



4^o

Natural Science

UDI 4 – Este es mi pueblo

UNIT 4 : Energy

1. Forces and their effects

1.1 What are forces?

FORCES: can change an object's movement, its direction of movement and the shape.

- **Forces can be:**

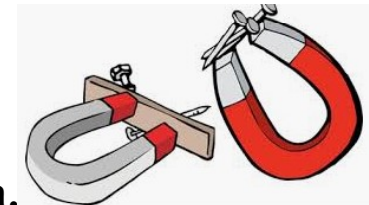
A) Contact forces:

When objects touch and exert force on each other.

B) Non-contact forces:

Two objects interact, but they don't make contact.

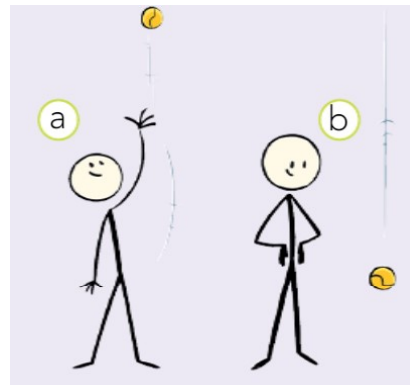
Examples of non-contact forces are gravity and magnetism.



1. Forces and their effects

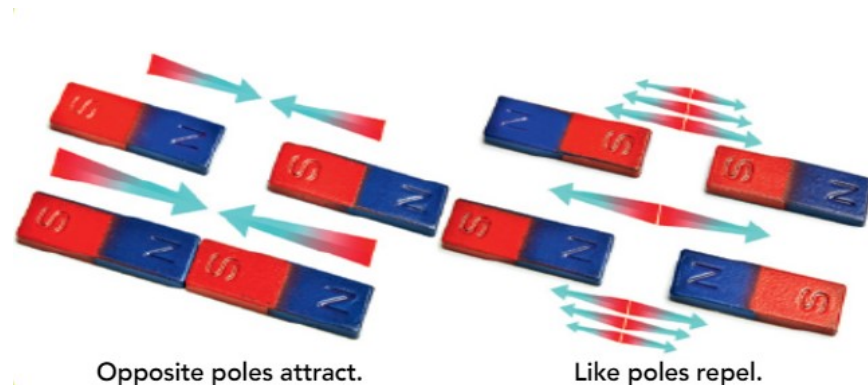
1.2- What is gravity?

Is a force that pulls object with mass towards each other but we only notice this force when there are a lot of mass, like the Earth



1.3- What is magnetism?

Specially metals produce forces to attract or repel other metal objects



2. Energy

2.1- What is energy?

Energy is everything that produces change or transform objects.

Types of energy:

- **Luminous energy.** Its main source is the Sun, but it has other sources, such as fire and light bulbs.
- **Electrical energy** can be stored in batteries. It is also found in storm clouds and lightning.
- **Mechanical energy** can be observed when an object changes position. Also known called **kinetic energy**
- **Chemical energy** is the energy stored in matter. It can be released from materials, such as fuels and food.
- **Thermal energy** is when heat is transferred from one object to another.

3. Energy and change

3.1- What is energy transfer and energy transformation?

- ENERGY TRANSFER:**

When energy passes to one object to another and **is still the same form.**

- ENERGY TRANSFORMATION:**

When energy passes to one object to another and **it changes form.**



The thermal energy from the vitroc ceramic hob transfers to the water in the pot.



The chemical energy in the battery transforms into luminous energy in the light bulb.

4. Light

4.1- What is light?

Light is a form of luminous body. It has these characteristics:

- Moves very quickly.
- Moves in all directions at the same time
- Travels in straight lines.

4.2- How do materials behave with light?

Transparent materials allow light to pass through. We can see through them. Clear glass is transparent.

Translucent materials allow some light to pass through. Frosted glass* is translucent.

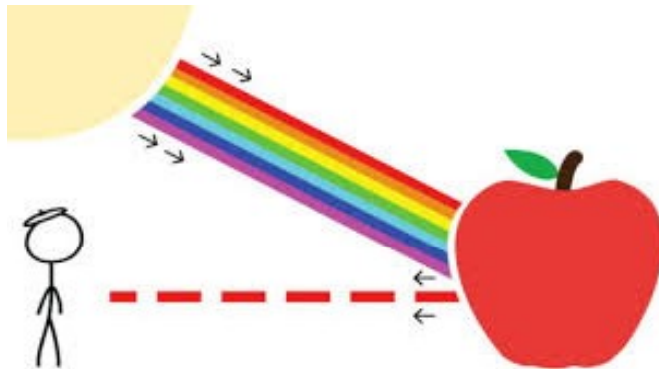
Opaque materials do not allow light to pass through. Wood is opaque.



5. Luminous phenomena

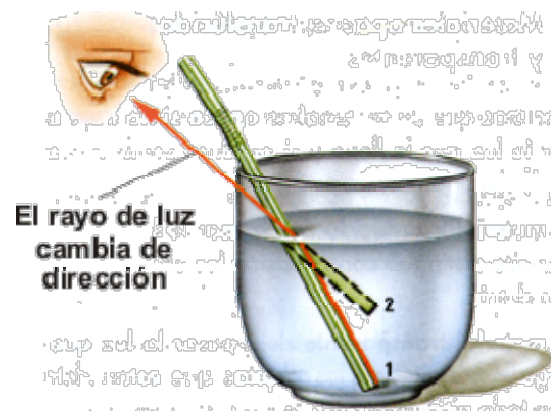
5.1- What are luminous phenomena?

REFLECTION: light rays **bounce** off opaque objects. We see shape, size and colour because of the reflection of light.



This is the reason because off the objects have colour. The colour we see is the colour that the object does´t absorb and reflect.

REFRACTION: when light travels from one type of object to another, the **light waves change direction**.



5. Luminous phenomena

5.2- What is dispersion?

Sunlight seems white but it is actually made up of several different colours.

-When it rains, the light illuminates water droplets in the air and **light is separated into 7 different colours.** This phenomena is called **DISPERSION.**

