Name _____ N°___

Surname _____

NATURAL SCIENCE

ELECTRICITY

ELECTRICITY

In this unit we are going to learn about:

1. What is electricity?
2. Electrical charges
   - Types of electrical charges
   - Interaction between electrical charges
   - Static electricity
3. Electrical current
   - Materials and electricity: Conductors and insulators
   - Effects of electric current
4. Electric Circuits.
   - Components of electric circuits
5. Production of electricity
6. Electricity and inventions

MY VOCABULARY

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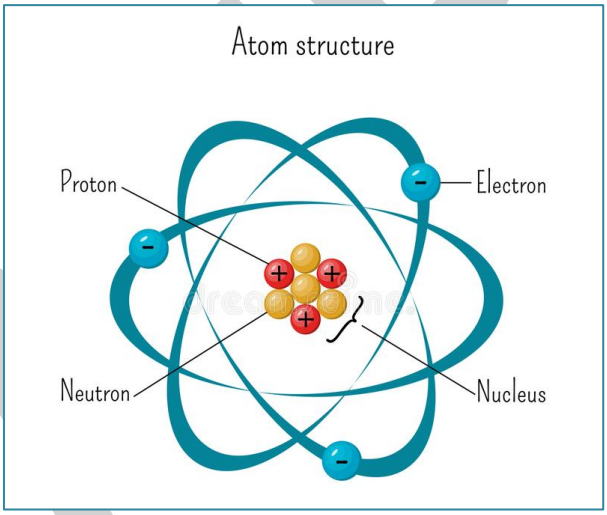
1. WHAT IS ELECTRICITY?

Electricity is a type of energy. Electricity begins with the smallest particle in matter, called the atom. Atoms are made up of **protons and neutrons inside a nucleus** and **electrons moving around** the nucleus. **Protons** have a positive electric charge and **electrons** have a negative electric charge. **Neutrons** have no charge, they are neutral. Electrons move from one atom to another.

Positive and negative charges try to pull each other together. However, two positive charges, or two negative charges, will push each other away. **Electricity results when electrons are pushed and pulled from atom to atom.**

If an object has the same number of protons and electrons, it is **electrically neutra**l. However, sometimes, electrons move easily from one object to another and this makes the object electrically charged

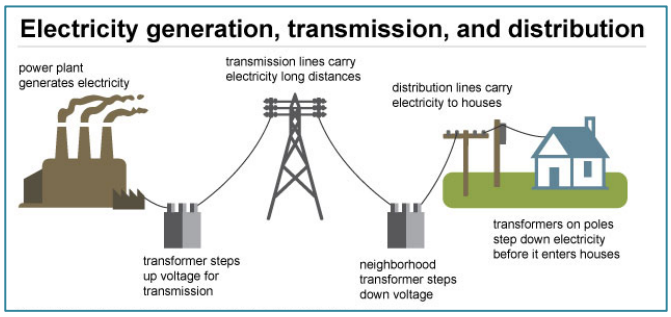


2. ELECTRICAL CHARGES

All objects around us, such as your body or the stars, have electrical charges.

When we rub a pen against a wool jumper and then hold the pen near some small pieces of paper, the pieces will stand up and stick to the pen. This happens because of electrical charges. The pen becomes **electrically charged** when it is rubbed against something. Then it is able to attract small objects.

EFFECTS OF ELECTRIC CURRENT



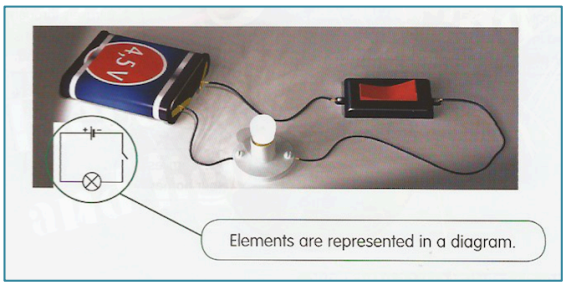
Electricity is the **most versatile energy** source that we have; it is also the newest: homes and businesses have been using it for not much more than a hundred years.

When electric current flows through conductors, it can produce:

- HEAT. When electric current flows through a conductor, it can heat up. This is what happens in an iron, a heater or a toaster.
- LIGHT. Electric current can produce light, like in light bulbs or TV screens.
- SOUND. Electric current can be transformed into sound, like in loudspeakers on a stereo or a computer.
- MOVEMENT. In electric motors, electric currents produce a turning movement, like in fans, juicers or drills.
- MAGENTISM. When electric current flows through a metal object, like a nail, it behaves like a magnet.
- CHEMICAL EFFECTS. Electric current can cause chemical changes in substances, like in batteries.

4. ELECTRIC CIRCUITS

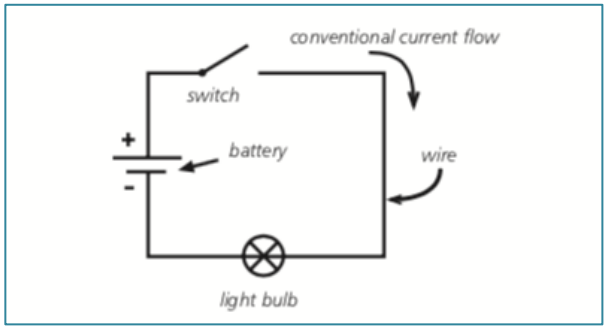
An **electric circuit** is a complete course of connected elements through which electric current can travel. Circuits provide a path for electrical current to flow and transform into other types of energy.



An **electric circuit** is a closed path through which electricity flows. The circuit need to form a complete circle in order to work. We use circuit diagrams to illustrate circuits.

COMPONENTS OF ELECTRIC CIRCUITS

Element	Definition	Symbol
Generator	It **provides the electricity** that travels through the circuit. A battery is a generator of electricity. The electrical charges leave the generator through one terminal and enter through the other. 	
Devices	It is a device that **turns electricity into another type of energy**, for example, light (bulbs), kinetic (motors), thermal (heaters)… 	
Cables (Wire)	They **transport the electricity** from the generator to the other components of the circuit. Cables are connecting wire, usually made of <u>copper</u>, wrapped in plastic covering. 	
Switch	It is a small device that **opens or closes** the flow of electricity. 	



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