



GALAXY

A galaxy is composed of stars, star remnants, interstellar gas, dust, and dark matter.

Gravity is the force that binds a galaxy together.

FUN FACTS ABOUT GALAXIES

How well do
you know the
galaxy you live in?

There are over 170 billion galaxies in the observable universe.

The word galaxy

comes from the Greek

word for "milky".

The closest galaxy to the Milky Way is Andromeda.

It is believed that almost every large galaxy has a black hole.



ABOUT THE 4 FACTS MILKY WAY

01

THE ORIGIN OF THE NAME MILKY WAY

The name Milky Way comes from the Greek galaxas kýklos, or milk circle.

02

AGE OF THE MILKY WAY GALAXY

The age of the Milky Way galaxy is around 13.6 billion years and will continue to increase over time.

03

NUMBER OF STARS IN THE MILKY WAY

The Milky Way is made of around 100–400 billion stars.

04

THE LARGEST PLANET IN THE MILKY WAY

The largest planet in the Milky Way is HD 100546 b, with a diameter 77 times the diameter of the Earth.

GAAXY YOUTH

01

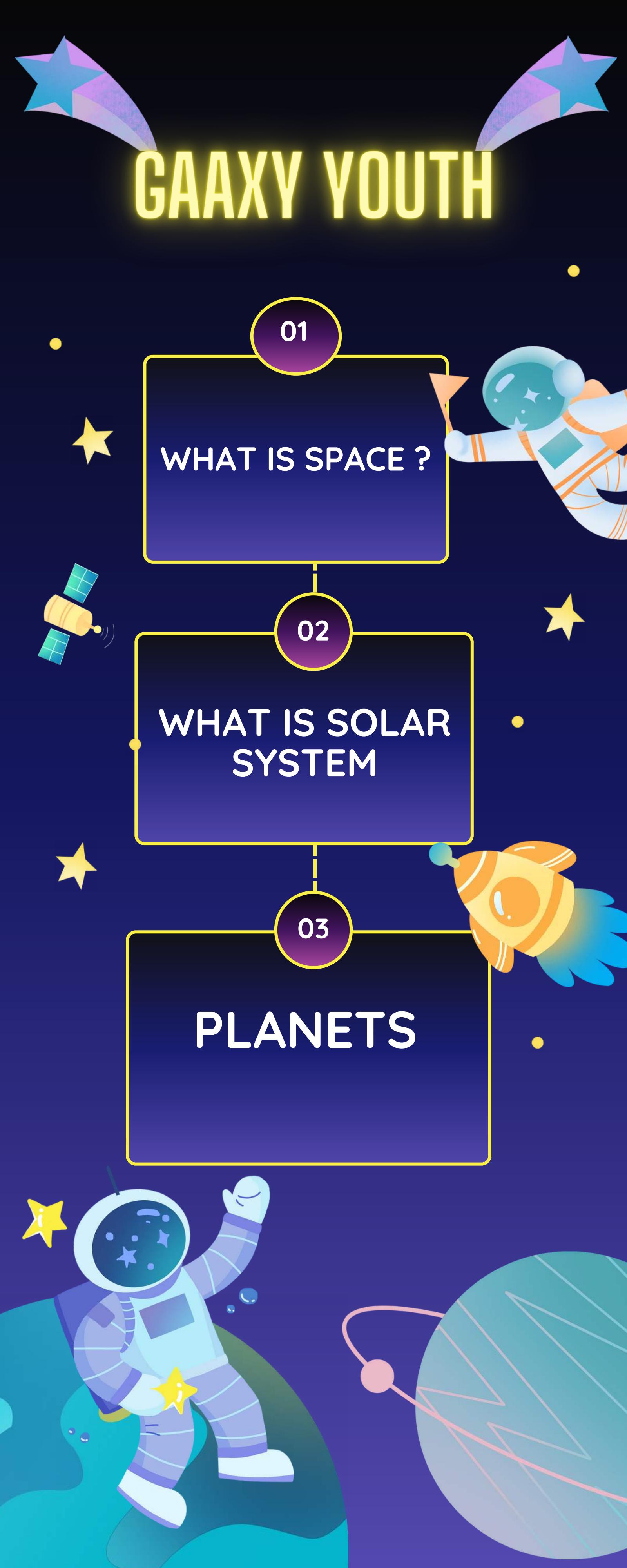
WHAT IS SPACE ?

02

WHAT IS SOLAR
SYSTEM

03

PLANETS



Space is considered an open field for exploration by scientists and researchers, as space research and discoveries help understand the origins of the universe, the way it works, and its development over time.

Humans have begun to explore space since the middle of the twentieth century using advanced technology, such as space telescopes and satellites, in addition to manned and unmanned missions sent into space to analyze its phenomena and secrets.

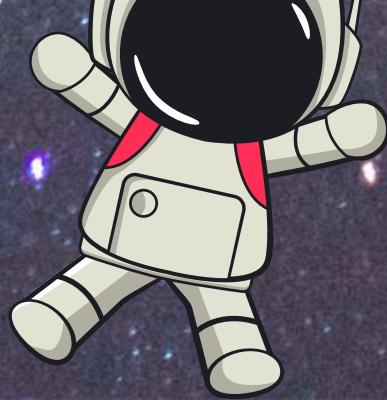


Space is the vast expanse that begins at the top of the Earth's atmosphere and extends to include the entire universe, including stars, planets, galaxies, and other celestial bodies.



