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EARTH IN THE SOLAR SYSTEM

INTRODUCTION

SUBJECT : GEOGRAPHY
CHAPTER NUMBER: 01 (Session-1)
CHAPTER NAME : EARTH IN THE SOLAR SYSTEM

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What do we expect to learn?

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- Students will be able to understand about the heavenly/ celestial bodies.
- Pupil will get an idea about how big the stars are and how they came into being.
- An idea regarding the formation of galaxies and stars will get into the minds of students.

INTRODUCTION

Definition- HEAVENLY BODIES / CELESTIAL BODIES are those objects that we see in the sky from the Earth.

Examples: Stars, planets, comets, moons.

STAR(S)

Characteristics of Star

- Huge balls of very hot gaseous matter
- Self-luminous
- Emit their own heat and light.
- Formed out of huge clouds of dust and gas.
- Always found in large groups and clusters; thus forming a galaxy.

Process of star formation

- when the centre of a cloud gets thicker and denser, it starts shrinking into a thick disc and starts spinning rapidly.
- The centre of spinning mass becomes hotter and hotter, thus leading to a chain of reactions.
- In this process huge amounts of energy is released into space in the form of heat and light.

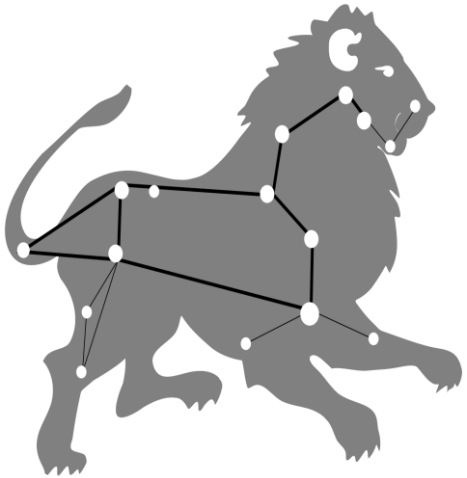
GALAXY

- Definition- A group of stars forming a cluster.
- Consists of stars, dust, gas and other matter.
- Bound together by the force of gravity.
- 1 galaxy consist s of several million stars.
- Examples: Milky Way or Aakash Ganga(it is the galaxy where we do live)


ANIMATED

CONSTELLATION

- Definition- Stars, when appear in an arranged and recognisable pattern.
- These patters can appear to be of the shape of animals or people or even like objects.



Examples: Ursa Major & Orion are the most recognisable constellations. Others include Canis Major(the Great Dog), Leo(the Lion) and Taurus(the Bull).

RECAPITULATION

- Meaning, concept and examples of heavenly bodies.
- Definition, characteristics and process for the formation of a star.
- Concept of Galaxy and Constellation.

HOME ASSIGNMENT

- MCQ: WORKSHEET QUESTION NO. 1 OF SUB-TOPIC 1 AND QUESTION NO 1 & 2 OF SUB-TOPIC 2.

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EARTH IN THE SOLAR SYSTEM

INTRODUCTION

SUBJECT : GEOGRAPHY
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WHAT DO WE EXPECT TO LEARN?

- In the introductory part pupil will gather knowledge about the uniqueness and speciality of Earth as it contains life.
- Proceeding furthur the students will get to acquire knowledge about the suitable conditions that are supporting the life conditions to prevail over the surface of the Earth.
- Adding furthur it ll be known to students about features of the solar system,the Sun and the Planets, in general.
- Lastly the pupil will get to know about the scientific evidences that support the theory that Earth is NOT flat; rather its form is Earth's like or Geoid.

INTRODUCTION

- Uniqueness is due to the availability or presence of “life” on this planet.
- Third from Sun(in context to distance) and the largest one(in context to the inner planets group).
- Not a perfect sphere as it is flattened at poles; thus the shape is known as spheroid.
- Said to be as “blue planet” as two-third of the surface is covered by water which makes it look blue from the space.
- Surrounded by a blanket of air called the atmosphere.
- performs “rotation” on its own axis and “revolution” around the Sun.

Suitable conditions for the sustenance of life upon Earth:-

- Optimum distance from the Sun.
- An average surface temperature of 14 degree celcius.
- Varying weather and climatic conditions at varying places, thus adding variety and diversity to flora and fauna.
- adequate availability of liquid water.
- Presence of atmosphere that protects living things from harmful Ultra violet radiations from the Sun.

THE SOLAR SYSTEM

- It is the system in which various celestial objects revolve around the Sun. The word solar means "of the Sun".
- As per the earlier astronomers, the Sun and all planets revolve around the Earth, which was put forwarded by **Claudius Ptolemy** in 140 CE as **Geocentric theory** (centered around the Earth).
- Due to the scientific advancements, the **Heliocentric theory**(centered around the Sun) was put forwarded by **Nicolas Copernicus** in 1543 CE.

