Circuits

Index:

Name_____

Form_____

A simple circuit with a battery, bulb and some wires Date:……..

Circuit layout

A short circuit (bad!)

If you finish the above….

What is the filament of the bulb made of? ……..

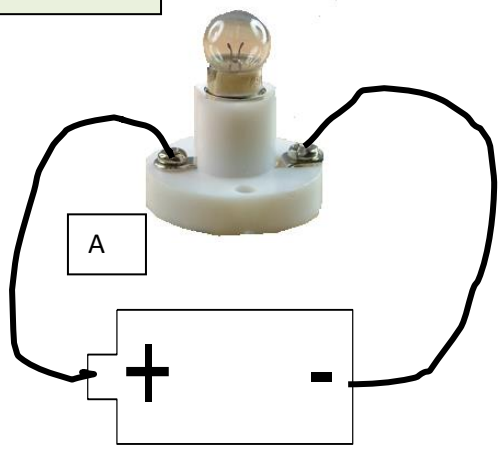
What makes the filament give out light? ……

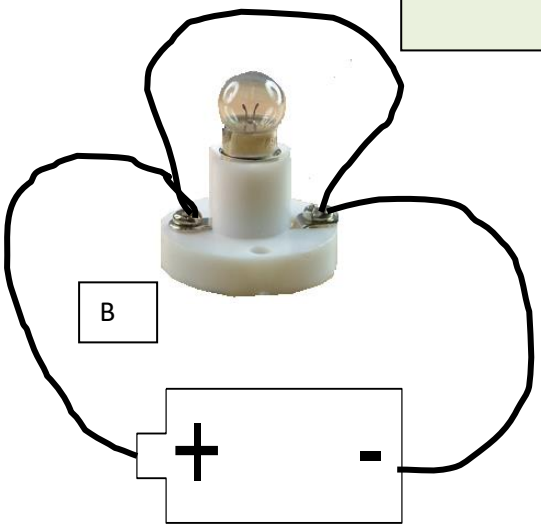
Simple circuits: Adding more than one bulb Date:……..……..

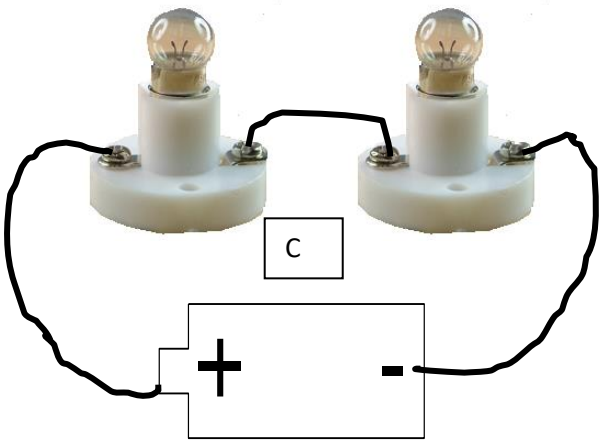
Make each circuit below.

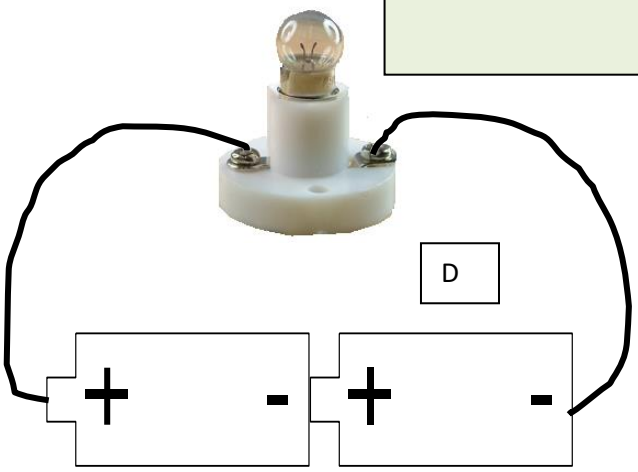
Use the words **Bright**, **Normal**, **Dim** or **Out** to describe the brightness of each bulb below. Write the word in the green box beside each bulb. Colour the bulbs yellow.

