Chapter Five

The solar system, satellites and Measurement

- The sun, the planets and all the heavenly bodies which move around it from the solar system.
- Heavenly bodies are structures that are high up in the atmosphere, but have no specific names.
- The solar system is circular in shape and forms part of the Milky Way galaxy.
- A galaxy is the name given to a large number of stars.
- The centre of the solar system is occupied by the sun, whose great mass creates the gravitational force which enables other objects to travel round it in an orderly manner.
- The universe is made up of space and everything that exists in it, and is indeed very large.
- It is composed of a number of galaxies.
- Each star is a source of heat and light, which means that each produces heat and light.
- The stars which include our sun are giant shining balls of hot gases.
- The main difference between a star and a planet is that, while a star produces its own light, a planet does not do so but reflects the sun's light.
- For this reason, a planet can be seen since it reflects light from the sun.
- At night, planets and stars look like, but while the planet produces steady light, that produced by the sun is twinkling.

The planets:

- These are heavenly bodies that move around the sun.
- Each planet moves in a circular path called its orbit.
- The planet in the course of movement do not clash or meet, due to the sun's gravitational force and each is at a particular distance away from the sun.
- The shape of the orbital path used by the planet around the sun is called ellipse.
- There are nine planets and naming them with respect to their closeness or nearest to the sun, we have: Mercury, Venus, Earth, Mars, Saturn, Uranus, Neptune and Pluto.
- All the planets with the exception of Pluto are surrounded by different kinds and amount of gases called atmosphere.

- For this reason, an atmosphere is the name given to the layer of gases which surrounds a planet.
- Among all the planets, the earth is the only one with enough oxygen and water on its surface to support life.
- While some of these planets have one or more moons moving around them, others have none.
- Each planet moves round the sun, and one complete movement of a planet round the sun is called a revolution.
- The earth takes a year or $365^{1}/_{4}$ days to revolve once round the sun.
- Apart from that, each planet spins on its axis which is an imaginary line through its centre, and this movement is called rotation.
- The earth takes 24hours to perform this rotation and it is this earth's rotation which cause day and night.

The temperature, atmosphere, length of days and nights as well as other conditions vary from planet to planet and depend on the following factors:

- (I) The distance of the planet from the sun.
- (II) The planet's atmosphere.
- (III)The planet's rotation.

Facts about some planets:

Mercury:

- Since this is the planet nearest to the sun, it is the hottest planet.

Venus:

- When viewed from the earth, this is the brightest of all the planets.

Earth:

- This is the only planet known to have life on it, since it has conditions which favour life.
- These conditions include the presence of oxygen and water, as well as a good or moderate temperature.

Mars:

- This is referred to as the red planet.

Jupiter:

- This is the largest of all the planets and it has a very big red spot on its surface.

Saturn:

- This I the second largest planet and it has three colourful rings around it.

Pluto:

- This is the farthest planet from the sun.
- It is also the darkest and coldest planetsince the rays of the sun does not get to it.

Space Travel:

- The spaceship or the rocket is the only vehicle that can be used to travel to space.
- People who travel to space are called astronauts.

The MOON:

- A moon is a natural satellite which orbits or moves round a planet.
- Our earth has one moon which is a solid heavenly body which moves round the earth.
- The moon has no air or water and its surface is covered with plains, mountains and large holes called craters.
- It is also the nearest heavenly body to the earth.

<u>The Sun:</u>

- This is the star around which all the planets move.
- The importance or the uses of the sun's energy are for the evaporation of liquid, in the drying of clothes and food, and in the salt making industries.
- It also used in keeping the atmosphere warm and provides light for sight or seeing.

- It also provides the light energy needed for photosynthesis.

Asteroids:

- They are also referred to as planetoids, and are irregularly shaped objects found within space.

Meteoroids:

- They are small heavenly bodies made up of iron and rock which sometimes fall from space to earth.
- Even though many meteoroids fall from space into the earth's atmosphere, most of them burn up as a result of friction between them and the gases within the atmosphere.
- While they are falling through the atmosphere they are called meteors, but if they reach the earth's surface they are referred to as meteoroids.

Rotation of the earth:

- The rotation or the spinning of the earth refers to its turning on its axis.
- A complete rotation of the earth which takes 24hours to occur, causes it to turn through an angle of 360⁰.
- The rotation of the earth causes day and night.
- Since the earth moves round the sun, the part of the earth which faces the sun will have light i.e. day, while the part which does not face the sun will have darkness.

The revolution of the earth:

- This refers to the movement of the earthround the sun.
- When the earth moves round the sun once, it is said to have made one revolution.
- The earth takes $365^{1}/_{4}$ days to make a complete revolution round the sun.
- It must be noted that the rotation and the revolution of the earth occurs at the same time.
- Therefore at any instant as the earth is rotating on its axis, it is also revolving round the sun.

Earthquake:

 This refers to the violent shaking movement of a portion of the earth as a result of the sudden movement of rocks, which are found deep down the earth.

Effects of earthquake:

- It leads to the destruction of infrastructures such as roads, buildingsand bridges.
- It can lead to the loss of lives and property.
- The lowering and rising of parts of the seamay occur, leading to the creation of tidal wave.

Volcano:

- This is an opening in the earth's surface through which hot melted rock is ejected up into the sky, and onto the earth's surface.
- This melted rock is called magna and before this magna appears, there will be the ejection of steam, gases, ashes and rocks.

Effects of Volcano:

- It can lead to the loss of life and property.
- It can lead to the formation of precious stones and minerals.
- The ashes and the gas released pollute the atmosphere.
- The rocks had as a result of volcanic action, break down to form fertile soil.

Satellites:

- A satellite is an heavenly body, which moves round a planet.
- There are two types and these are the natural and the artificial satellites.
- While natural satellite is naturally made, artificial satellite is man made.

The uses of satellites:

- The uses or importance of satellites are for the following purposes:
 - (1) For communication purposes.
 - (2) To study and forecast the weather.
 - (3) To carry instruments into space and for scientific research purposes.
 - (4) For military purposes.

Measurement:

- There are different types of measuring instruments and each is used for a specific measurement.
- One of the main importance of accurate measurement or measurement being accurate is to avoid cheating.
- Apart from that, inaccurate measurement can lead to dangerous situations or disasters.