The Sun

- 5 billion years old.
- Made up of hot gases viz. helium and hydrogen.
- Surface temperature: 5700 degree celcius.
- Temperature at the center is approximately 15 million degree celcius.
- Diameter: 1,392,000 km.
- Primary source of heat and light for living beings.

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The Planets

- Almost all planets are spherical in shape.
- Non-luminous; rather reflect the light that falls upon them.
- Spins on its own axis which is called rotation. 1 complete rotation is referrred to as 1 planet-day.
- Revolve around the Sun in fixed elliptical paths of their own, called as orbit(s). 1 complete orbit is called revolution or planet-year.
- **OUTER/ JOVIAN planets**: 4 giants planets viz. Jupiter, Saturn, Uranus and Neptune. They were formed by the breaking of colder outer part of the disc of the Sun.
- **INNER/ TERRESTRIAL planets**: Mercury, Venus, Earth and Mars; the warm inner part of the disc of the Sun.

Earth is NOT flat?

- Images taken from the space.
- Explorers or sea farers who set on voyage do return back to the same place from where they begin.
- Shadow cast by earth on the moon during the lunar eclipse is circular.
- When a ship comes towards the port, one is able to see the top first and then gradually its base.
- The shadow cast by an object at 12 noon increases as one keeps going north or south.

Recapitulation

- Uniqueness and speciality of the Earth.
- Suitable conditions for the sustenance of life upon Earth.
- The Solar system comprising of the Sun and the planets.
- Evidences in support of Earth NOT being flat.

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Home Assignement

- Worksheet Question- MCQ, SUB-TOPIC 4 & 5

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EARTH IN THE SOLAR SYSTEM

INTRODUCTION

SUBJECT : GEOGRAPHY
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What do we expect to learn?

- Students will be able to grasp and make out the differences between a planet and a star.
- Pupil will get an idea about the natural satellite of the Earth i.e. the Moon along with its features.

Difference between star and planet:-

Stars	Planets
Stars have their own light.	Planets don't have their own light. They reflect their own light.
Stars twinkle at night.	Planets do not twinkle.
Stars appear as point object as they are very far from Earth as compared to planets.	Planets appear as disc as it is closer to the Earth.
The stars do not change their positions with respect to each other as they are fixed at a point.	Planets change their position with respect to each other as they revolve around the sun.
There are millions of star in the galaxy.	There are only eight planets in the galaxy.
A star has a very high temperature.	Planets have low temperature as compared to stars.

THE MOON/ NATURAL SATELLITES

- Definition: Celestial objects that revolve around planets.
- Exception: Mercury and Venus are the only two planets that don't have Moon.
- Earth has only 1 satellite i.e. the Moon.
  - It shines because it reflects the light of the Sun that falls upon it.
  - Around 384,400 km from Earth; which takes 27 days and 8 hours to complete one revolution around Earth.
  - Maximum temperature: 100 degree Celcius & minimum temperature: -150 degree Celcius.
  - Uneven, rough and rocky surface with huge craters.
  - No atmosphere and minute amounts of water.

PHASES OF MOON:-

- https://www.youtube.com/watch?v=BQvo7vyCmuE
- The shape & position of Moon, apparently varies everyday.
- Full moon night is called *purnima* & New moon night is called *amavasya*.

RECAPITULATION

- Differences(s) between a star and a planet.
- The Moon and the natural satellites.
- Phases of the Moon.

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What do we expect to learn?

- Pupil will get an idea about the heavenly bodies like asteroids and meteors.

ASTEROIDS

- Celestial bodies that revolve around the Sun between the orbits of Mars and Jupiter.
- It is believed that these are either the parts of planets that exploded millions of years ago or they could be matter that was left over the planets were formed.
- https://www.youtube.com/watch?v=vfvo-Ujb_qk

METEORS(Meteoroids, Meteors and Meteorites)

- Meteoroids are rock pieces moving at tremendous speeds around the Sun.
- Meteoroids become Meteors OR Shooting stars when get attracted towards the Earth due to force of gravity. The name shooting stars has been given because as soon as they enter the atmosphere, the force of friction starts acting upon them because of which some part of them start burning and this phenomenon produces “streaks of light”.
- When the partly burnt rock fragments fall on the surface of the Earth causing huge dents or craters are called as Meteorites. These can be seen in Arizona, USA.
- https://www.youtube.com/watch?v=O4QrnC9vLs8

RECAPITULATION

- Asteroids
- Meteoroids, Meteors and meteorites.

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