ASPIRE
INTERNATIONAL SCHOOL

Science Department

2023/2024

Year 4

Term 2, Summary notes

Name: ……

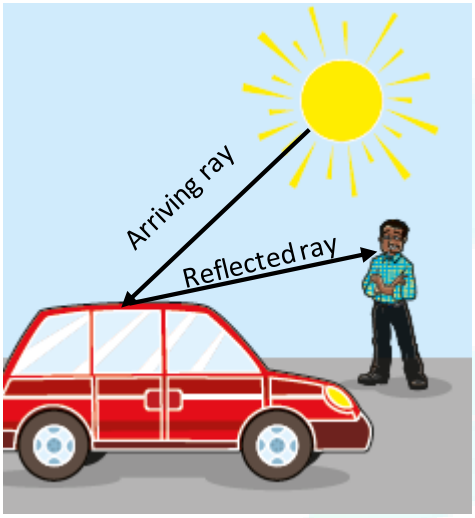
Class: ……

5.1 How we see things

How light travels and how is it reflected?

We need a source of light in order to see things.

Light travels from the light source to the object we want to see. The light bounces or **reflects** off the object into our eyes. This is how we can see the object.



5.2 Light travels in straight lines

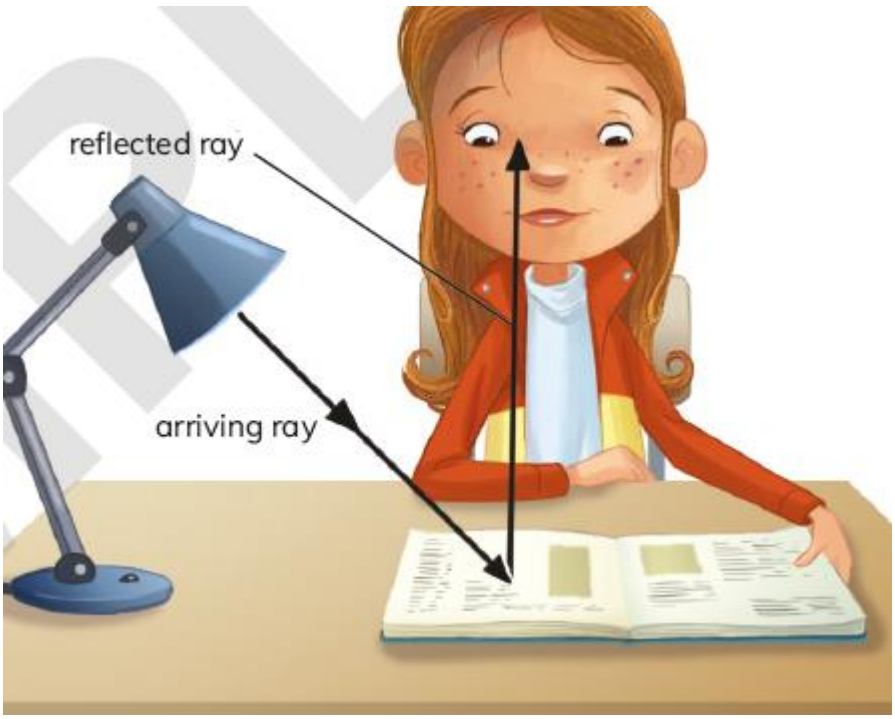
Light rays

Light is travelling in straight lines. Each narrow beam of light is called a **ray**. Light rays travel from the source of light in all directions until they hit something.

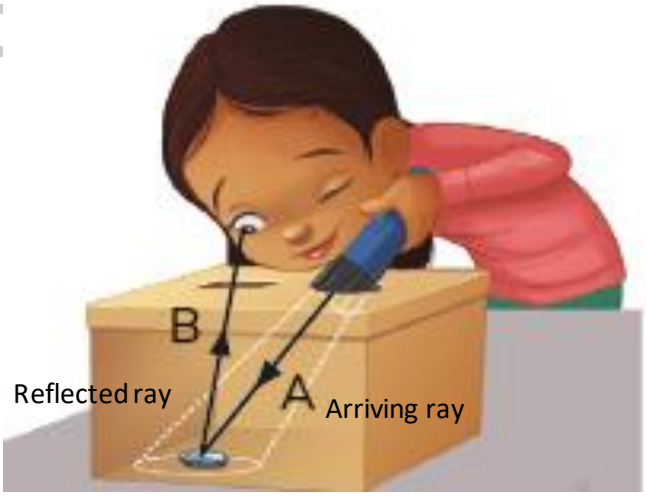
Ray diagrams

We can show how light travels with a **ray diagram**. On the diagram, we draw straight lines for the rays of light. We draw an arrowhead to show the direction the light ray is moving.

Here is an example of a ray diagram with light rays travelling from a lamp.



We can show how light travels using a **ray diagram**.



5.3 Light reflects off different surfaces

Mirrors

A smooth, shiny surface is very good at reflecting light. A mirror has a smooth, shiny surface.

We call the reflection of your face in the mirror **image**.

Do some surfaces reflect light better than others?

The mirror reflects the image.

The wooden surface **absorbs** light. It takes the light in and does not reflect it.

