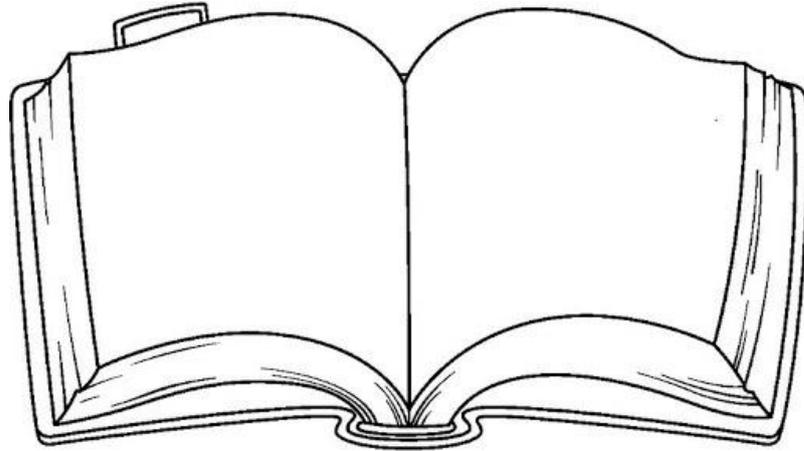


YEAR 6 SCIENCE PRACTICE SHEETS



END OF SEMESTER 2 2018-2019

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OBJECTIVES:

identify and name the main parts of the human circulatory system, and describe the functions of the heart, blood vessels and blood

recognise the impact of diet, exercise, drugs and lifestyle on the way their bodies function

describe the ways in which nutrients and water are transported within animals, including humans

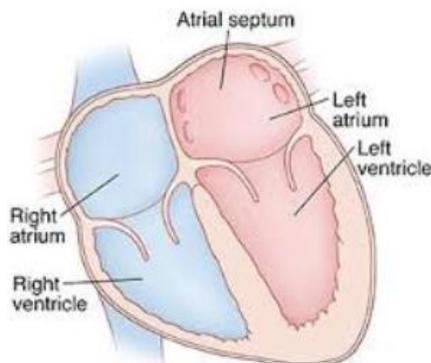
Your heart

Your heart plays an important part in being healthy. It keeps all the blood in your circulatory system flowing. Blood helps oxygen get around your body. When you exercise you can feel your pulse, it tells you how fast your heart is pumping.

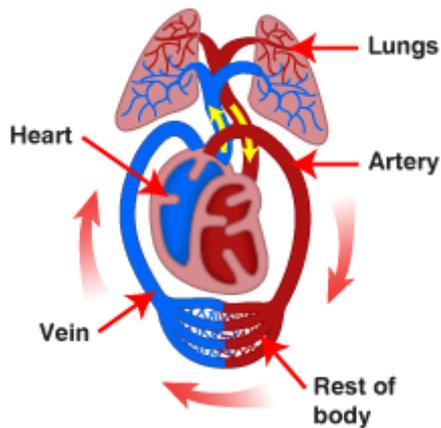
Avoiding cigarettes and alcohol, eating right and exercising help your health and fitness.

Your heart is a very strong **muscle** that pumps blood around your body.

It is made of four chambers, two upper chambers and two lower chambers. Blood enters the upper chambers. These squeeze and push the blood into the lower chambers, which then squeeze and push the blood out of your heart.



1. Your heart first pumps blood to your lungs. Here, the blood picks up **oxygen** from the air that you have breathed in.
2. The blood (carrying oxygen) then travels back to your heart.
3. The heart gives the blood a second push. This time, it's sent to all the other parts of your body, including the brain, all the other organs and all the muscles. The blood delivers oxygen to them all.
4. The blood travels back to the heart, and it all begins again.



The tubes that carry blood away from your heart are called **arteries**. The tubes that carry blood back to your heart are called **veins** and the smallest of tubes is called the **capillaries**

(Read page 4 and 5 of Science Bug Textbooks for further information)

Questions

1. **Is the heart a strong muscle? TRUE or FALSE**

2. **The heart is a strong muscle. Explain what is the definition of a muscle**

3. **Explain the function of the heart?**

4. **Which statement best describes the function of the heart?**
 - a) The human heart is an organ that pumps blood throughout the body.
 - b) The human heart is an organ that makes blood.
 - c) The human heart is an organ that takes in oxygen.

