

1 It is a spiral-shaped galaxy, and it is the galaxy to which the Sun, Earth, and the rest of the Solar System belong, It rotates around itself every 250 million years and contains hundreds of billions of stars.



2 Enormous clouds of dust atoms and gases are spread all over the galaxy.

Milky Way

3 People who live in the Northern Hemisphere see the Milky Way galaxy in summer, fall, and winter. However, the view in late summer or early fall is at its brightest extent.



4 The spiral shape of the galaxy forms the arms, which are the arm of Scutum-Centaurus, the arm of the Perseus , the arm of Carina-Sagittarius, the arm of Orion, and the Norma Arm.

5 The arms include planets, stars, asteroids, and hydrogen clouds that come from the center of the galaxy towards its edges. The solar system is located in the region of the inner side of the arm of Orion.

1 It is the planetary system that consists of the sun and all that orbits it, including the earth and the other planets.

2 The solar system includes other smaller objects, which are dwarf planets, asteroids, meteors, comets, and a thin cloud of gas and dust in the planetary medium.

3 The largest object in the solar system is the sun.

The Solar System

The Sun

Mercury

Venus

Earth

Mars

4 The solar system contains eight planets, which are in order of distance from the sun: Mercury, Venus, Earth, Mars, Jupiter, Saturn, Uranus, Neptune.

5 The biggest planet in the solar system is Jupiter and the smallest is Mercury.

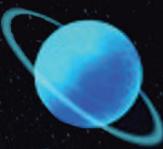


Jupiter

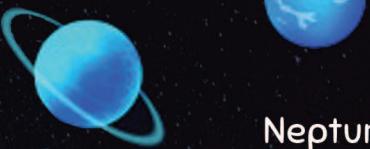


Saturn

6 The Solar System formed around 4.6 billion years ago.



Uranus



Neptune



Pluto

7 Each planet in our Solar System has different characteristics. For example, Earth is made up of rock, however, Jupiter is made from Gas!



The Sun

Space



- 4 The sun emits ultraviolet rays which are harmful to the human skin if exposed for a long time.

1 The sun is the central star of the solar system, and its shape is almost spherical. It is classified as a star because it is a massive, radiant body.



2 Sunlight is the main source of energy on earth, as it is the source of warmth. The energy of solar light rays transmitted to the earth provides life on it by securing the photosynthesis process in plants, in addition to securing the earth its climate and weather.



3 The sun is 150 million km away from the earth, which is why it appears small in the sky while in reality, it is much larger.

1 Mercury is the smallest planet in the solar system and the closest to the sun, which makes it a very hot planet.



2 The fastest planet in its orbit around the sun, as it completes its rotation within approximately 88 Earth days.



3 Mercury has various terrain, including mountains, plains, valleys, and hills.



Mercury

Fact



4 It has no natural Moons or even an atmosphere.

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”





Venus

1 Venus is the second planet from the sun, and it's closer to the sun comparing to the earth.



2 It is a stormy planet with a high temperature, and it is almost similar to the Earth's size, and it resembles the Earth in volcanoes, earthquakes, mountains, and valleys.

3 Venus is covered by a dense cloud of toxic gases that conceals its surface from view, and this cloud retains huge amounts of high temperature.

4 There are twice as many active volcanoes on Venus than that on Earth, which erupt from time to time.

What did you learn?



Venus



Mercury



The Sun



The Solar System

It is the planetary system that consists of the sun and all that orbits it including the earth and the other planets

There are twice as many active volcanoes on this planet than that on Earth, which erupt from time to time

It is the smallest planet in the solar system and the closest to the sun, which makes it a very hot planet

It is the central star of the solar system and its shape is almost spherical. It is classified as a star because it is a massive, radiant body



1 Earth is the home to millions of species of living creatures, including humans. It is the only place known to have life in the universe due to the presence of water, oxygen, and the ozone layer that blocks harmful ultraviolet rays.



2 Earth is distinguished by the existence of its only natural satellite, the "Moon", which orbits around it.

The Earth

3 The land on Earth is divided into seven continents, which are Asia, Europe, Africa, North America, South America, Antarctica, and Australia.



4 The earth is the only planet with seas and oceans, where 70% is water, and only 30% is land.



The Earth

7 The earth rotates around the sun once every 365 days, which is a whole year.

8 The rotation of the earth around the sun and the tilt of the earth's axis are what causes the phenomenon of the four seasons.

S Earth's axis: It is an imaginary diagonal line that passes through the north and the south poles.