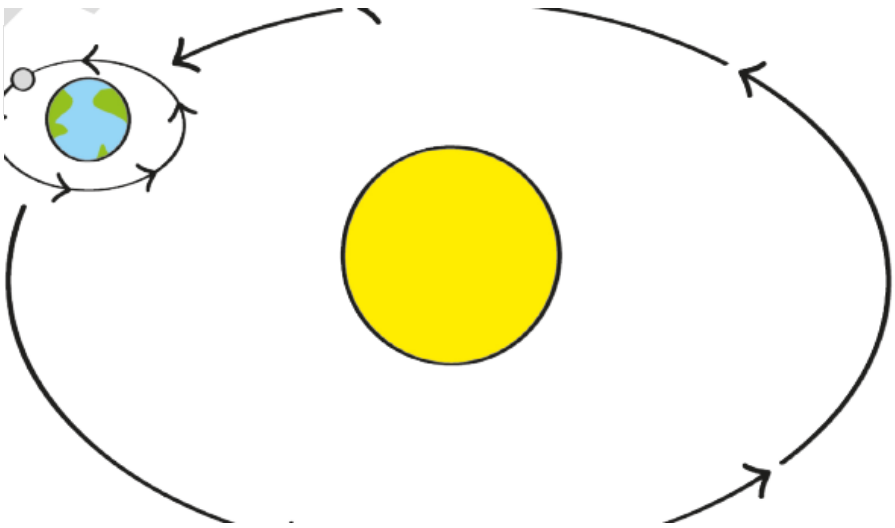
All objects reflect light or absorb light.

If a surface **reflects** light very well, you'll be able to see your reflection in the surface. If you can't see your reflection at all in a surface, it means the surface **absorbs** light.

5.4 Light in the solar system

The Sun is our source of light.

Orbits



Look at the diagram of the Sun, Earth and Moon. The Earth and the Moon are constantly moving in space.

1- The Moon **orbits** the Earth and the Earth orbits the Sun.

2- The Moon takes 29 days or one month to complete its orbit around the Earth.

3- The Earth takes 365¼ days or one year to complete its orbit around the Sun.

Our solar system

The **solar system** – which means the Sun and the planets, moons, **comets** and **asteroids** which move around it.

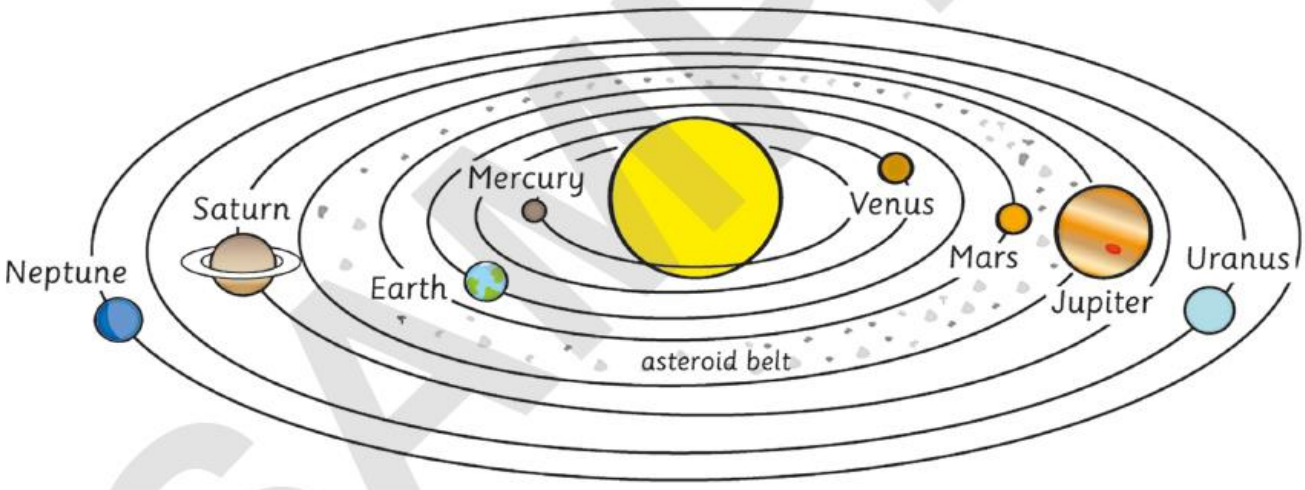
1- The Sun is at the centre of the solar system.

2- There are eight planets which orbit the Sun.

3- Notice that the planets that are **closest**, or nearest, to the Sun have smaller orbits than the planets further from the Sun.

4- Planets that are closer to the Sun than Earth take less than an 'Earth year' to orbit the Sun.

5- Planets that are further from the Sun than Earth take more than an 'Earth year' to orbit the Sun.



Asteroids

1- Asteroids are rocky masses that orbit the Sun. They are similar to planets but much smaller.

2- All of them are in the asteroid belt between the planets Mars and Jupiter.

Moons

1- Moons orbit planets and asteroids.

2- Earth has one moon. Mars has two moons.

3- Titania is the largest of the moons of planet Uranus and the eighth largest moon in the
solar system.

Comets

1- Comets are lumps of ice and dirt which move in large orbits around the Sun.

2- Many comets are beyond the planets at the edge of the solar system.

3- Comets have long tails behind them.

5.5 Day and Night

The Earth

It is shaped like a ball and it has a stick passing through it from the North Pole to the South Pole.

This stick represents the Earth's **axis**.

In space, the Earth is not upright. The Earth is **tilted** on an imaginary axis like the globe.

The Earth spins

1- The Earth turns round and round or **spins** all the time on its axis.

2- the Earth spins in an **anticlockwise** direction. It does one complete turn on its axis every 24 hours.

5.6 Investigating shadows lengths

Shadow lengths

1- Blocking the light causes the formation of shadows.

2- During early morning and late afternoon, shadows are long.

3- During midday, shadows are short.

4- When an object is close to the light source, shadows are big.

5- When an object is far away from the light source, shadows are small.