

Electricity

Foundation Tier

Time Allowed: 50 minutes (50 marks)

Question	Links to Student Progress Sheet	Score	Total Marks Available
1	Circuits		11
2	Magnets		6
3	Electromagnet investigation		14
4	Drawing circuits		8
5	Atoms		6
6	Static electricity		5
Total			50

Name _____

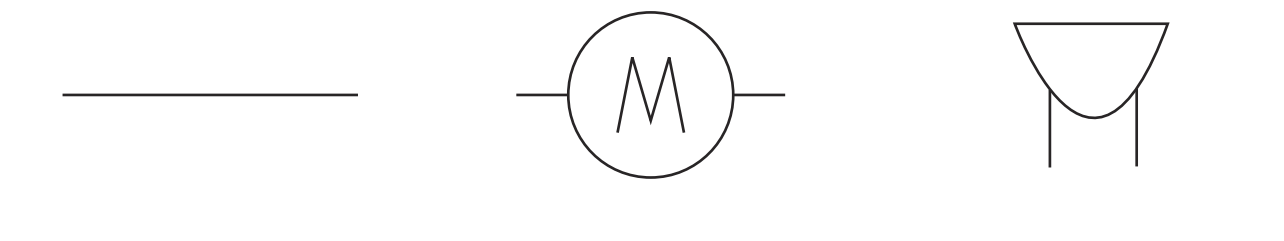
Date _____



1. Ava and Max are making a series circuit using a selection of equipment.

