount of voltage in the circuit? Circle the ones you might need.



2 marks

6. When you carry out the test, what is the one variable you would change?

.....

1 mark

Total for this page

7. What variables would stay the same?

.....
.....

2 marks

8. Fill in the missing heading on this results table:

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

1 mark

9. Why has the volume been tested 3 times for each voltage?

.....
.....

1 mark

10. Which result looks like an anomaly?

.....

1 mark

11. What is a possible reason for the anomaly?

.....
.....

1 mark

12. What conclusion would you draw from the results in the table in question 8?

.....
.....
.....

2 marks

13. Write your own title for an investigation about the brightness of bulbs in a circuit.

.....

2 marks

Total for this page

question	answer	marks	notes
1. Join up these symbols to their labels using lines.			
		4	<p>1 mark = 2-3 correct 2 marks = 4-5 correct 3 marks = 6-7 correct 4 marks = 8 correct</p> <p>No marks for 1 correct.</p>
2. Draw the diagram of this circuit below with an unlit bulb.			
	<p>1 mark each for:</p> <ul style="list-style-type: none"> • An open switch and bulb • A battery symbol - not a cell 	2	<p>NB: the switch should be shown open to indicate an unlit bulb.</p> <p>Components can be in any order in the circuit.</p> <p>The alternative bulb symbol is allowed.</p> <p>+ and - does not need to be drawn on the battery symbol.</p>
3. Name two ways that electricity can be generated.			
	<p>Any two answers from:</p> <ul style="list-style-type: none"> • wind turbines • solar panels • biomass/coal/nuclear power stations • hydro/water/wave power • physical dynamo 	1	<p>1 mark for two answers</p>

question	answer	marks	notes																														
4. Fill in the table by ticking the correct columns to say what happens to the bulb in each of these circuits:																																	
	<table border="1"> <thead> <tr> <th></th> <th>Bulb Lights</th> <th>Bulb does not light</th> <th>Bulb is dimmer than normal</th> <th>Bulb is brighter than normal</th> </tr> </thead> <tbody> <tr> <td>A circuit with a battery, a bulb and an open switch.</td> <td></td> <td>✓</td> <td></td> <td></td> </tr> <tr> <td>A circuit with two batteries, a closed switch and a bulb.</td> <td>✓</td> <td></td> <td></td> <td>✓</td> </tr> <tr> <td>A circuit with a closed switch, a buzzer, a battery and a bulb</td> <td>✓</td> <td></td> <td>✓</td> <td></td> </tr> <tr> <td>A circuit with a motor, a bulb and a closed switch (no battery).</td> <td></td> <td>✓</td> <td></td> <td></td> </tr> <tr> <td>A circuit with a closed switch, a battery, a motor, a buzzer and a bulb.</td> <td>✓</td> <td></td> <td>✓</td> <td></td> </tr> </tbody> </table>		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 (no battery).		✓			A circuit with a closed switch , a battery, a motor , a buzzer and a bulb.	✓		✓		5	<p>1 mark for each row</p> <p>Where there are two ticks, both must be present for the mark</p> <p>Bold highlights the reasons for the ticks.</p>
	Bulb Lights	Bulb does not light	Bulb is dimmer than normal	Bulb is brighter than normal																													
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5. Which of these items would you need to test how the volume of a buzzer is affected by the amount of voltage in the circuit? Circle all the ones you might need.																																	
	<p>The following components should be circled:</p> <ul style="list-style-type: none"> wires with crocodile clips a buzzer 2 different double batteries 	2	<p>2 marks for all 3 correct 1 mark for 2 correct 0 marks for 1 correct</p> <p>Switch can be included but does not gain a mark.</p>																														
6. When you carry out the test, what is the one variable you would change?																																	
	<ul style="list-style-type: none"> Voltage Amount of batteries/cells 	1	<p>1 mark for either answer.</p> <p>No mark for 'power' which does change but is a result of the voltage variable.</p>																														
7. What variables would stay the same?																																	
	<ul style="list-style-type: none"> Length of wires Type of buzzer Distance of decibel monitor from buzzer Batteries (number/type) 	2	<p>1 mark for any of these answers to a maximum of 2 marks.</p>																														
8. Fill in the missing label on this results table.																																	
	<ul style="list-style-type: none"> Voltage Amount of Voltage 	1	<p>1 mark for either answer.</p> <p>No mark for 'number of batteries'</p>																														

question	answer	marks	notes
9. Why has the volume been tested 3 times for each voltage?			
	<ul style="list-style-type: none"> • Improve accuracy • Check results • To work out a mean/average 	1	1 mark for any of these answers.
10. Which result looks like an anomaly?			
	<ul style="list-style-type: none"> • 33db 	1	1 mark for the correct answer.
11. What is a possible reason for the anomaly?			
	<ul style="list-style-type: none"> • Decibel measure too far from buzzer/ different distance to others • The measure was read wrong • Written down wrong/misheard • Buzzer didn't work properly/error in circuit made it quieter • Batteries in circuit started to lose voltage 	1	1 mark for any of these answers. No mark for decibel measure was 'nearer'.
12. What conclusion would you draw from the results in the table.			
	<ul style="list-style-type: none"> • The higher the voltage, the louder the buzzer. • The lower the voltage, the quieter the buzzer. 	2	Award 2 marks for the correct answers. Answers must include both buzzer, the voltage and either lower/quieter or higher/ louder.
13. Write your own title for an investigation about the brightness of bulbs in a circuit.			
	<ul style="list-style-type: none"> • Answers must mention bulb brightness. • Mention of one other variable e.g. length of wires, number of batteries/cells. 	2	Award 2 marks for the correct answers. Do not give a mark for answers that mention more than one variable.
		total 25	