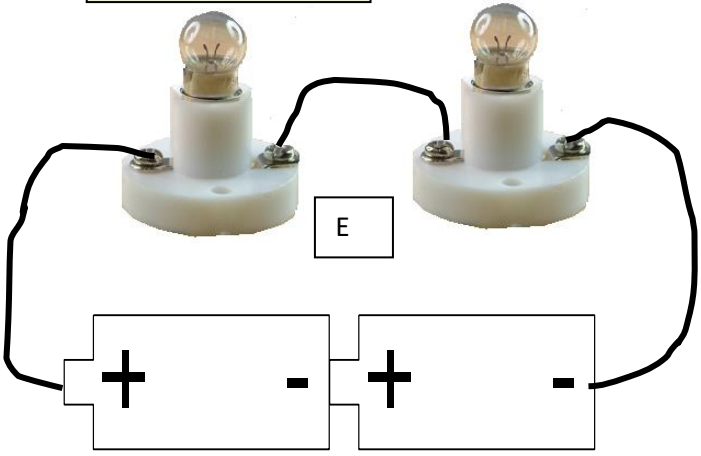
Normal





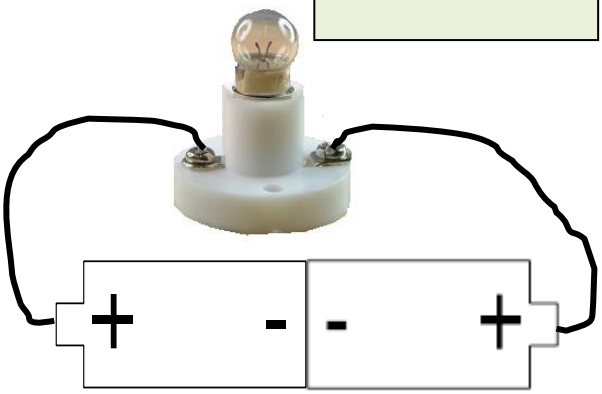


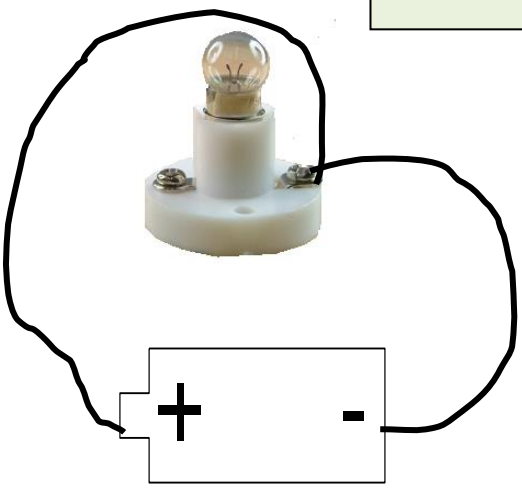


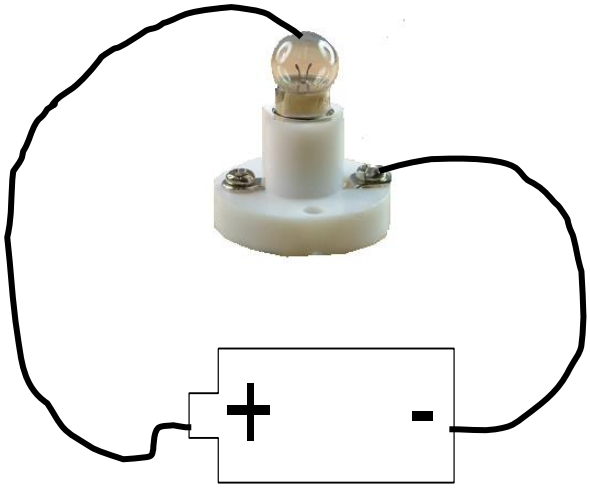


In which circuit will…

a) The bulb(s) be the brightest?
b) The bulb(s) be the dimmest?
c) The battery run out the quickest







What can you say about the three circuits on this page?

