THE SOLAR SYSTEM

- Our solar system is a part of Milky Way galaxy. In ancient India, it was imagined to be a river of light flowing in the sky. Thus, it was named Akash Ganga.
- A solar system consists of a sun at the centre and the eight planets, moons, asteroids, comets and meteoroids that revolve it. The gravitational attraction between the Sun and these objects keeps them revolving around it.
- The sun, the moon and all those objects shining in the night sky are called celestial bodies.
- The study of universe is known as cosmology.
- The size of the solar system has been estimated to at about 10^5 AU.
- The eight planets, namely the Mercury, Venus, Earth, Mars, Jupiter, Saturn, Uranus and Neptune, revolve around the sun in fixed elliptical paths known as 'orbits'.
- Pluto is a dwarf planet.
- The light-year is a unit of length used to express astronomical distances

Sun

- The sun is in the centre of the solar system.
- The sun is the ultimate source of heat and light for the solar system.
- The sun is about 150 million km away from the earth.
- Light takes about 8.5 minutes to reach the earth from the sun.
- Hydrogen and helium are the main gases present in the sun.
- The boundary between the Sun's interior and the solar atmosphere is called the photosphere. It is the visible 'surface' of the Sun.
- The core is at the centre of the sun. It is the hottest region, where the nuclear fusion reaction takes place to give the sun power.
- The outer layer of sun atmosphere made up of thin hot gases is called corona. Corona is visible only during a total eclipse of the sun.
- Sun has a surface temperature of 6000 degree Celsius.
- The temperature at the centre of sun is around 1.5*10^7 K

Planets

The planets are classified in order of their distance from the sun and based on their characteristics. They are:

- The inner planets or terrestrial planets or rocky planets. Mercury, Venus, Earth and Mars are called inner or terrestrial planets.
- The outer planets or gaseous planets or giant planets. Jupiter, Saturn, Uranus and Neptune

are called outer or gaseous planets.

- All the eight planets of the solar system move around the sun in fixed paths. These paths are elongated. They are called orbits.
- A night planet has been recently discovered by NASA named as Carla .

Mercury

- Mercury is nearest to the sun and it is the smallest planet in the solar system.
- Mercury has no satellite of its own.
- It rotates on its own axis in 58.65 earth days while it takes 88 Earth days to complete one revolution around the sun.
- The sunlight takes 3.2 minutes to travel from the Sun to Mercury.
- Mercury has no protective blanket like Ozone around it to prevent us from harmful radiations.

Venus

- Venus is the second planet in distance from the sun.
- Venus is earths nearest planetary neighbour. It is the brightest planet.
- Venus has no moon or satellite of its own. Rotation of Venus on its axis is somewhat unusual. It rotates from east to west. Only Venus and Uranus have this backwards direction.
- It completes one rotation in 243 Earth days which is the longest day of any planet in our solar system.
- The Venus takes 224.7 Earth days to complete one revolution around the sun, and it has no natural satellites.
- Venus is 0.7 astronomical units away from the sun.
- Venus is considered as 'Earth's-twin' because its size and shape are very much similar to that of the earth. It's also called as 'Earth sister'.
- Venus is known as the evening star as well as Morning star.
- Venus is hotter than Mercury because Venus has an atmosphere which is thicker and made almost entirely of carbon dioxide.
- The sunlight takes 6 minutes to travel from the sun to Venus.

Earth

- The earth is the third nearest planet to the sun. In size, it is the fifth largest planet.
- The axis of rotation of the Earth is not perpendicular to the plane of its orbit. The Earth is 23.5 degrees tilted on its axis and thus makes 66.5 degrees angle. The tilt is responsible for the change of seasons on the Earth. The Earth has only one moon.
- The Earth rotates from west to east.
- It is also known as the 'Blue Planet' because of the presence of water.
- Earth has only one natural satellite called the Moon.
- The Earth takes 365.25 days to complete one revolution around the Sun. It takes 23 hours 56

minutes and 4 seconds for the earth to complete one rotation on its own axis.

- The sun light takes about 8.3 minutes to reach the earth.
- Earth has a protective blanket of ozone layer high up in its atmosphere to save life from harmful ultraviolet radiations coming from the sun.

Mars

- Mars is the fourth nearest planet to the sun and it is the second smallest planet in the Solar system.
- It is also described as the “Red planet”. It is reddish in colour due to the presence of iron oxide on its surface.
- The landmass of Mars and Earth are very similar.
- It takes 24 hours and 37 minutes to complete one rotation on its axis and its takes 687 days to complete one revolution around the Sun.
- Mars has two satellites namely Phobos and Deimos.

