

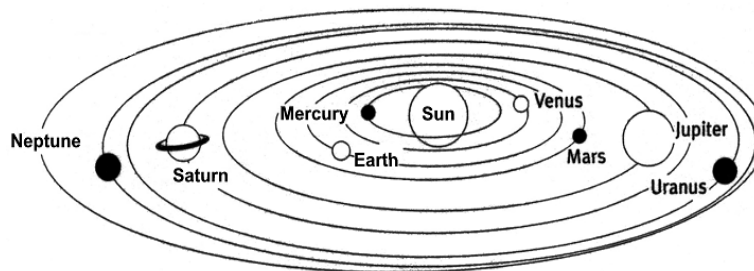


INDIAN SCHOOL AL WADI AL KABIR

Class: VIII	Department: SCIENCE-2020-2021	
Handout	Stars and the solar system	Note:A4 File format
Name of the student:	Class & Section:	Roll No.

CELESTIAL OBJECTS: Objects such as the stars, the planets, the moon and many other objects in the sky are called celestial objects.

SOLAR SYSTEM: It consists of the Sun, the eight planets, satellites, moon, stars and millions of celestial objects such as Asteroids, Comets and Meteoroids. The planets, moons, asteroids, comets and meteors are held by the gravitational pull of the sun.



ASTRONOMY: The branch of science that deals with the study of universe.

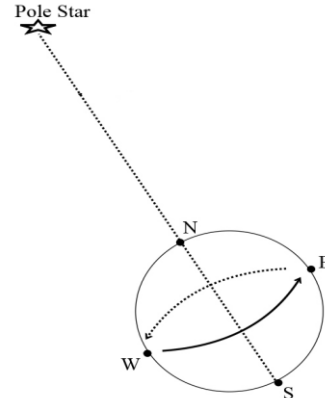
MOON: The only natural satellite of earth. It revolves around the earth in a fixed orbit. It is a non-luminous body which reflects the light of the sun. It has many craters on its surface and also has steep and high mountains. The moon has no air and water. The various shapes of the bright visible part of the moon as seen from the earth during a whole month are called phases of the moon. The phases of moon occur due to its continuously changing position with respect to the Earth and the Sun.

STARS: A star has light of its own. The stars appear to be small because they are very far away from us. The stars appear to move in the sky from east to west due to the rotation of Earth from west to east on its axis. They appear to twinkle in the night. The twinkling of stars is an illusion (false show) caused by the disturbance of star's light by the earth's atmosphere. The Sun is also a star.

LIGHT YEAR: The distances between the stars and the earth are so big that it is difficult to measure these distances in kilometers. For this we need a bigger unit. This unit is light year. A light year is defined as the distance that light can travel in one year. The speed of light is 300,000 km/s. If we multiply this speed of light by the number of seconds in one year, we get the distance of about 9.46×10^{15} meters.

POLE STAR:

The star which appears stationary from the Earth is known as Pole Star. It is used as a reference point to identify the direction. The pole star is situated in the direction which is directly above the geographic north pole of the earth's axis. Therefore, its position does not change and it appears stationary.

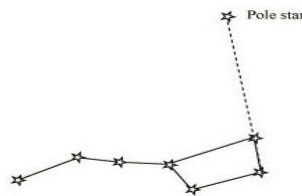


CONSTELLATIONS: The stars forming a group that has a recognisable shape of animals, human beings or other objects is called a constellation.

URSA MAJOR:



URSA MAJOR

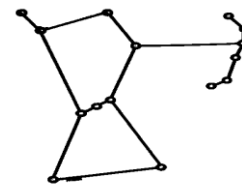


LOCATING A POLE STAR

Third largest constellation and known as the Great Bear, the Big Dipper or the Plough. It is visible in the northern hemisphere, in summer months consists of seven stars and known as *Saptarshi Mandal* in India. We can locate the position of Pole star with the help of Ursa Major constellation.

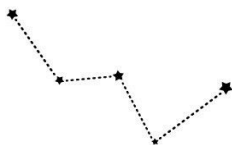
ORION:

This constellation consists of seven or eight bright stars that depict the shape of a hunter holding a shield in his right hand. With the help of this constellation it is easy to spot the brightest star in the night sky Sirius located close to Orion.



ORION

CASSIOPEIA:



This constellation is visible during winter in the northern sky, consists of five stars which looks like a distorted **M** or **W**

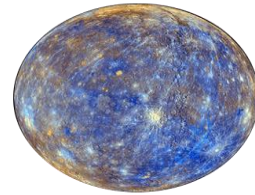
THE SUN: The sun is the nearest star, which is the main source of heat and light for all the planets.