5. **What are the three tubes called in the circulatory system?**

6. What are the three tubes called in the circulatory system? Circle the correct answer.

- a) Arteries
- b) Aorta
- c) Ventricle
- d) Veins
- e) Capillaries

7. What does the blood have when it is travelling around the body? And how does it help the body?

8. Deoxygenated blood is blood without any oxygen which has been transferred to the cells. True/False

Your pulse

Your pulse is a measure of how fast your heart is beating. It is the number of beats your heart makes in one minute. Your heart beats faster or slower depending on what you are doing.

You can feel your pulse at certain points on your body. The easiest place to feel it is in your **wrist**, using the first two fingers of your other hand.



When you sit, the average heart beats about **80 times per minute**. However, everybody is different, so your pulse could be higher or lower than this.

When you **exercise**, your heart beats more quickly. This is because your muscles are working harder and need more oxygen to keep going. Your lungs also work harder, making you breathe more quickly to get more oxygen.

When you **sleep**, your muscles need less oxygen, so your heart slows down.

Questions

1. What does the pulse rate tell us?

2. The pulse rate is which of the following:

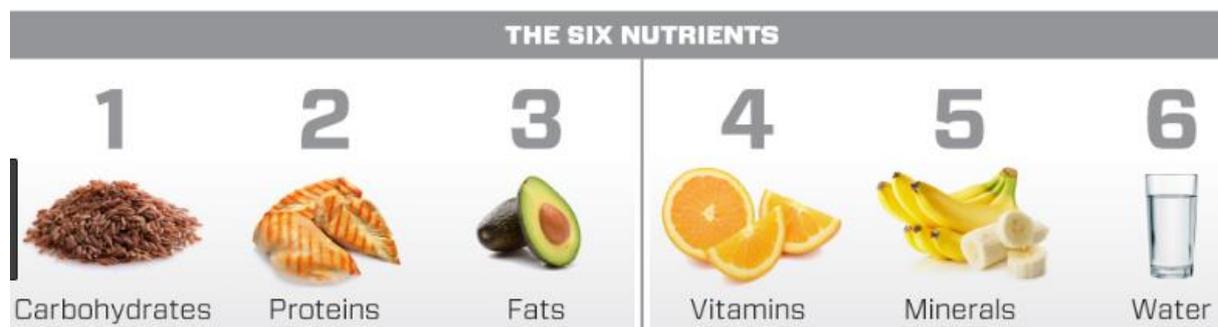
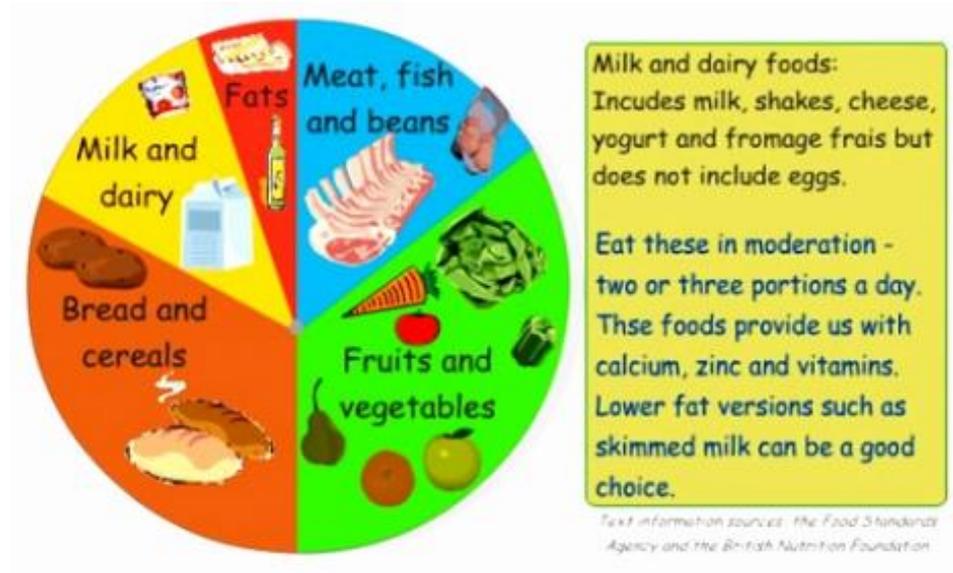
- a) The blood going through the body.
- b) The heart beat per minute.
- c) The lungs taking in oxygen each time

