

4<sup>o</sup>



# Natural Science

**UDI 5 – Otra época**  
UNIT 6 : Energy and machines

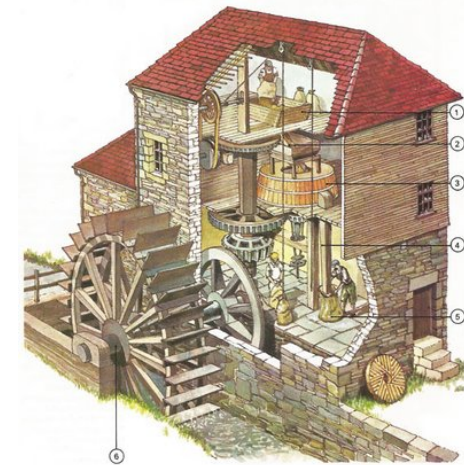
# 1. Technology and machines

## 1.1 What is a machine?

A machine has one part, or more parts that work together, to carry out a specific task\*. All machines use energy in order to function.

## 1.2 What type of machines use mechanical energy?

The first machines invented by humans used **mechanical energy** to function.



# 1. Technology and machines

## 1.3 What type of machines use electrical energy?

- in light bulbs, to produce light.
- in refrigerators, to keep the temperature cool.
- in televisions, to produce sound and images.
- in engines, to produce movement.
- in computers, to process data.

Electrical energy reaches the machine from a **battery**, or through an **electric current**.



# 2. Simple machines

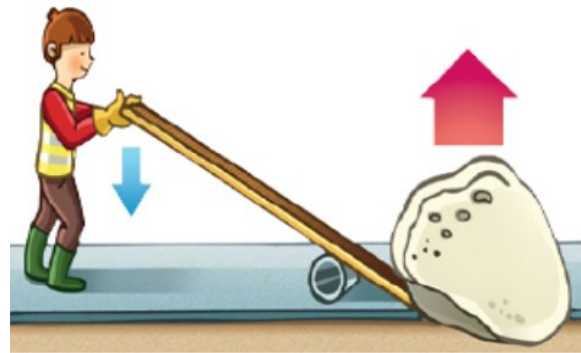
## 2.1- What is a simple machine?

Simple machines have no moving parts or very few moving parts.

### TYPES OF SIMPLE MACHINES:



A pulley



A lever



An inclined plane



Wheels and axles



Rollers

# 3. Compound machines

## 3.1- What is a compound machine?

**Compound machine** is made up of two or more simple machines or has a lot of components



Modern machines can have many different components. In a car, for example:

- The engine converts electrical or chemical energy into mechanical energy.
- The tyres reduce friction and enable\* the car's wheels to move along the ground.
- The wipers clean the windscreen of rain and snow.
- The brakes slow down and stop the car's movement.

All these components work together when the car moves.

# 4. Discoveries and inventions

## What did Archimedes invent?

One of the earliest inventors that we know about is **Archimedes**. He used mathematical formulae to build many incredible machines. He studied how objects travel through air and he built a very accurate catapult.



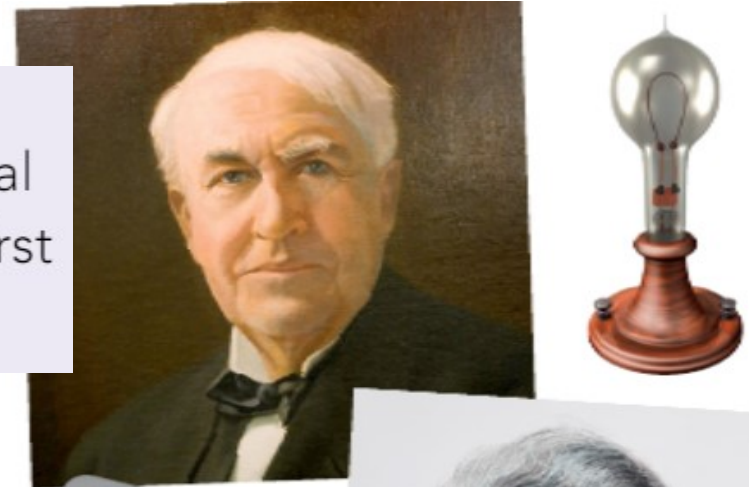
## Who was Isaac Newton?

**Isaac Newton** was a 17<sup>th</sup>-century mathematician and a scientist. He developed a theory to explain the force of gravity. This was crucial to understanding the movement of the planets around the Sun.



# 4. Discoveries and inventions

**Thomas Edison** perfected the work of previous scientists and invented a practical electric light bulb. He also invented the first phonograph, for listening to music.



**Marie Curie** discovered two new chemical elements, polonium and radium. She measured the amounts of X-rays emitted by these elements and defined the term **radioactivity**. Radium is used in some cancer treatments today.