Make and draw some circuits of your own

Conductors and Insulators

Date:……..……..

This is what I am trying to find out

This is my circuit

This is how I will use the circuit

Results of the experiment

Object	**Material** (What material is the object made out of?)	**Does the bulb light up? (yes or no)**	**Conductor** (Tick if the bulb lights)	**Insulator** (Tick if the bulb does not light)
Book	**Paper**			
Water pipe	**Copper** (a type of metal)			
Ruler	**Wood**			
Ruler	**Plastic**			
Nail	**Iron** (a type of metal)			
Paper fastener	**Brass** (a type of metal)			

Conclusion:

I discovered that objects that conduct electricity are usually made of …….

An electrical conductor is a material that electricity can flow through
An insulator is a material that electricity cannot flow through

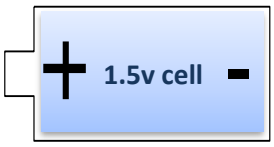
Two examples of electrical conductors:……..

Two examples of electrical insulators:……..

Electricity Assessment Test **PART 1** **D**ate:……..

Bulb

Switch



Battery

1. Use your pencil to add three wires to join up the cell, bulb and battery in the diagram above so that the bulb will light when the switch is closed.

2. Charlotte made a circuit like the one above but her bulb did not light up

Give two reasons why her bulb might not light:

i. ……..

ii. …….

3. Peter used the circuit above to test which materials conducted electricity.

If the bulb lit up he knew the substance conducted electricity.

Place a tick in the right hand column if you think the material conducted electricity

Material being tested	Bulb lit up
Wooden stick	
Iron nail	
Copper wire	
Cork	
Aluminium foil	
Plastic pencil	

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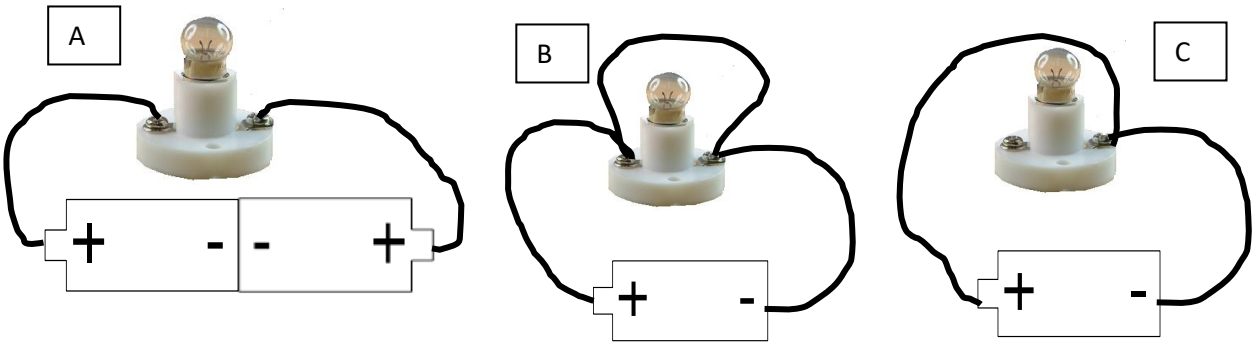


4. Form 4 were drawing circuits that they made in class

The diagrams above show three circuits where the bub did not light up.

Explain why the bulb did not light for each circuit:

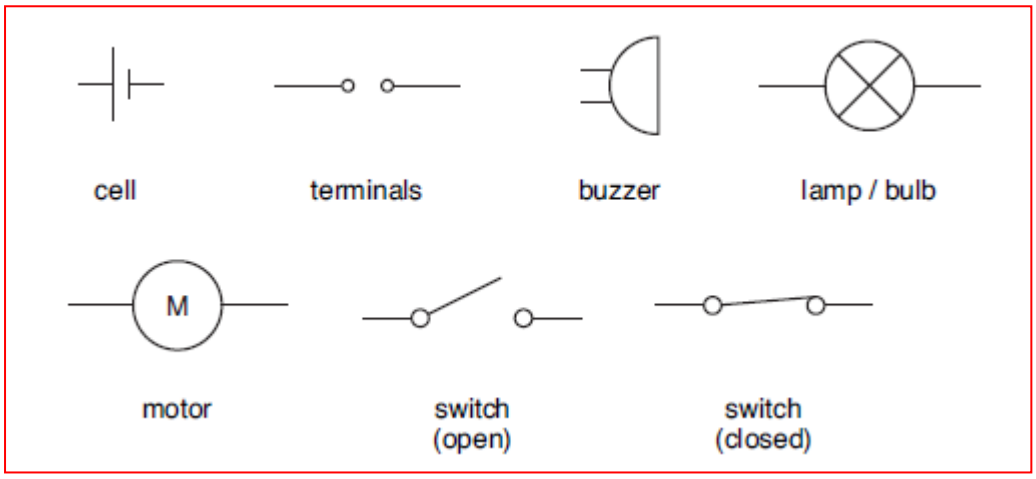
	Reason why the bulb did not light up
Circuit A	
Circuit B	
Circuit C	

CIRCUITS **Part 2**

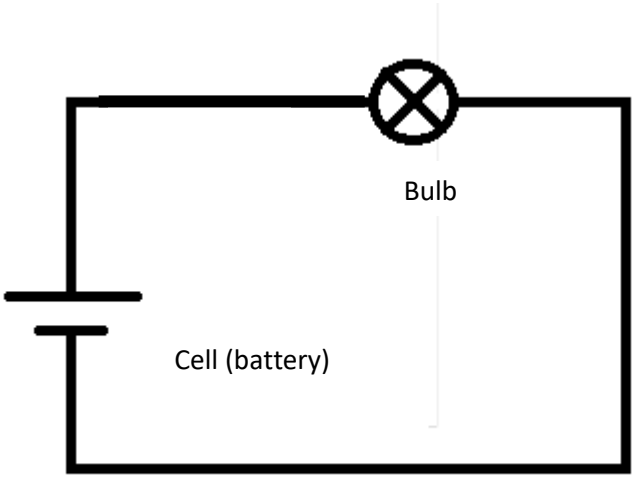
Drawing a circuit diagram

Date:……..

Every part of a circuit has a circuit symbol



Circuit diagram showing a battery lighting a bulb



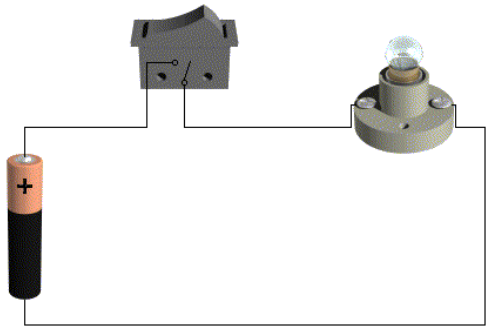
Notes

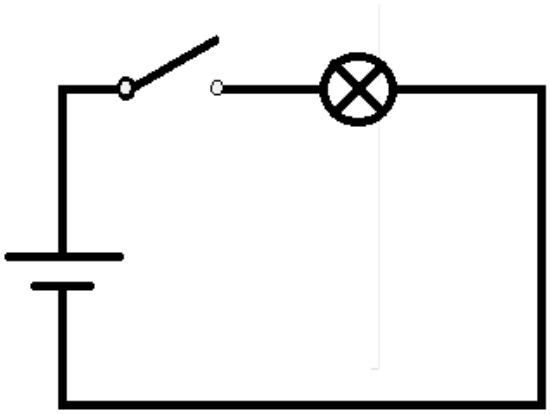
Draw circuit diagrams neatly using a pencil and ruler

Label each component

Copy the circuit above into the space below

SWITCHES Date:……..