3. When you exercise your heart beats more quickly. TRUE/FALSE
Explain why?

4. When your heart beats quickly during exercise it is because your body needs to take in more oxygen. True/False

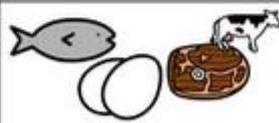
How to keep healthy

We need to keep healthy by maintaining a healthy lifestyle and having a balanced diet as shown here:



To be healthy we need to:

- Maintain a Healthy Weight. ...
- Exercise Regularly. ...
- Don't Smoke. ...
- Eat a Healthy Diet. ...
- Get regular healthy amount of sleep

Type of Food Group	Function	Examples
Carbohydrates	Helps your body work properly	
Protein	Needed for chemical reactions in our body	
Vitamins & Minerals	Helps your body grow and repair itself	
Fats and Oils	Acts as an energy store	
Fibre	Gives you energy	
Water	Cleans our digestive system	

Questions

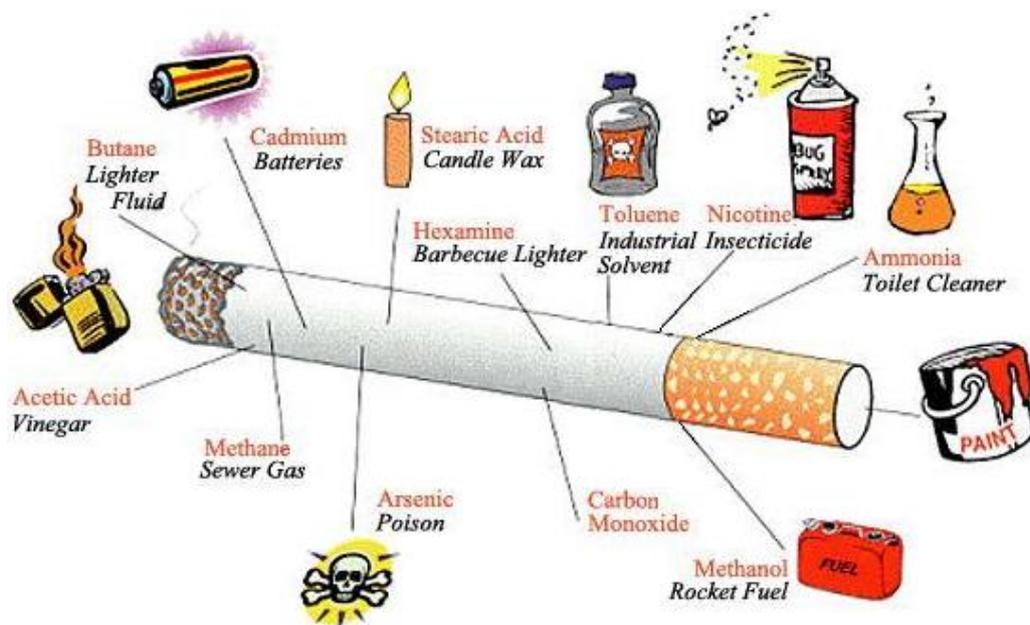
1. Write down what is the function of the following nutrients

Name of nutrients	Function
Carbohydrates	
Protein	
Vitamins and Minerals	
Fats	

2. How do we keep healthy?

Drugs & Smoking

Smoking is extremely harmful and causes harm to the body. Below shows **MOST** of the chemicals in one single cigarette.



Now we have some very good medicines to defend us against bacteria – special chemicals we call **antibiotics**, which kill bacteria and make us better.

These drugs help us in making our body fight infections when we are ill. And there are drugs which can cause harm to our body.

Questions

1. Name 4 chemicals that are in cigarettes.

a) _____

b) _____

c) _____

d) _____

2. How do antibiotics help the human body?

OBJECTIVES:

use recognised symbols when representing a simple circuit in a diagram

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

associate the brightness of a lamp or the volume of a buzzer with the number and voltage of cells used in the circuit

Electricity

Electricity is created by generators which can be powered by gas, coal, oil, wind or solar.

The electrical energy can be converted into other types of energy such as light, heat, movement or sound.

Electricity is dangerous, so be careful when using electrical appliances.