6 The earth rotates around its axis, which means it revolves around itself once every 24 hours, and this is what causes the phenomenon of night and day.





1 Mars is the planet neighboring the Earth from the outer side. The name (the red planet), was because of its red or reddish color, which is a result of the high percentage of iron oxide (rust) dust on its surface and in its atmosphere.



2 The second smallest planet in the solar system, after Mercury



3 Mars has two moons, the first is called Demos, and the second is Phobos. The two moons are small and irregular in shape.



4 Mars contains the largest volcano in the solar system, called Olympus Mons, after the Olympic Mountain.



5 There is also the Mariner Valley, which is one of the largest canyons in the solar system.

Mars
(The red planet)



1 Jupiter is the largest planet in the solar system, and it has 79 moons orbiting around it, including four large moons, called Galileo's moons : Io , Europa, Ganymede, and Callisto.



2 Jupiter has a large red spot, which is a continuous hurricane.



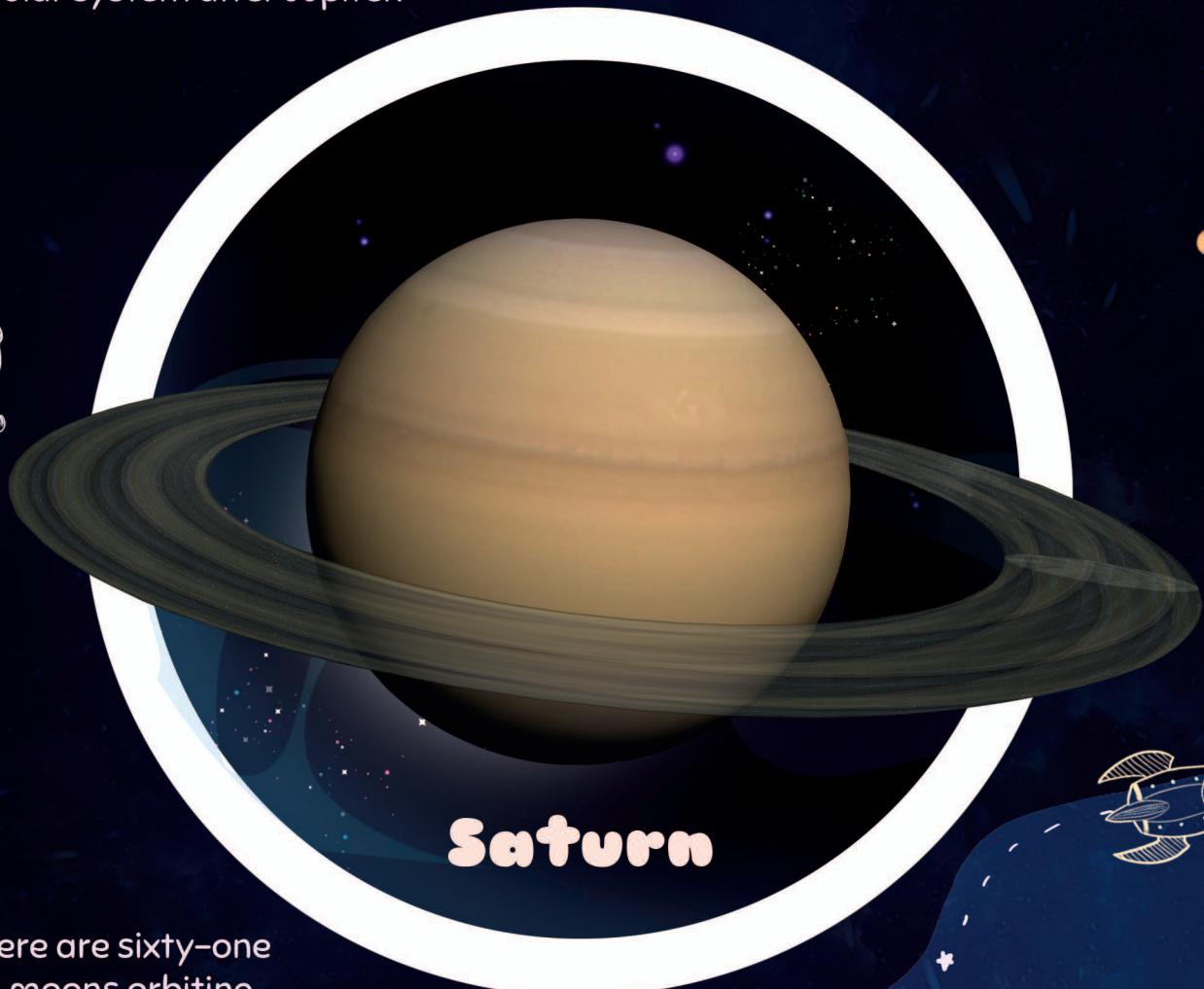
3 The planet is surrounded by three faint rings:

