

## LIVING ON MOON

*"Imagining a life on a dark, black celestial body with no light to show your path"*

Earth is a large planet carrying the lives of living organisms. It has an atmosphere suitable for living. Moon is a celestial body which is much smaller in size compared to earth. But, it has no air around it. As a result it cannot support the life in it.

Therefore, planning to live in Moon necessarily requires oxygen. This suggests that people should carry sufficient oxygen cylinders to the Moon. Moon can be provided with life using the regolith which covers the Moon surface as the raw material to build up the Moon's base. Growth of plants and crops would be possible as humans exhale CO<sub>2</sub>. In the presence of CO<sub>2</sub>, H<sub>2</sub>O and Sunlight plants can do photosynthesis. This cycle will support the survival of humans on the Moon. These suggest, conductive atmosphere can be made with carry of oxygen.

Moon's gravity causes tides in the sea and ocean.

Earth has a lot of water on its surface. On the other hand, the Moon's weak atmosphere disables formation of H<sub>2</sub>O and O<sub>2</sub> making the moon lifeless. After research it has been found that there is water ice on the lunar Moon and also water is also locked between lunar minerals. So people wouldn't die due to lack of water.

The mass of a person would remain the same whereas the weight would change due to change in gravitational force. The gravitational force of the moon is 1.6 meters per second per second whereas the gravitational force on earth is 9.8 meters per second per second. Hence weight on the moon would be  $\frac{1}{6}$  th of that on earth.

**Formula:**

**$W=mg$**

**W=Weight**

**m= Mass**

**g= Gravitational force**

Sound can't travel on the Moon in absence of any medium whereas sound can travel on the earth in the presence of a medium. This will be the major drawback in living on the Moon. Communication would be difficult as travel of sound needs medium. People cannot talk to each other. Solution to this problem would be talking through a solid medium like a desk or something similar.

Transportation would be very expensive on moon, as oil reservoirs aren't available on the moon and need to be transported from earth which would cost a lot of money.

Friction would make it difficult to walk, write etc. People would slip easily.

According to the following equation:

**friction = coefficient of friction \* normal force**

Weight of any object would be  $\frac{1}{6}$ th on the Moon to that on earth. This will result in reduction in frictional force.

This will make movement of people very difficult. They need to walk very carefully.

Gravitational force also causes change in the time period, as gravitational force decreases the time period increases as it is inversely proportional so the time period on the moon is more than that on earth.

$$T=2\pi\sqrt{L/G}$$

A day lasts 24 hours on earth while it would last about 707.7 hours on the moon. This will make for a long day and night on the Moon.

Reason behind it is probably that as the earth takes shorter time to complete one rotation whereas, the moon takes 707.7 hours to complete one rotation.

Moon would get too much sunlight in absence of atmosphere and greenhouse gases. To protect ourselves from the harmful UV radiation and IR rays, one needs to create an artificial atmosphere around the Moon surface. This will reflect most of the sunlight and harmful rays or absorbed. It will reduce temperature significantly on the Moon surface.

As the Moon faces sunlight directly, one can place several solar panels on the Moon surface to generate solar energy. This energy can be used to make air conditioning as temperature is very high on the Moon. This energy can be used in other forms of energy for daily requirements.

The survival indicated that earth's creatures that can withstand extreme temperatures and radiations can actually survive on the lunar surface too. The temperature of the Moon is very high and it doesn't have an ozone layer so the UV radiation, infrared rays.

### **Law of gravitation**

Every particle attracts every particle in the universe with a force that is directly proportional to the product of mass and inversely proportional to distance between centres.

$$F = G \frac{m_1 m_2}{r^2},$$

where,

fg=force of gravity

g=gravitational constant

m1 and m2=mass

r=straight line distance between two particles

The force of gravity wouldn't change anywhere in the universe as the gravitational constant ,  
Mass and straight line distance between two particles wouldn't change anywhere in the universe.

Below are some of the basic concepts of gravity forces acting on an object?

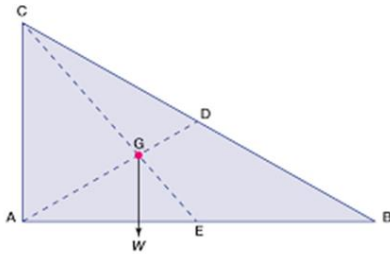
Various questions coming to our mind are:

The point at which the weight is completely balanced or the line or the line which passes through the center of gravity, how an object is balanced. Here are some of the answers

## Centre of gravity

Occurs in the body at a point where weight is equally distributed on both sides.

A body can pivot in any direction and remain balanced



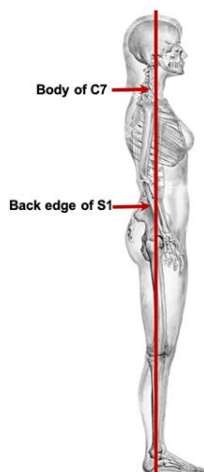
the point named g is the center of gravity.

This is the point where the entire weight is acting.

## Line of gravity

It is an imaginary vertical line that passes through the center of gravity

It basically represents the direction gravity acts on a person



The imaginary represents the line in which gravity is acting on the object.

## Center of mass

It is the average position of all the parts of the system, weighted according to their masses.