Electrical Circuits

Electricity can flow through the components in a complete electric circuit. We can use symbols to draw circuits.

You can make bulbs brighter by adding more batteries to the circuit. But if you add more bulbs instead they will get dimmer.

Electric current

When electric charges move in a wire, we say that an **electric current** flows in the wire. It's like the way a current of water flows in a river.

For an electric current to flow, we need two things:

- something to make the electricity flow, such as a battery or power pack
- a complete path for the current to flow in. This is called an electric circuit.

Electric circuits

An electric current will not flow if we do not have a **power source** (a cell, battery or power pack). It also won't flow if the circuit is not **complete**. One end of the power source must be joined to the other end by the wires and components of the circuit.

The simplest complete circuit is a piece of wire from one end of a battery to the other. An electric current can flow in the wire from one end of the battery to the other, but nothing useful happens. The wire just gets hot and the battery goes flat.

To do something useful with the electric current, we need to put an electrical **component** into the circuit, such as a lamp or motor, that can use the current to make something happen.

Questions

1. How can we make bulbs brighter?

2. Fill in the table below. What solutions could we do for the following?

Fault	Solution
Bulb is not screwed tightly enough in the bulb holder	
Crocodile clips have become unattached to the metal part of any component	
Wire is no longer attached to the crocodile bit of the clip	
Buzzer wont buzz	
One bulb in a circuit is not working	
All components in a circuit are not working	

3. What would happen if you add more bulbs to a circuit?
 - a) Get dimmer
 - b) Get brighter
 - c) Stay the same

4. Give one reason why you think we use symbols to represent something in an electrical circuit?
5. Which electrical symbol is this?



6. What do we mean by the term when we say: “**an electrical current flows**”?

7. If we do not have a power source electrical current CAN still flow through the complete circuit. **True or False. Explain your reasons**

Circuits

A circuit always needs a power source, such as a **battery**, with wires connected to both the **positive (+)** and **negative (-)** ends. A battery is also known as a **cell**.

A circuit can also contain other electrical **components**, such as bulbs, buzzers or motors, which allow electricity to pass through.

Electricity will only travel around a circuit that is **complete**. That means it has no gaps.

Questions

1. What are the two ends of a battery called?

2. What would happen if there are gaps in the circuit?

- a) Electricity will not be able to flow all the way around
- b) Nothing will happen, the electricity would just go around it

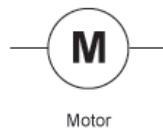
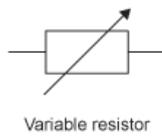
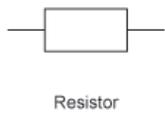
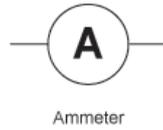
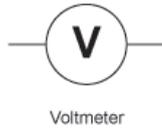
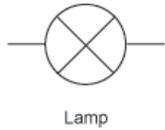
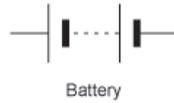
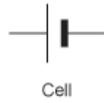
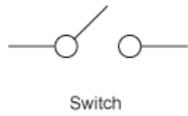
3. Explain how the battery (a power source) makes the electricity flow around the circuit?

4. Name 3 components that you can have in a circuit.

- a) _____
- b) _____
- c) _____

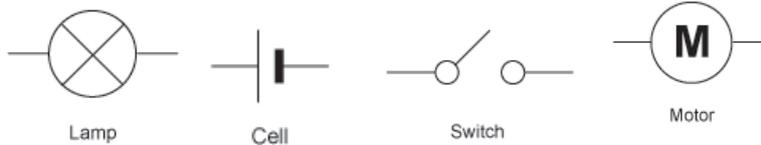
Symbols

We use these symbols to draw diagrams of circuits:



Questions

1. Use the following symbols to draw a complete circuit. (use a ruler)

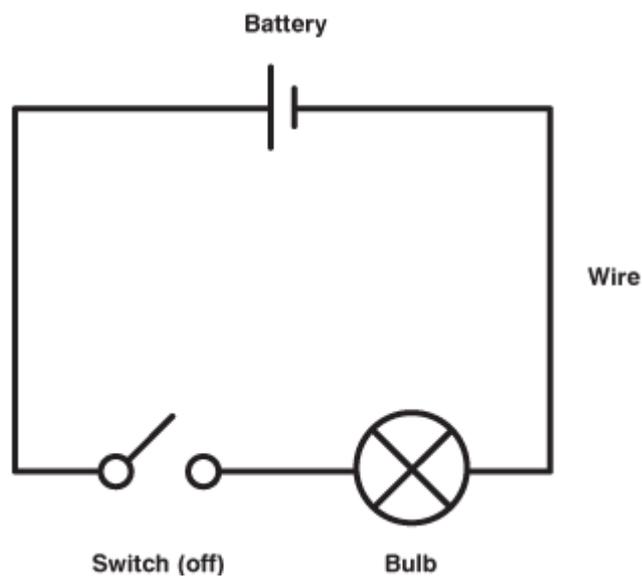
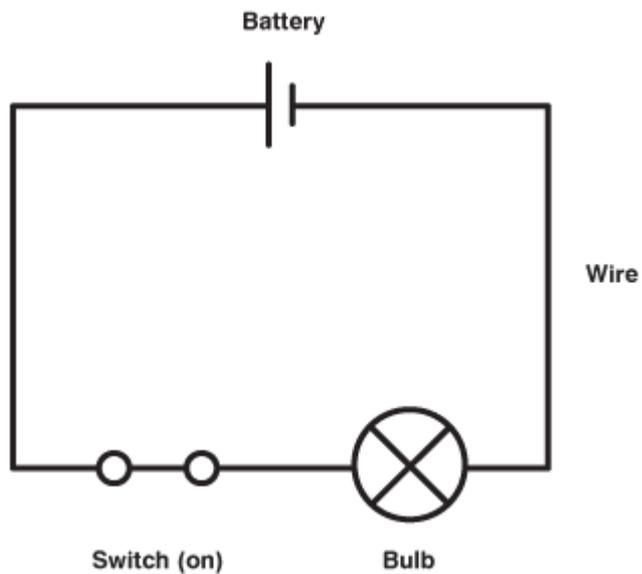


2. Draw a symbol of a switch that is opened and closed.

Switches

When a switch is open (off), there is a gap in the circuit. Electricity **cannot** travel around the circuit.

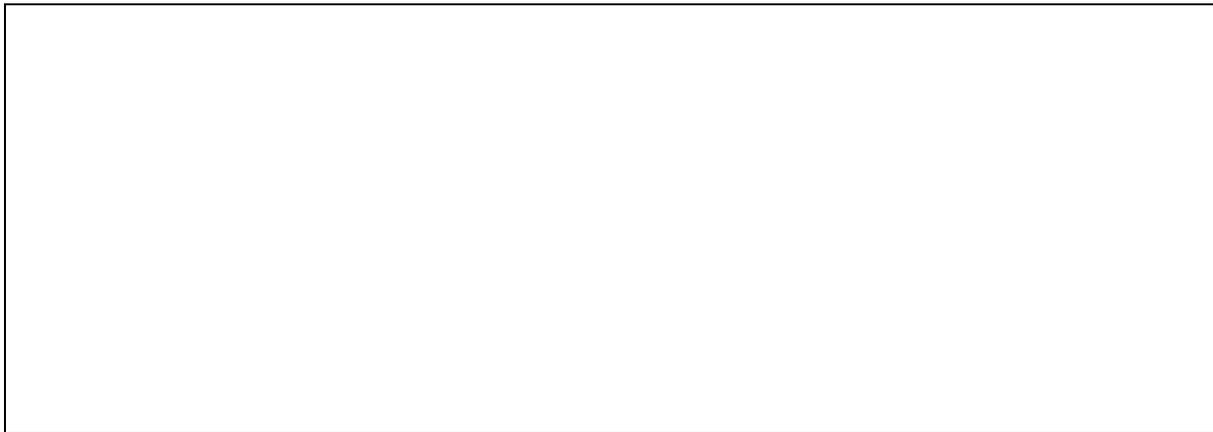
When a switch is closed (on), it makes the circuit complete. Electricity **can** travel around the circuit.