Space is a very different environment from Earth, as there is no air and gravity as we know it on Earth, and the temperature is very low, making it almost a complete vacuum.

Space, also known as the cosmic vacuum, is not completely empty, but rather contains small amounts of scattered particles and cosmic rays. This vast void is home to a variety of celestial bodies, such as stars that coalesce to form massive galaxies, planets orbiting stars, and moons, asteroids, and comets that move freely in this vast expanse.



IT IS CONSIDERED AN OPEN
FIELD FOR SCIENTISTS AND
RESEARCHERS TO EXPLORE.

SUN



SPACE



CELESTIAL
BODIES



GALAXY





**Space is different
from.....**

Moon

space

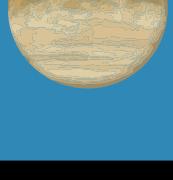
Celestial bodies

planet Earth

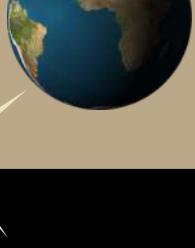
SOLAR SYSTEM



MERCURY



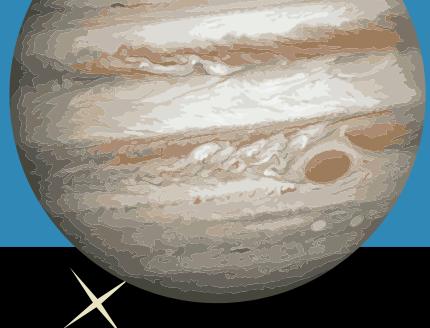
VENUS



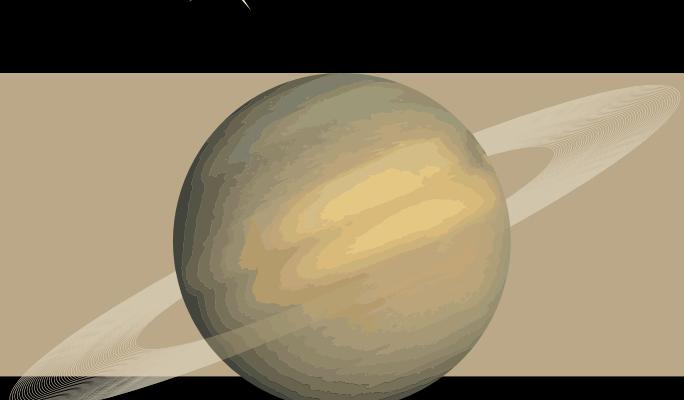
EARTH



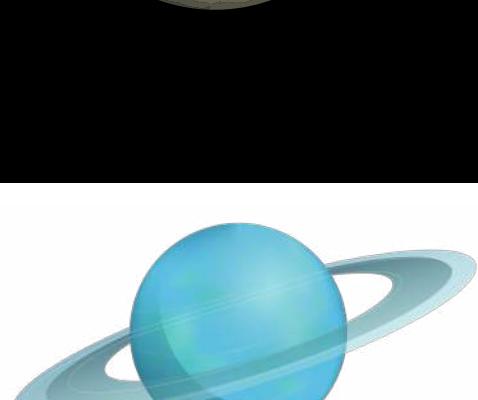
MARS



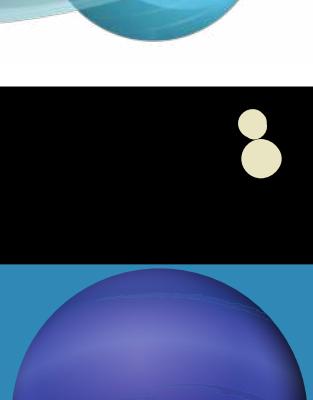
JUPITER



SATURN

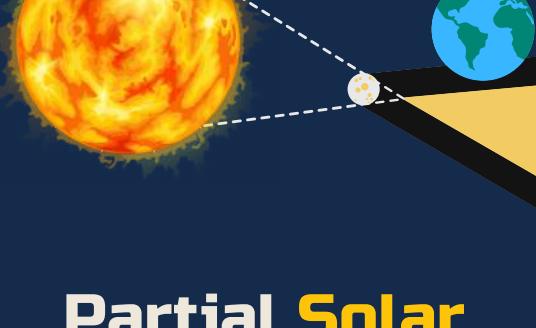


URANUS



NEPTUNE

Types of Solar and Lunar Eclipses



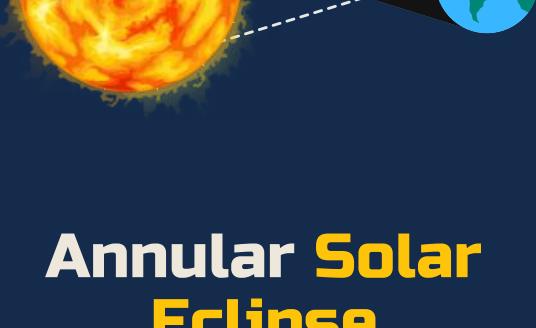
Partial Solar Eclipse

The moon partially covers the sun, casting only a portion of its shadow on Earth. It appears as if a bite has been taken out of the sun.



Partial Lunar Eclipse

A portion of the Moon moves into the Earth's umbra, the central part of its shadow. This results in a partial darkening of the moon.



