1 June 2020 Unit 4 Cells and batteries Please follow the instructions

1. Read and study the lesson related information
2. Answer the questions (The answers are in the lesson related information provided)
3. Draw the electrical circuit/Copy it from the example given.
4. Mark the questions with the provided memo.

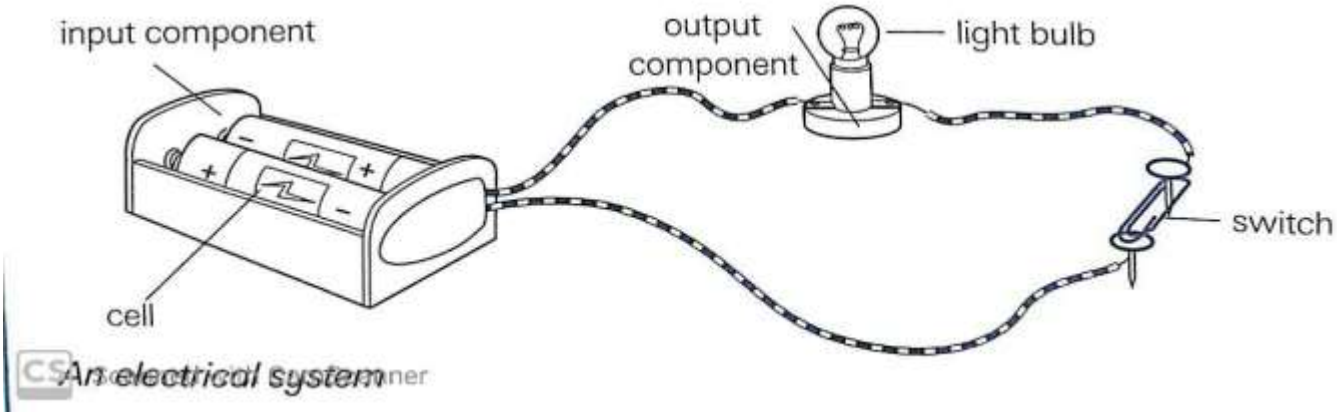
Unit 4 Cells and batteries

Energy can be stored in cells

Energy cannot be created or destroyed, but it can be stored. Electrical energy is stored in cells, which are one of the sources of electrical energy. Almost all electrical circuits change electrical energy to another type of energy such as sound, heat, light or movement energy. When two or more cells are connected, it is called a battery. Cells and batteries let us move around easily with electrical devices. Hearing aids, wrist watches and cars are examples of products that use batteries.

What is a circuit?

A system is a group of components that work together for a purpose. Look at the electrical circuit below. This is an electrical system.



An electrical system

An electrical system

This circuit uses electrical energy from a cell to light up the bulb. All the different components work together to get the system to work. If one part of the system does not work properly, then the whole system will not work. For example, if the light bulb has a broken **filament** then the circuit will not work.

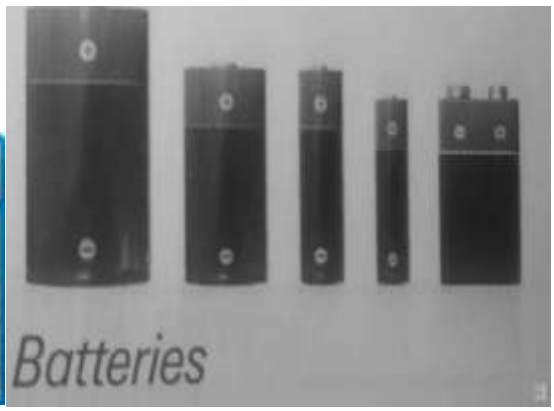
So, a circuit is a system that transfers electrical energy to where it is needed. When an electrical system is working, there is an input of energy and an output of energy. The input energy is electrical energy. The output energy is light and heat energy given by the light bulb.

filament: very thin metal wire in a light bulb

Tips

input: what goes in

output: the result



Batteries

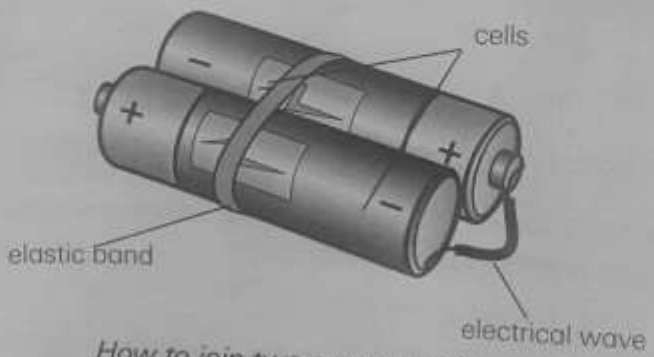
Energy transfer from one part of a system to another

When the type of energy at the output of an electrical system is different to the type of energy at the input, then a **transformation** of energy has taken place. In your circuit, the electrical energy from the cell was mostly transformed to light energy in the light bulb, which we see when the light shines. Some of the electrical energy was transformed to heat energy. The light bulb gets hot.

How to connect cells

If you look carefully at a cell, it has a positive **terminal** and a negative terminal at each end. These are marked on most cells with + and – signs. Electrical current flows in a loop from the positive terminal, through the circuit, and back to the negative terminal.

The positive and negative terminals of a cell



How to join two or more cells

Questions.

Question 1

State whether the following are true or false

1. Energy can be created or destroyed……
2. Energy can be stored…….
3. There are **no** electrical circuits that change electrical energy into another type of energy such as sound, heat, light or movement energy…….
4. When two or more cells are connected it is called a battery…….
5. An electrical system is a group of electrical components that work separately…….
6. The electrical circuit on page 1 uses movement energy to light up the light bulb…….
7. If one part(component) of the electrical system does not work properly, then the whole system will not work…….
8. An electrical circuit is an electrical system that transfers sound energy to where it is needed…….
9. When an electrical system is working there is an input of energy and an output of energy……..
10. In the circuit on page 1, the input of energy is light energy and the output of energy is usually electrical energy given by the light bulb……..
11. A battery(cell) has a positive terminal and a negative terminal at each end, (page 3)……..
12. Electrical circuits flow in a loop(circle) from the negative terminal of a cell through the circuit and back to the positive terminal of a cell. (Page 3)……..

ANSWERS OF TRUE AND FALSE IS ON THE NEXT PAGE.

Question 2

Please practise drawing (copying) the electrical circuit on page 1

Questions.(ANSWERS)

State whether the following are true or false

1. Energy can be created or destroyed…**false…**……
2. Energy can be stored……**true…**…….
3. There are **no** electrical circuits that change electrical energy into another type of energy such as sound, heat, light or movement energy…**false**…….
4. When two or more cells are connected it is called a battery…**true…**…….
5. An electrical system is a group of electrical components that work separately……**false…….**
6. The electrical circuit on page 1 uses movement energy to light up the light bulb……**false**…….
7. If one part(component) of the electrical system does not work properly, then the whole system will not work **true…**…….
8. An electrical circuit is an electrical system that transfers sound energy to where it is needed…**false**…….
9. When an electrical system is working there is an input of energy and an output of energy…**true…**……..
10. In the circuit on page 1, the input of energy is light energy and the output of energy is usually electrical energy given by the light bulb…**false…**……..
11. A battery(cell) has a positive terminal and a negative terminal at each end, (page 3)…**true……..**
12. Electrical circuits flow in a loop(circle) from the negative terminal of a cell through the circuit and back to the positive terminal of a cell. (Page 3)…**false…**……..