Jupiter

- Jupiter is the largest planet in the solar system. It is made primarily of gases and is therefore known as ‘Giant Gas planet’.
- Jupiter is also known as winter planet.
- It takes 9 hours 55 minutes to complete one rotation on its axis and it takes 11.86 years to complete one revolution.
- Jupiter has the shortest day in the solar system.
- Jupiter has a faint ring system around it. They are mostly comprised of dust particles.
- Jupiter has 67 confirmed satellites orbiting the planet. Ganymede, the satellite of Jupiter, is the largest natural satellite in the solar system (even bigger than the planet Mercury).

Saturn

- Saturn is the sixth planet from the sun and the second largest planet in the solar system. Saturn is called as the Ringed Planet.
- Saturn is the only planet in our solar system whose average density is less than water.
- The Saturn has 30 rings and 53confirmed natural satellites.
- The Saturn takes 10 hours 34 minutes to complete one rotation on its axis and it takes 29.4 years to complete one revolution around the sun.
- Titan is Saturn’s largest moon and the second largest (after Ganymede of Jupiter) in the solar system. It is the only moon in the solar system with clouds and a dense, planet-like atmosphere.

Uranus

- Uranus is the seventh planet from the sun and it is not visible to the naked eye.
- Uranus rotates on its axis from east to west.
- Uranus is inclined on its axis at an angle of 98 degrees.

- Hydrogen, helium and methane are the major gases of its atmosphere.
- It is very cold due to its great distance from the sun.
- This planet appears greenish in colour because of methane gas present in its atmosphere.
- Uranus also has rings and twenty-seven satellites.
- Uranus is the first planet to have been discovered by the use of telescope.

Neptune

- Neptune is the eighth planet from the sun.
- It takes 16 hours to complete one rotation on its own axis and it takes nearly 165 years to revolve around the sun.
- It is the coldest planet in the Solar System because it is the farthest planet from the Sun.
- It has 13 natural satellites and 5 rings.
- Neptune is surrounded by methane rings of subzero temperature.

Important Facts About the Planets

Biggest planet	Jupiter
Smallest plant	Mercury
Brightest planet	Venus
Brightest star	Dog Star
Planet having maximum number of satellites	Jupiter (67)
Coldest planet	Neptune
Red planet	Mars
Biggest satellite of solar system	Ganymede
Smallest satellite of solar system	Demos
Blue planet	Earth
Red planet	Mars
Sister of Earth	Venus
Morning star, Evening star	Venus
Greatest average density	Earth
Lowest average density	Saturn
Hottest Planet	Venus
Deepest Oceans	Jupiter
Strongest Magnetic fields	Jupiter
Retrograde revolution (East to west)	Venus, Uranus

Dwarf Planets

- Dwarf planets are tiny planets in our solar system. Any celestial body orbiting around the sun, weighing for the self-gravity and nearly be round in shape is called ‘Dwarf Planet’.

- It should not be a satellite of any planet.
- Ceres, Pluto, Heumea, Makemake and Eris are dwarf planets.

Asteroids

- Asteroids are small rocky celestial bodies that revolve around the Sun, like other planets. They are also called 'Minor Planets'.
- Larger asteroids are called Planetoids. These are found in between the planets Mars and Jupiter. This belt is known as 'Asteroid belt'.
- The diameter of the asteroids varies from 100 km to a size of a pebble .

Comets

- They revolve around the Sun. But their orbits are irregular. Sometimes they get very close (Perihelion) to the sun and in other times they go far away (Aphelion) from the sun.
- These are generally found in Kuiper Belt. They travel towards the sun.
- The best known Comet, Halley's Comet, appears once in every 76 years. The Halley's Comet was seen last in 1986.

Meteors

- The small pieces of rocks which move around the sun are called meteoroids.
- They are the removed pieces of rocks mainly from the Asteroid belt. They are called Meteoroids before they enter into our atmosphere.
- They enter into the atmosphere with great speed. But most of them are burnt when they enter into the atmosphere.
- After entering into our atmosphere they are called as Meteors. Some pieces do not burn fully and they fall on the earth and make craters.
- Examples for Meteorite Fall: Meteor crater in Northern Arizona and Lake Lonar in Buldhana District of Maharashtra in India were created by meteor impacts.

Satellites

- The satellites move around a planet from West to East.
- They have no atmosphere and water.
- Number of natural Satellite in solar system

Planet	Number of natural Satellite
Jupiter	63
Saturn	60
Uranus	27
Neptune	13
Mars	2
Earth	1

Venus	0
Mercury	0

Moon: The Earth's Satellite

- The moon is located at a distance of 8, 84,401 km from the earth. The moon revolves around the earth.
- The moon takes 27 days and 7 hours and 43 minutes for both its rotation and revolution around the earth.
- The moon is the fifth largest natural satellite in the solar system.
- The light which is reflected by the Moon will reach the Earth in just one and a quarter second.
- The moon is smaller than the earth and it has 1/6 of the gravitational pull of the earth.
- Apollo 11 was the first manned mission to land on the Moon sent by NASA.