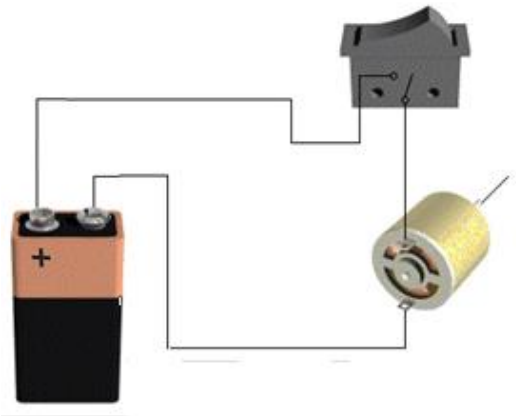
A switch can be <u>OPEN</u> or <u>CLOSED</u>

When the switch is OPEN the bulb is OFF

When the switch is CLOSED the bulb is ON

Position of switch	Bulb on or off
OPEN	
CLOSED	

Draw a circuit diagram in the space below showing the switch turning on a motor.
Note the order of the components does not make a difference



There are lots of different sorts of switches but they basically all do the same thing … turn things on and off

Some switches we use in the science lab.

Slide switch

Push switch

Toggle switch

Micro switch

Reed switch

Rocker switch

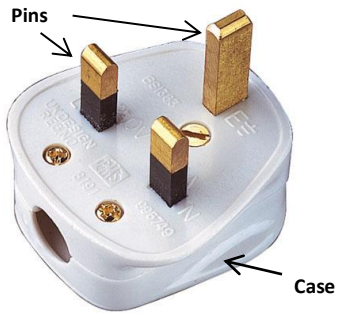
Designing a torch:

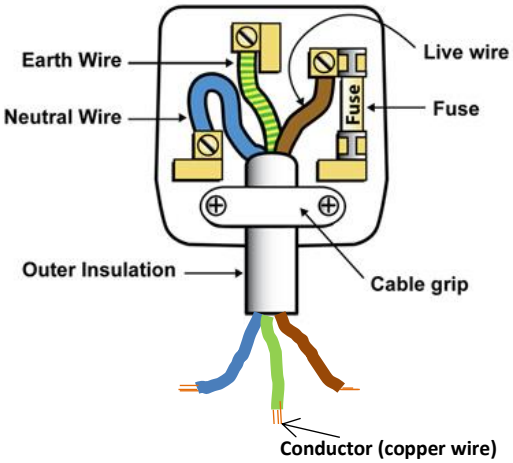
Draw a picture of a home-made torch.

Include a circuit diagram showing how the torch works

MAINS ELECTRICITY

13 Amp Plug





The Pins are made of……..

The case is made of……

The fuse is a piece of thin wire which …… when too much electricity flows and stops the electricity flowing.

Mains voltage is …….. volts which is VERY dangerous.

Some sensible safety rules:

- Switch the socket off before putting in (or taking out) a plug.
- Metal parts of a plug or wires should NEVER be touched while it is plugged in.
- NEVER take the cover off any bit of machinery (like a computer or toaster) until it is unplugged AND switched off.
- Children: If somebody asks you to put a plug on a wire always ask an adult to check it.

Some things I know which plug into the mains supply (240 volts) are:

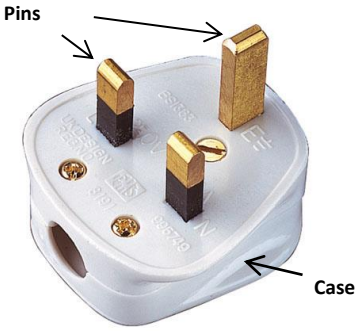
Circuits Assessment test Part 2

5. What do each of the circuit symbols below represent?

Chose from: **Motor, Bulb, Switch, Cell, Buzzer**

6. Draw the circuit diagram, using the correct symbols, showing how you would wire up a circuit for a torch using a battery, a bulb and a switch. Label each component you draw.



This question is about a 13 amp plug

7. Answer the questions below using words given after the question

a) The case is made of …….

b) The pins are made of …….

Metal ***Plastic***

7. Answer the questions below using words given after the question

a) The case is made of plastic because plastic is a …….

b) The pins are made of metal because metal is a …….

Conductor ***Insulator***