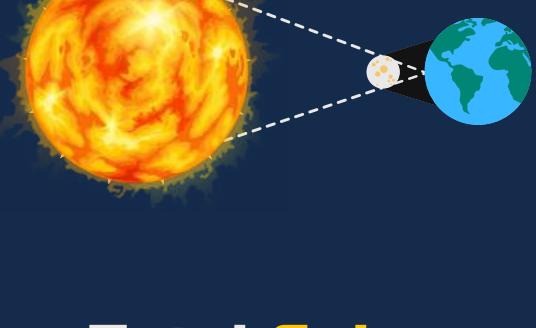
Annular Solar Eclipse

This occurs when the moon is too far away from Earth to completely cover the sun's disk, resulting in a ring-like appearance of the sun.



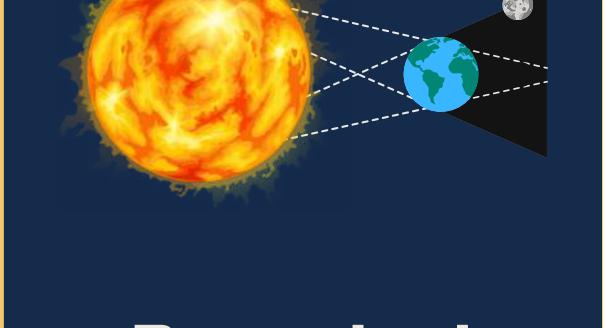
Total Solar Eclipse

The entire moon moves into the earth's umbra. The moon may take on a reddish hue, commonly referred to as a "blood moon."



Total Solar Eclipse

The moon completely covers the sun, blocking its entire disk. This results in a brief period of darkness known as totality.



Penumbral Solar Eclipse

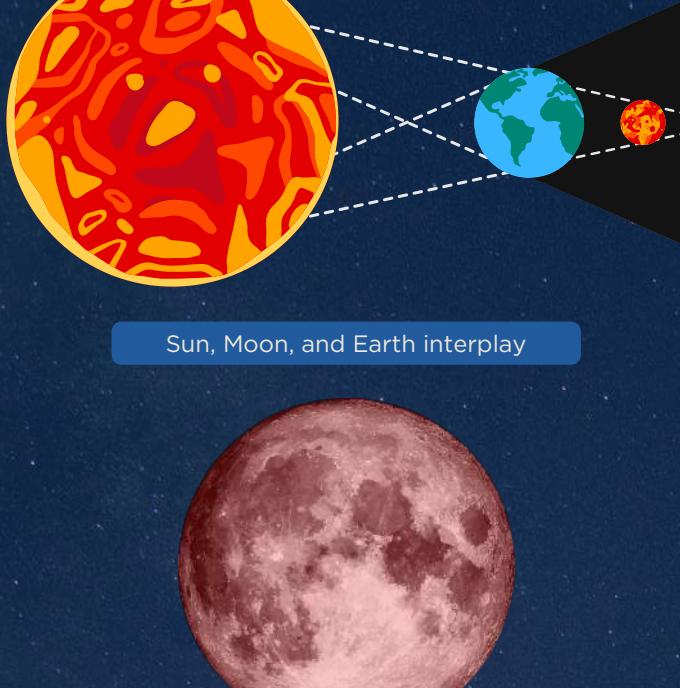
The moon passes through the earth's penumbra. This type of eclipse is subtle, and the changes may be challenging to observe.

TYPES OF LUNAR ECLIPSES

PARTIAL LUNAR ECLIPSE

A PORTION OF THE MOON MOVES INTO THE EARTH'S UMBRA.

A portion of the Moon moves into the Earth's umbra, the central and darker part of its shadow. This results in a partial darkening of the lunar surface as only part of the Moon is obscured.



Sun, Moon, and Earth interplay

TOTAL LUNAR ECLIPSE

THE ENTIRE MOON MOVES INTO THE EARTH'S UMBRA.

During this phase, the Moon may take on a reddish hue, commonly referred to as a "blood moon," due to the Earth's atmosphere bending sunlight and casting it onto the lunar surface.

PENUMBRAL LUNAR ECLIPSE

THE MOON PASSES THROUGH THE EARTH'S PENUMBRA.

The Moon passes through the Earth's penumbra, the outer and lighter part of its shadow. This type of eclipse is subtle, and the changes in the Moon's brightness may be challenging to observe.

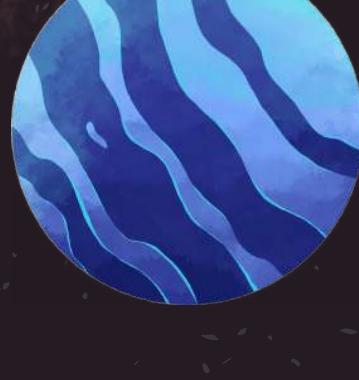


This is what you see from earth.



Sun, Moon, and Earth interplay

PLANET FUN FACTS



NEPTUNE

Neptune is the eighth planet from the Sun and the farthest known solar planet. In the Solar System, it is the fourth-largest planet by diameter.

