CHAPTER SIX

THE SOLAR SYSTEM , PRESSURE AND MEASUREMENT

THE SOLAR SYSTEM:

The sun, the planets and all the heavenly bodies which move around the sun form the solar system. The solar system which is circular in shape, 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. A star is an heavenly body which can produce its own heat and light, with an example being the sun.

THE PLANETS:

- These are heavenly bodies that move around the sun.
- There are nine planets and each of them moves in a circular path, called its orbit.
- These nine planets are Mercury, Venus, Earth, Mars, Saturn, Uranus, Neptune and Pluto.
- With the exception of Pluto, all the other planets are surrounded by a layer of gases called atmosphere.
- For this reason, an atmosphere is the name given to the layer of gases which surrounds a planet.
- Each planet move round the sun, and one complete movement of a planet round the sun is called a revolution. -
The earth takes a year or 365 ¼ days to revolve or move round the sun.
- Apart from this movement, the earth spins or move round on its own and this movement is called its rotation.
- The earth takes 24 hours to make one complete rotation, and it is this rotation which causes day and night.
- Among all the planets, it is only the earth which has enough oxygen and water to enable living thing live on it.

SPACE TRAVEL:

- The space ship 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 an heavenly body or a satellite, which moves round a planet.
- While some planets have one or more moons, others have none.
- Out earth has only one moon which has no water or oxygen.

THE SUN:
-This is the star around which all the planets move.
- The sun is very important because its energy is used in drying food and our wet clothes.
- The sun also makes our atmosphere warm, and provides the light we need for seeing.

ASTEROIDS:
-They are also called planetoids, and are irregularly shaped objects found in space.

MATEOROIDS:
- These are small heavenly bodies, which sometimes fall from space to earth. -
While they are falling through the atmosphere, they called meteors.
- But if they reach the earth's surface, they are called meteoroids.

SATELLITES:
- A satellite is a heavenly body which moves round a planet.
- There are two types and these are natural satellites and artificial satellites.
-While natural satellite is not made my man, artificial satellite is made by man.

SOME USES OR IMPORTANCE OF SATELLITES:

(i) Satellites can be used for communication purposes.
(ii) Satellites can be used to study the weather.

PRESSURE:
- Pressure is defined as the force which acts per unit area.
- Its standard is NM^{-2} or the Pascal.
- Pressure $= \frac{Force}{Area}$
- From this formula we can see that the bigger the surface area, the smaller becomes the pressure.
- Also the smaller the surface area, the bigger becomes the pressure. -
For example if we place on the ground a 5kg block whose surface area is $20m^2$, and another 5kg block whose surface area is $10m^2$, the second one will exert a greater pressure on the ground , since it has a smaller surface area. -
To get the force, we multiply the weight in kg kilogram by 10. -

For example a weight of 2kg will exert a force of 2 x 10 = 20.
- Also a weight of 5kg will exert a force of 5 x 10 = 50N.

(Q1) Calculate the pressure exerted by a block of area 100m^2, if it has a weight of 40kg.

Soln

Weight = 40kg.

Force = 40 x 10 = 400N.

Pressure = $\frac{Force}{Area}$ = $\frac{400}{100} = 4\ pascal$s.

(Q2) The area of a body is 50m^2. If it has a mass of 20kg, calculate the pressure that it will exert when placed on a table.

Soln

Area = 50m^2

Mass = 20kg.

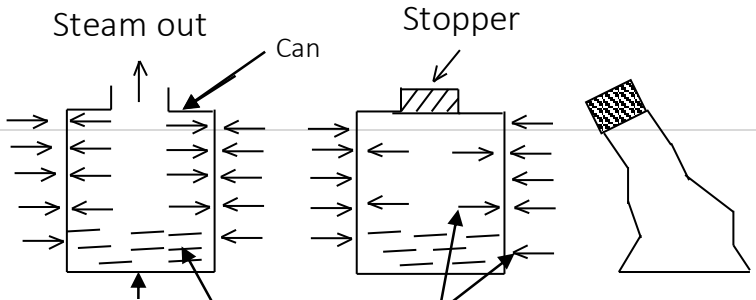
Force = 20x 10 = 200N.

Pressure = $\frac{Force}{Area} = \frac{200}{50} = 4$ Nm^{-2}

ATMOSPHERIC PRESSURE:

- This is also known as the air pressure and it is the pressure exerted by the atmosphere. The atmosphere refers to the layer of gases which surrounds the earth.
- It is the pressure exerted by these gases which are referred to as atmospheric pressure.
- This pressure acts on the surface of the earth, and on any object found on the earth's surface.

EXPERIMENT TO SHOW THAT THE ATMOSPHERE EXERTS PRESSURE:



- Such an experiment can be demonstrated in the crushing can experiment.
- A metal can with a good stopper is taken, and the stopper removed.