Questions

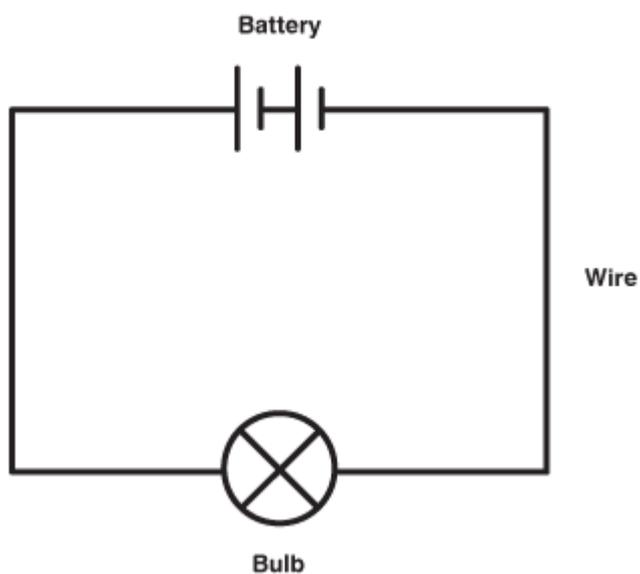
1. Explain why electricity cannot travel through a switch that is turned off?

2. Draw a complete circuit using: A Buzzer, a switch and a battery.

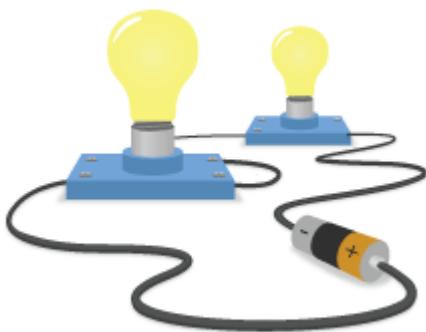


Changing circuits

Adding **more batteries** to a simple circuit will increase the electrical energy, which will make a bulb **brighter**.



More bulbs



Adding **more bulbs** to a simple circuit will reduce the electrical energy and make the bulbs **dimmer**.

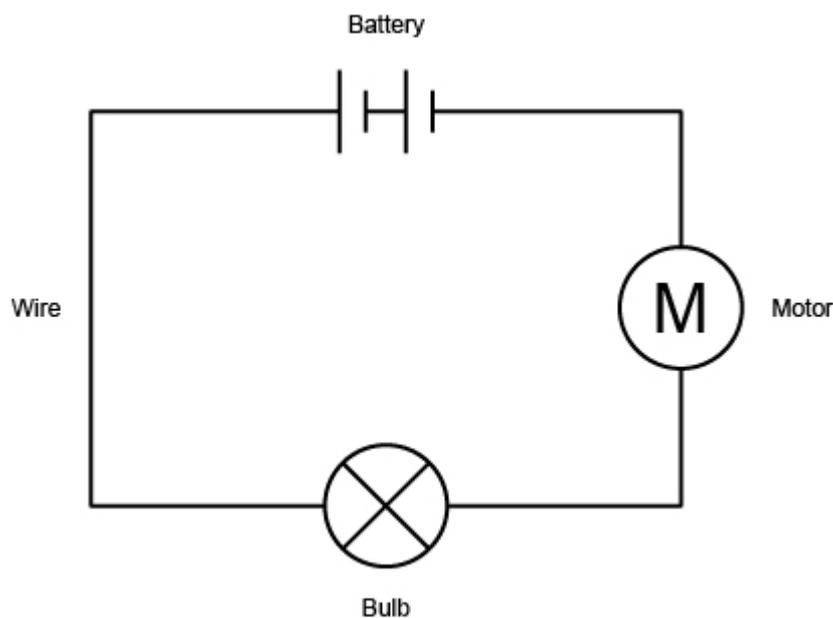
Longer wires



Lengthening the wires in a simple circuit will reduce the electrical energy, as it has further to travel. The extra distance will make the bulb **dimmer**.

Adding a motor

If electrical energy is flowing around the circuit, the motor will rotate.



How does electricity travel in a circuit?

The direction of an **electric** current is by convention the direction in which a positive charge would **move**. Thus, the current in the external **circuit** is directed away from the positive terminal and toward the negative terminal of the battery. Electrons would actually **move** through the wires in the opposite direction.

Questions

1. If the wires of a circuit are longer then what would happen to the bulbs in the circuit?

2. If I add more batteries in a complete circuit the bulbs will stay the same. **True or False.**
3. If I have three bulbs in a complete circuit how can I make them have the same level of brightness?

4. Adding **more bulbs** to a simple circuit will reduce the electrical energy and make the bulbs **dimmer**. *Explain why do you think this happens?*