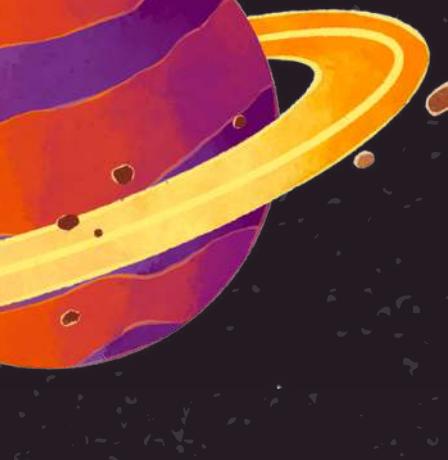
URANUS

Uranus is the seventh planet from the Sun. It has the third-largest planetary radius and fourth-largest planetary mass in the Solar System.



SATURN

Saturn is the sixth planet from the Sun and the second-largest in the Solar System, after Jupiter. It is a gas giant with an average radius of about nine and a half times that of Earth.



JUPITER

Jupiter is the fifth planet from the Sun and the largest in the Solar System. It is a gas giant with a mass more than two and a half times that of all the other planets in the Solar System combined.



MARS

Mars is the fourth planet from the Sun and the second-smallest planet in the Solar System, being larger than only Mercury. In the English language, Mars is named for the Roman god of war.

EARTH

Earth is the third planet from the Sun and the only astronomical object known to harbor life.

While large volumes of water can be found throughout the Solar System, only Earth sustains liquid surface water.



VENUS

Venus is the second planet from the Sun. It is sometimes called Earth's "sister" or "twin" planet as it is almost as large and has a similar composition.

MERCURY

Mercury is the smallest planet in the Solar System and the closest to the Sun. Its orbit around the Sun takes 87.97 Earth days.



PLANETS FACTS

How much
do you know about
the planets?

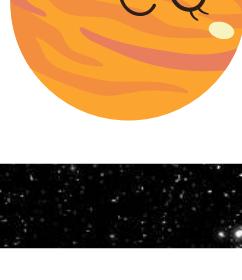


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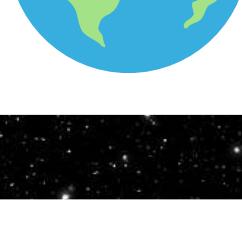
Mercury is the first planet. It is the smallest and the closest to the sun. It has no moons.

2



Venus is the second planet. It is yellowish. It is the hottest planet. It has no moons.

3



Earth is the third planet. It has life and it is our home. It is made of land and water. It has one moon.

4



Mars is the fourth planet. It is called the Rocky Red Planet. It has mountains. It has two moons.

5



Jupiter is the fifth planet. It is the biggest planet. It has a red spot. It has dark rings and it has 79 moons.

6



Saturn is the sixth planet. It has bright rings made of ice, dust and rock. It has 82 moons.

7



Uranus is the seventh planet. It is the coldest planet. It has dark rings. It has 27 moons.

8



Neptune is the eighth planet. It is the farthest planet from the sun. It has dark rings. It has 14 moons.

THE SUN

The Heart of the Solar System

Diameter: 1.4 million km (870,000 mi)

Mass: about 1.989×10^{30} kilograms

Distance (Earth): 149.6 million kilometers

Surface Temperature: 5,500°C

Star Type: G-type main-sequence star

Composition: The Sun is primarily composed of hydrogen (about 74% by mass) and helium (about 24%). Trace amounts of other elements, such as carbon, oxygen, and nitrogen, make up the remaining 2%.



8 PHASES OF THE MOON



New Moon

The Moon is positioned between the Earth and the Sun, with the side illuminated by the Sun facing away from Earth.



Waxing Crescent

A small, illuminated crescent begins to emerge on the right side of the Moon as seen from the Northern Hemisphere.



First Quarter

Half of the Moon's right side is illuminated, creating a shape similar to a half-circle.



Waxing Gibbous

More than half of the Moon is illuminated, and the illuminated portion continues to grow larger.



Full moon

The Moon is directly opposite the Sun, and its entire face is illuminated as seen from Earth.



Waning Gibbous

More than half of the Moon is still illuminated, but the illuminated portion begins to shrink.



Last Quarter

Half of the Moon's left side is illuminated, creating a shape similar to a half-circle.