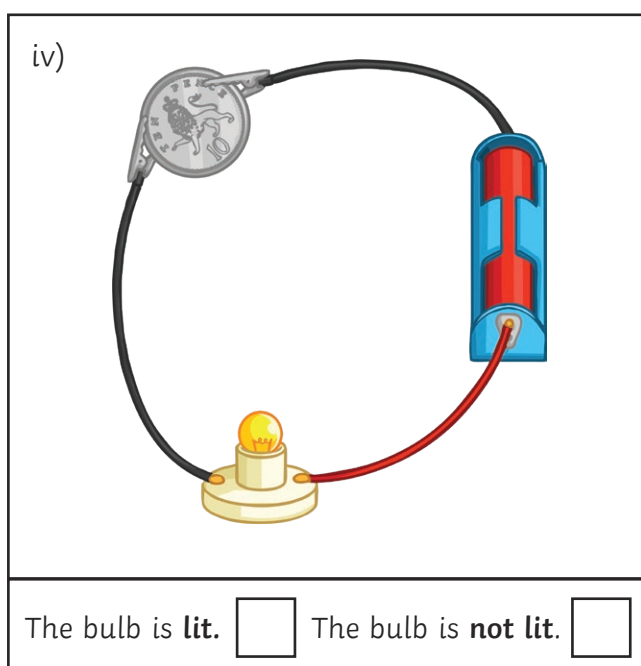
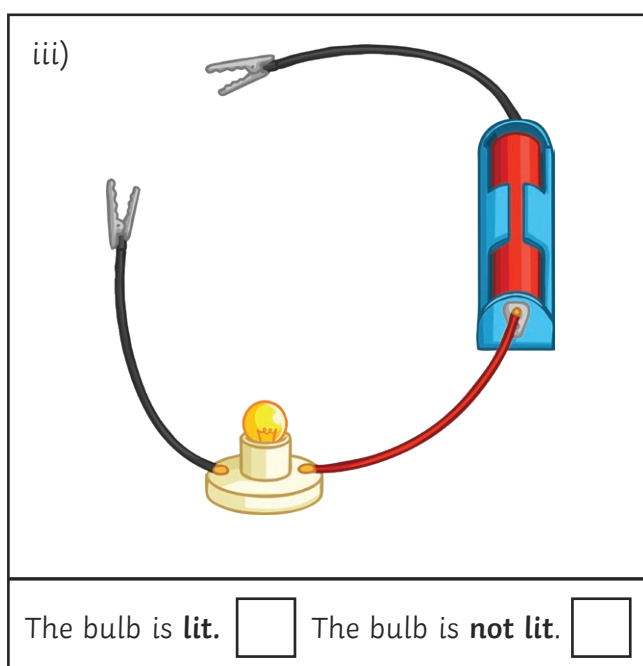
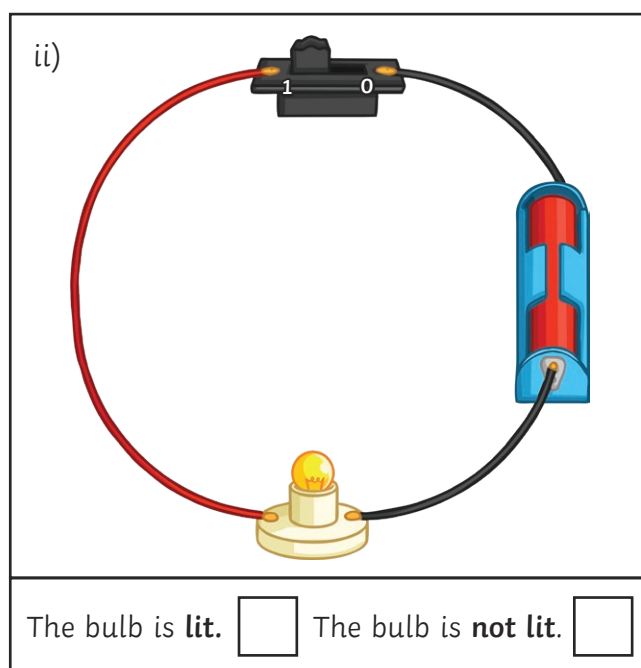
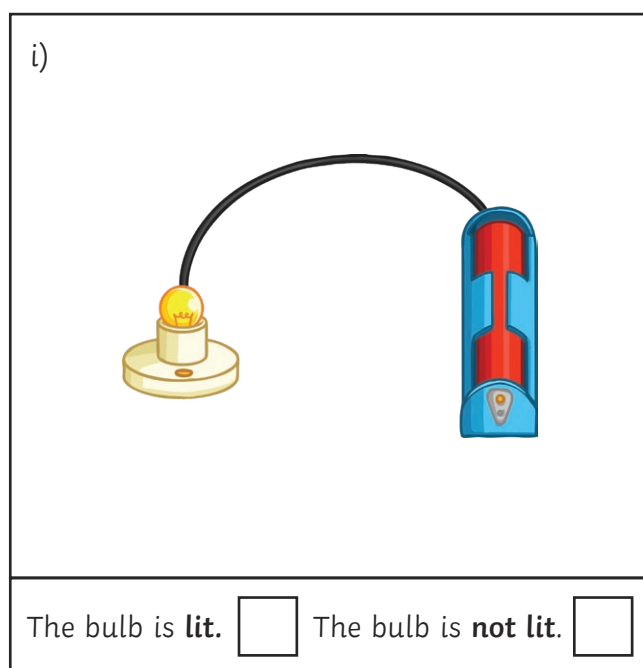
a) Identify the equipment that they are using from the images below.

(3)

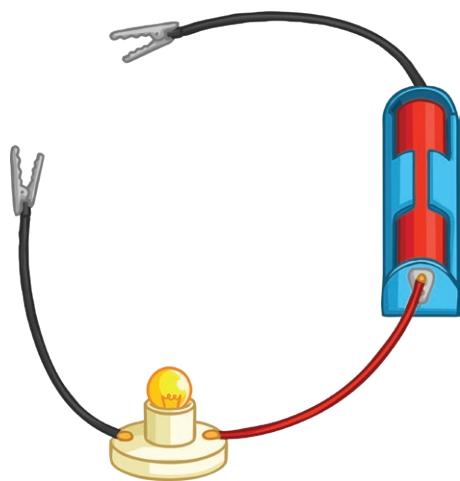


b) For each of the circuits below, tick **one** box to say whether the bulb will light or not.