PLANETS:

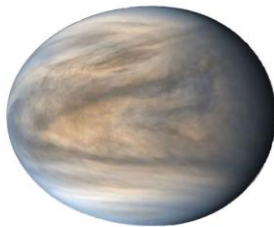
- There are total eight planets: *Mercury, Venus, Earth, Mars, Jupiter, Saturn, Uranus and Neptune.*
- The planets which are closer to the Sun, like Mercury, Venus, Earth and Mars, are called **inner planets**. The planets that are farther away are called **outer planets**
- A planet has a definite path in which it revolves around the sun. This path is called an **orbit**.
- The time taken by a planet to complete one revolution is called its period of revolution.
- They do not produce their own light but reflect the light of the sun.
- Besides revolving round the sun a planet rotates on its own axis. The time taken by a planet to complete one rotation is called the period of rotation.

MERCURY: (BUDH)

- Smallest planet, closest to the sun, which is not visible due to the glare of the sun.
- It can be observed either before sunrise or after sunset.
- It has no satellite.



VENUS: (SHUKRA)



- Second and the brightest planet and almost the same size as the Earth
- It rotates from east to west, which is direction opposite to that of the Earth.
- This planet is called *Morning Star* when it is seen in the sky before sunrise and *Evening Star* when seen in the sky after sunset.
- It has no satellite.

EARTH: (PRITHVI)

- The only planet to have land, water and air, and is a unique planet on which living organisms are found.
- Moon is the satellite of the Earth.
- It takes 365 days to complete one revolution.
- It appears to be blue-green in colour when observed from space due to the reflection of light from water and landmass on its surface. It is the only planet known to support life, because it has atmosphere, water, suitable temperature and blanket of ozone.
- The axis of rotation of earth is not perpendicular to the plane of its orbit. The tilt is responsible for the change of season on earth.



MARS: (MANGAL)



- It appears to be red due to the presence of iron oxide present in its soil and is called the *Red planet*.
- It has two small natural satellites

JUPITER: (BRAHASPATI)

- It is about 318 times that of earth and has large number of satellites.
- Largest planet that can be seen with naked eyes. It has faint rings around it.
- There are many moons that orbit Jupiter.



SATURN: (SHANI)



- Second largest planet and is characterized by the rings around it, often called *Ringed planet*.
- Yellowish in color. It has a large number of satellites.
- Least dense than all the planets.

URANUS:

- Uranus rotates from east to west
- Uranus has highly tilted rotational axis. As a result, in its orbital motion it appears to roll on its side.



NEPTUNE:



It is the outermost planet of the solar system. It has fourteen moons.

DIFFERENCE BETWEEN STARS AND PLANETS:

STARS	PLANETS
1. Made up of light gases	Made up of rocks and minerals
2. Temperature is very high	Temperature depends on their distance from the sun
3. Stars have their own light	Do not have light of their own. They only reflect sunlight
4. Stars appear to twinkle in the sky	Planets do not twinkle.

ASTEROIDS: very small, broken pieces of planets, made of rocks and metals which revolve around the Sun mainly between Mars and Jupiter. They are a belt of debris called *asteroid belt* which fail to assemble into planets and keep revolving around the Sun.

COMETS: Very small luminous celestial bodies made of ice, dust and small rocky particles which revolve around the Sun in highly elliptical orbits. It can be seen from the earth only when they come close to sun. A comet has a head and tail. As a comet approaches the sun it gets heated and leaves behind a stream of hot, glowing gases and dust particles. It appears as the tail of the comet. As the comet moves closer to the sun, the tail grows longer because the pressure of the solar wind increases. Since solar wind blows from the sun towards the comet, the tail of a comet always points away from the sun.

❖ **Halley's Comet appears within our solar system in every 76 years, last seen in 1986.**

METEOROID: It is a chunk of rock moving in space of a size considerably smaller than an asteroid. They are usually destroyed completely by friction and heat when they pass through the Earth's atmosphere.

METEOR: A small piece of rock from outer space that enters the Earth's atmosphere and glows as a streak of light as a result of friction with air. It is called a shooting star though it is not a star.

METEORITE: A meteoroid that does not burn completely and falls to the Earth's surface.

SATELLITE:

- A natural satellite is a celestial body that revolves around the planet.
- A man-made satellite that revolves around the earth at regular time period is known as artificial satellite.eg. ARYABHATTA, INSAT, IRS, Kalpana 1, EDUSAT ETC.
- These satellites are sent for various purposes to study the universe, help forecast the weather, to transfer the telephone calls over the oceans, to monitor crops and to support military activity.

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