Waning Crescent

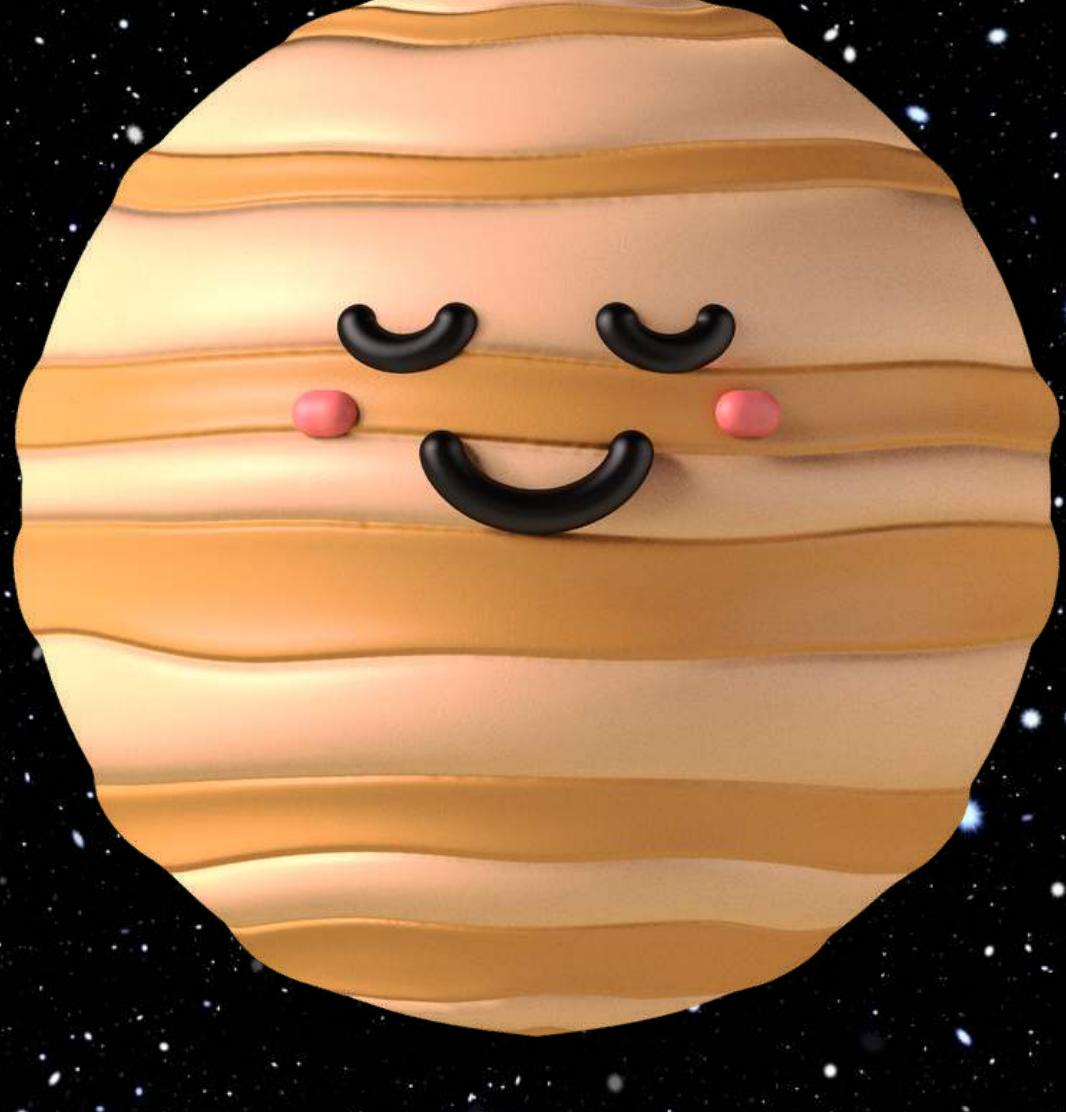
A small, illuminated crescent begins to emerge on the left side of the Moon as seen from the Northern Hemisphere.

MOON



- Dusty ball of rock.
- 1/4 size of Earth.
- Does not produce its own light.
- Changes shape as it orbits Earth.
- Can be really hot and cold.

MERCURY



- Closest to the sun.
- Does not have any moons.
- Can be both extremely hot and cold.
- Is the smallest planet.

VENUS



- Second planet from the sun.
- Does not have any moons.
- Very hot planet.
- Has many volcanoes.
- Earth's closest neighbor.

EARTH



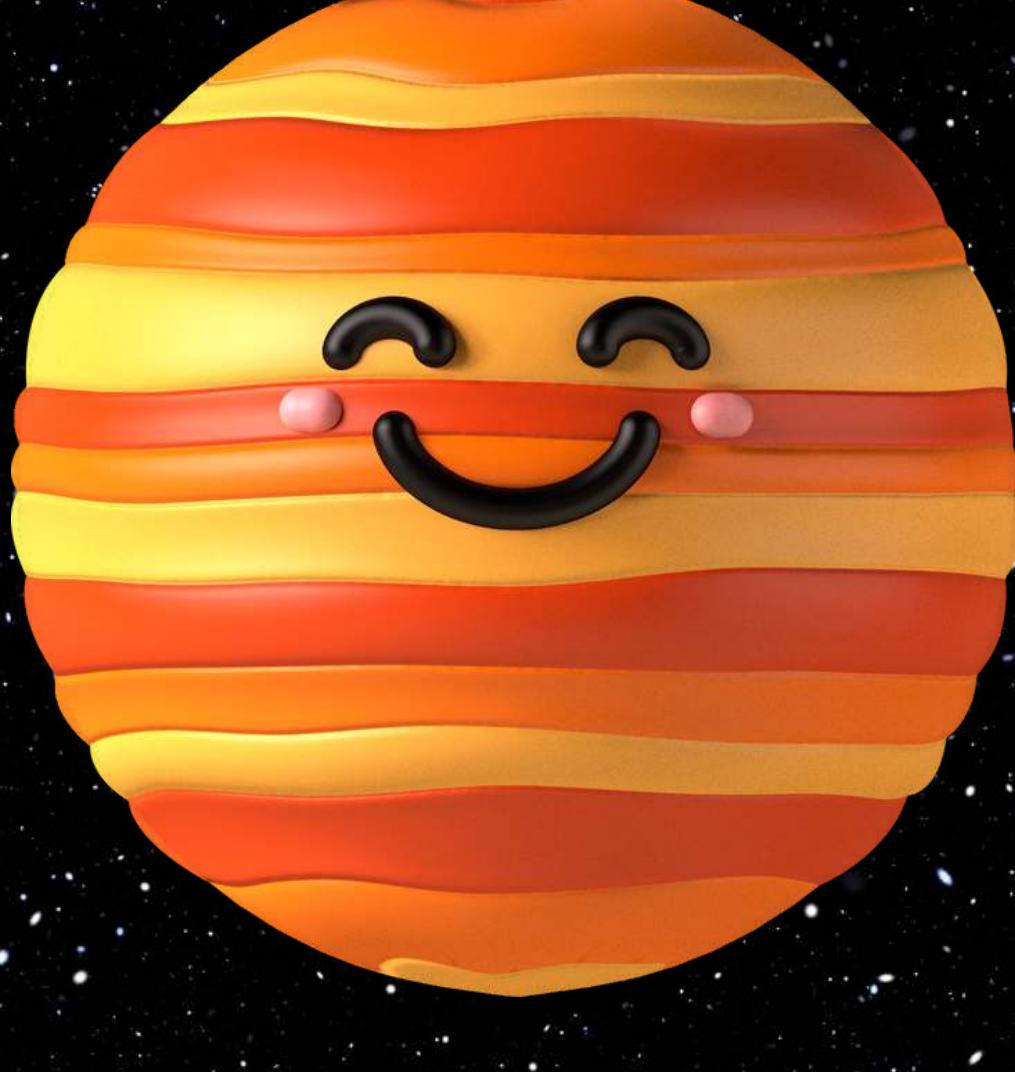
- **WE'RE THE THIRD ROCK FROM THE SUN**
- **THE PLANET MOVES AROUND THE SUN**
- **EARTH IS BILLIONS OF YEARS OLD**
- **EARTH HAS A DIAMETER
OF ROUGHLY 8,000 MILES**
- **70% OF THE EARTH'S SURFACE
IS COVERED IN WATER**