(4)



c) Ava and Max are testing different objects to see whether they will conduct electricity using the circuit below.



Ava and Max place objects between the crocodile clips. How will they know if the object conducts electricity?

(1)

d) For each of the objects below, put a tick beside those objects that you think will conduct electricity.

(3)

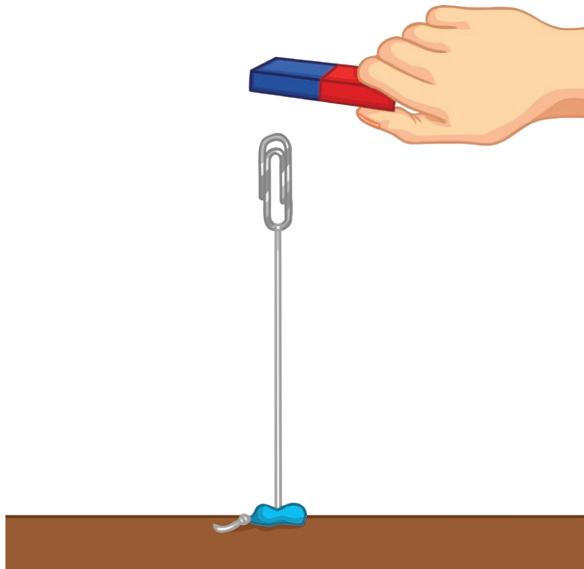
Object	Does the Object Conduct Electricity?
coin	
wooden spoon	
rubber	
brass pin	
paperclip	



2. Ellie ties a paperclip to a piece of string. She tapes the string to the table and holds a magnet over the paperclip.

a) On the picture below, draw an arrow to show the direction of the magnetic force.

(1)



b) Tick the correct box to show what happens to the paperclip when Ellie removes the magnet.

(1)

The paperclip remains in the air.	☐
The paperclip falls to the table.	☐
The paperclip is repelled.	☐

c) Ellie decides to repeat the experiment using a variety of objects.

Tick one of the objects below which will act in the same way as the paper clip.

(1)

rubber

☐

plastic pen

☐

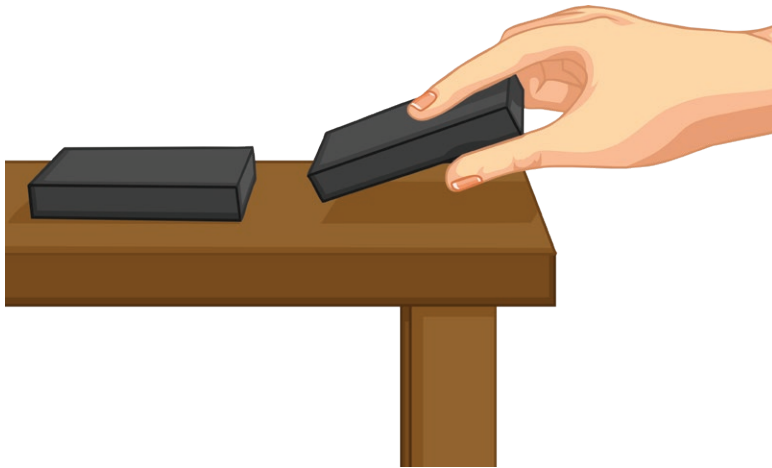
steel pin

☐

wooden matchstick

☐

- d) Harry places two magnets on the table. He picks one of the magnets up and pushes it close to the other.



The magnet on the table moves away as the other magnet is pushed closer to it.

Why does the magnet on the table move away?

(1)

- e) Use the words repel or attract to complete the sentences below.

(2)

When the north poles of two magnets are held together, we say that the magnets _____ one another.

When the south pole of one magnet is held close to the north pole of another magnet, we say that the magnets _____ one another.



3. Charlotte wants to make an electromagnet using the following equipment: 1 power pack, 1 large nail, 30cm of insulated copper wire, 2 crocodile clips, 2 wires and 30 paperclips.

Charlotte wants to investigate how many paperclips she can pick up with her electromagnet.