MARS



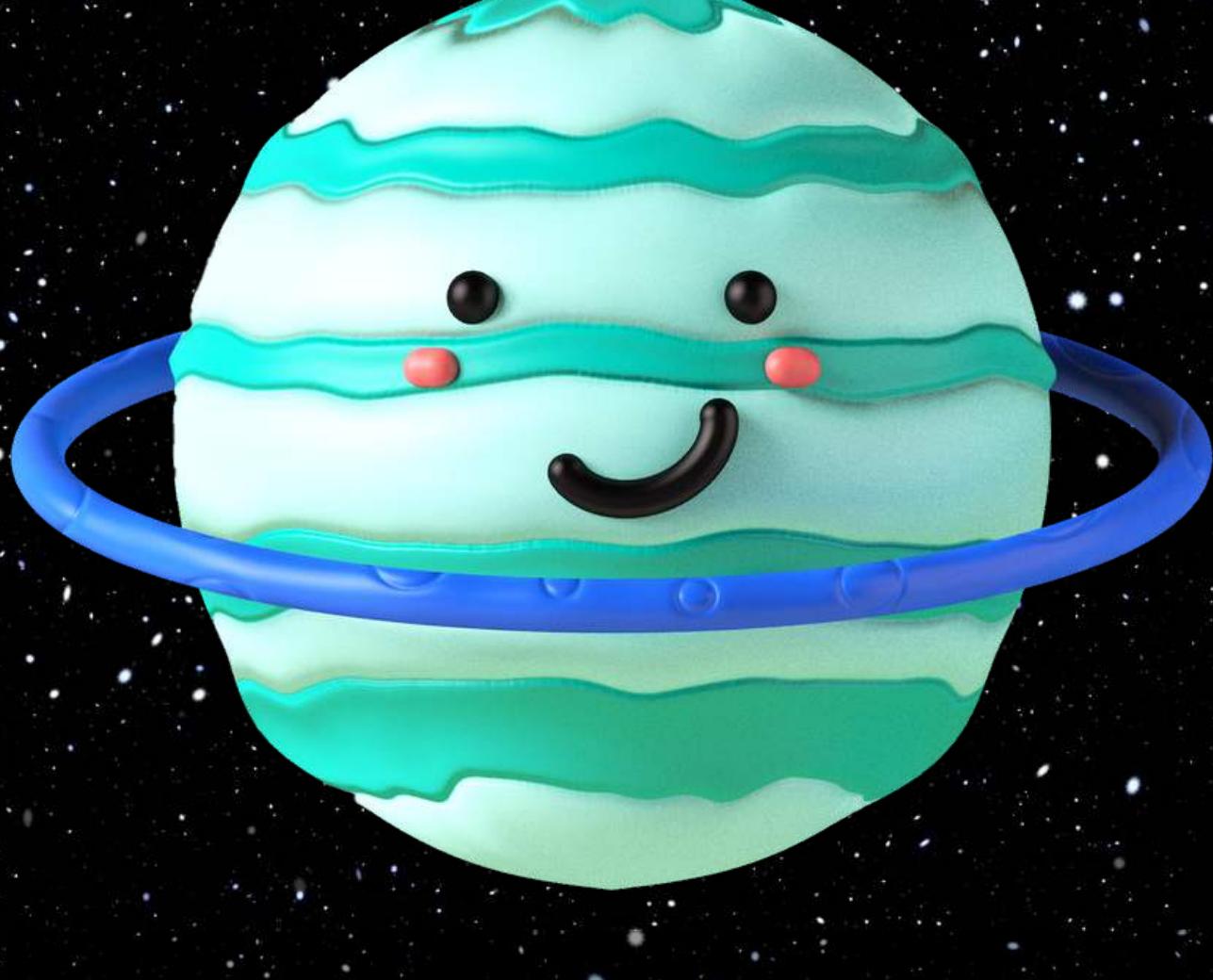
- Fourth planet from the sun.
- Second smallest planet and is half the size of Earth.
- Has two moons.
- Red in color due to its iron minerals.

JUPITER



- Fifth planet from the sun.
- Called a 'gas giant'.
- Has 79 moons.
- The largest planet in the Solar System.
- Is as big as 317 Earths.

URANUS



- Seventh planet from the sun.
- A "gas giant".
- Made up of a lot of ice.
- The coldest of the planets.
- Has 27 moons.

NEPTUNE



- Furthest planet from the sun.
- Called an "ice giant" and does not have a solid surface.
- Has 14 moons.
- Blue in color.

THE PLANETS OF THE SOLAR SYSTEM

MERCURY

VENUS

EARTH

MARS

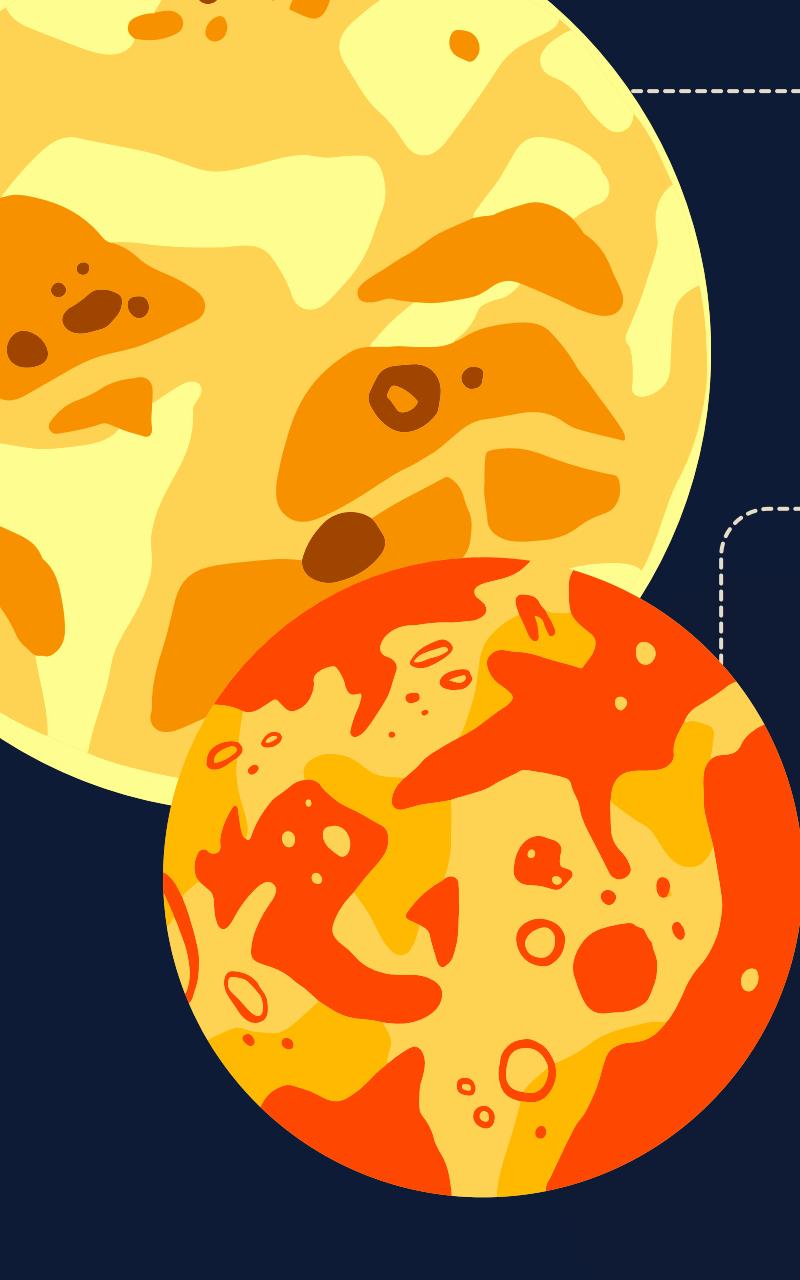
JUPITER

SATURN

URANUS

NEPTUNE

CLOSEST STARS TO EARTH



LALANDE 21185

This is a red dwarf star located about 8.29 light-years away from us.

SIRIUS A

This star is located about 8.6 light-years away from us. Sirius A is a bright, white main-sequence star.

SIRIUS B

This star is located about 8.6 light-years away from us. Sirius B is a white dwarf.

• LUYTEN 726-8 A

This red dwarf star that orbits Luyten 726-8 B is located about 8.73 light-years away from us.

• LUYTEN 726-8 B

This red dwarf star that orbits Luyten 726-8 A is located about 8.73 light-years away from us.

• PROXIMA CENTAURI

This star is about 4.24 light-years away from us. It is a small, dim red dwarf star.

• ALPHA CENTAURI A

This star is located about 4.37 light-years away. Alpha Centauri A is a yellow dwarf star similar to the sun.