- a) Describe a method of how to make an electromagnet.

The first two steps have been done for you.

(6)

Step 1 – Collect the equipment.

Step 2 – Place crocodile clips on two of the wires.

- b) There are three variables in Charlotte's investigation. Match the word to its definition.

(3)

independent

This is the variable that we keep the same.

dependent

This is the variable that we change.

control

This is the variable that we measure.

- c) Fill in the blanks using the words in the box to describe what an electromagnet is.

(5)

wire

larger

magnetic field

charges

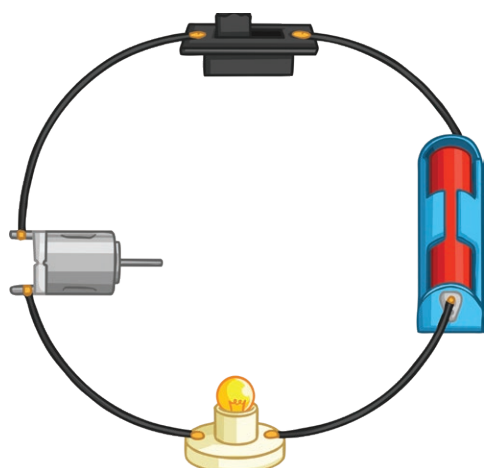
stops

When electrical _____ flow in a wire, a _____
_____ is formed around the _____. The _____ the current, the
stronger the magnetic field will be. When the current _____ flowing, there is no
magnetic field.



4. George is using a variety of components to make series and parallel circuits.

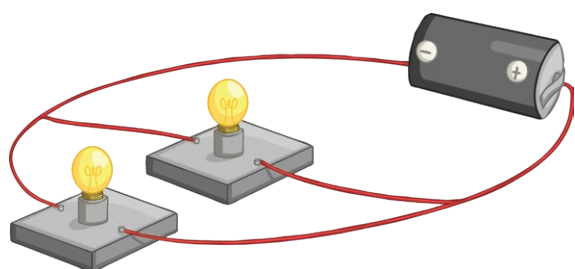
a) Draw a circuit diagram for the following circuit.



(2)



b) Draw a circuit diagram for the following circuit.



(2)



c) Draw the symbol for each of the following components:

(4)

bulb	ammeter	voltmeter	motor



5. Use the words in the box to complete the sentences below.

negative

positive

neutral

a) Protons have a _____ charge.

(1)

b) Neutrons have a _____ charge.

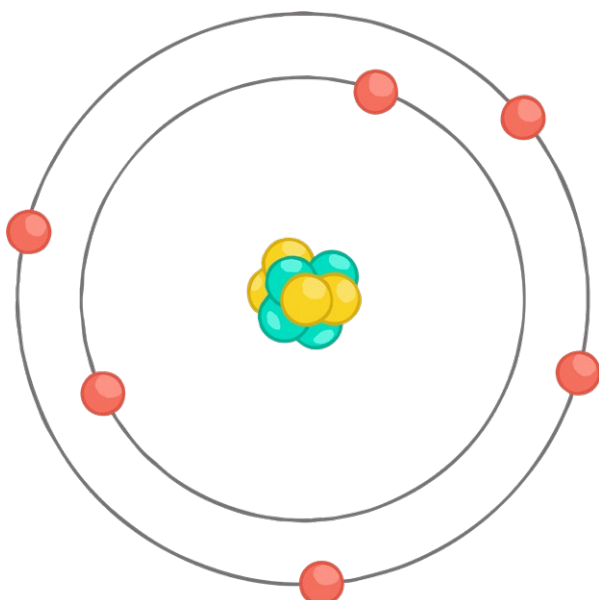
(1)

c) Electrons have a _____ charge.

(1)

d) Label the atom with the following words: electron, proton and neutron.

(3)



6. A dry cloth is used to rub an insulator; the insulator becomes negatively charged.

a) Describe why the insulator becomes negatively charged.

(2)

b) Name three ways that static electricity could be a nuisance or dangerous.

(3)