• ALPHA CENTAURI B

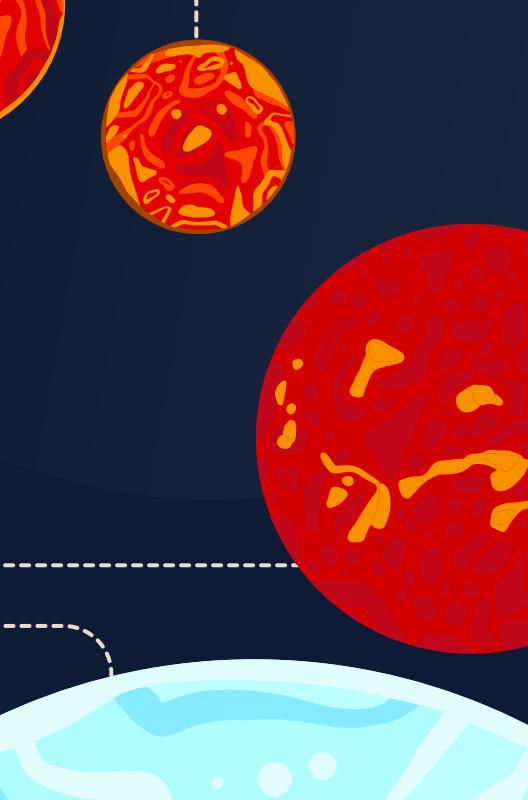
This star is located about 4.37 light-years away. Alpha Centauri B is an orange dwarf.

• BARNARD'S STAR

This is a red dwarf star located about 5.96 light-years away from us.

• WOLF 359

This is another red dwarf star, located about 7.78 light-years away from us.



EXPLORING THE CELESTIAL WONDERS OF OUR SOLAR SYSTEM

Get ready to blast off on an exciting journey through our solar system! From the majestic planets, to the shimmering stars, and other celestial wonders, there is so much to explore and discover. Let's take a look at the amazing objects in our solar system!

THE SUN

- Our solar system revolves around the sun, which is a star located at the center of the solar system.
- The sun is incredibly large and is estimated to be about 4.6 billion years old.
- The sun provides light and heat to all the planets in the solar system.

THE PLANETS

- There are eight planets in our solar system, and each one is unique and fascinating.
- Mercury, Venus, Earth, and Mars, Jupiter, Saturn, Uranus, and Neptune

MOONS AND DWARF PLANETS

- In addition to the eight planets, there are many other celestial objects in our solar system, such as moons and dwarf planets.
- Some of the most well-known moons include Earth's moon, and Jupiter's moon Io.

COMETS AND ASTEROIDS

- Comets are small, icy objects that orbit the sun and often have a bright, glowing tail.
- Asteroids are small, rocky objects that orbit the sun and can sometimes collide with other objects in the solar system.

THE STARS

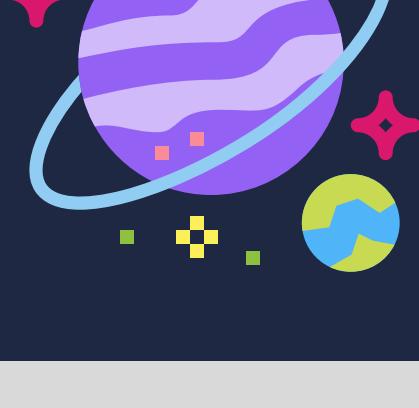
- Our sun is just one of billions of stars in the universe!
- Stars come in different sizes and colors, and some stars even have their own planets orbiting around them.

Get to know the planets in outer space

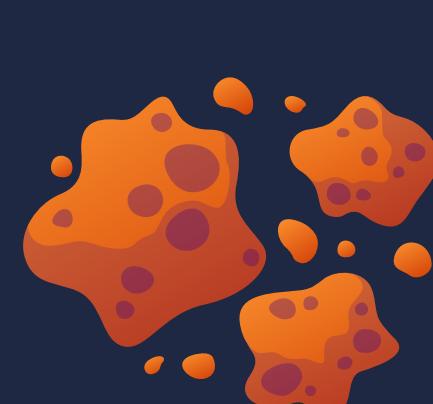
The sun is the star at the center of the solar system. It is spherical in shape and consists of hot plasma mixed with a magnetic field. Its diameter is about 1,392,684 km, about 109 times the diameter of Earth, and its mass is approximately 99.86% of the total mass of the solar system.



As per the IAU definition, there are eight planets in the Solar System. According to their distance from the sun (near to far), there are four terrestrial planets, Mercury, Venus, Earth, and Mars, then the four gas giants, Jupiter, Saturn, Uranus, and Neptune.



Asteroids, also called minor planets or planetoids, are objects smaller than planets but larger than meteoroids, usually found in the interior of the solar system. Asteroids differ from comets in that comets have tails while asteroids don't.



A galaxy is a massive, gravitationally bound system consisting of stars, interstellar gas, dust, and dark matter, an important but poorly understood component. The word galaxy comes from the Greek *galaxias*, meaning "milky", which refers to the Milky Way galaxy.

The Moon is Earth's only natural satellite and is the fifth largest satellite in the Solar System. The Moon is also the largest natural satellite in the Solar System according to the size of the planet it orbits, with a diameter of 27%, a density of 60%, and a mass of 1.2% of Earth.