- The inner hoop-shaped ring, known as halo, which is a luminous ring
- The outer ring is known as the Gossamer ring or Gossamer's ring
- The middle ring is known as the main ring



1 Saturn is the sixth planet in terms of distance from the sun and is the second largest planet in the solar system after Jupiter.

2 Saturn is characterized by nine rings of ice and dust that rotate around it on one level, giving it a distinctive shape.



3 There are sixty-one known moons orbiting Saturn among these moons; Titan which is considered to be the second largest moon in the solar system after Jupiter's "Ganymede".

4 Saturn takes approximately 29 and a half years to complete a full rotation around the sun.



1 It is the seventh most distant planet from the sun, and the third largest planet in the solar system.

2 Uranus is made of rock and ice.

3 Uranus rotates around the sun once every 84 years.

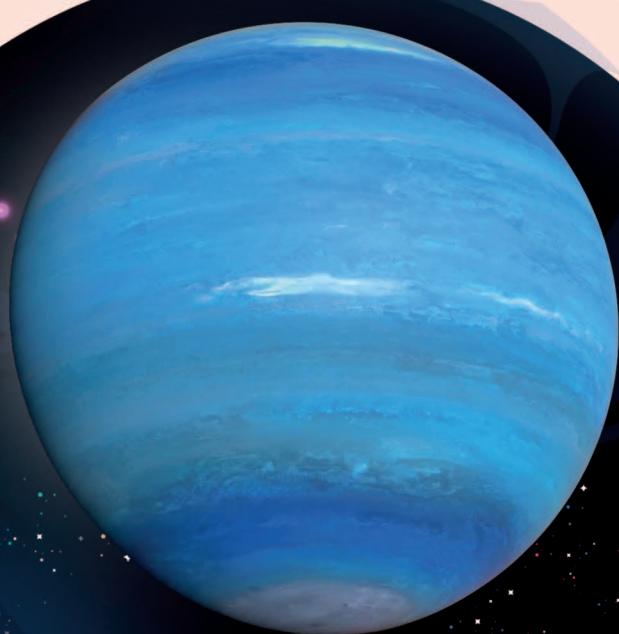


4 Uranus has 27 natural moons, its five main moons are Miranda, Ariel, Titania, Oberon, and Umbriel.

5 The Voyager 2 space probe visited Uranus in 1986, and this was the only flight that came close to Uranus.

1 Neptune is the eighth most distant planet from the sun, it completes one rotation around the sun every 164.8 years.

2 Neptune has 14 moons, the largest of which is Triton, and it is the only moon of Neptune that rotates in the opposite direction of Neptune's rotation.



Neptune
(The blue planet)

3 The reason for the blue color of Neptune is that methane occupies the outer regions of the planet, which gives the planet a blue color.

4 The distance between Neptune and the sun is 30 times the distance between the earth and the sun.



5 Neptune has four rings, but these rings are much less dense and larger than the rings of Saturn, and they appear to be composed of dust particles.



the Earth



Mars



Saturn



Uranus

What did you learn?

It is the only planet with seas and oceans where 70% is water and only 30% is land.

This planet takes approximately 29 and a half years to complete a full rotation around the sun

This planet contains the largest volcano in the solar system, called Olympus Mons, after the Olympic Mountain

It is the seventh most distant planet from the sun, and the third largest planet in the solar system

1 The Moon is Earth's only proper natural satellite, and it is the brightest body after the sun.

2 It is considered the moon that humans only landed on.

3 The moon becomes in its highest levels during the winter.



4 Solar eclipse which is when the moon falls between the earth and the sun.



5 Lunar eclipse is when the moon is full, and when the earth is between the sun and the moon.





1 It is a dwarf planet and the largest known dwarf planet within the orbit of Neptune.

2 It contains valleys that are billions of years old.

3 There is some very salty liquid water that appears on the asteroid in the form of bright spots.



Ceres



4 Ceres' surface is made of a mixture of water, snow and various minerals.



1 Pluto is primarily composed of ice and rocks



2 Because of its small size, many astronomers do not consider it a planet, but rather some thought of it as a follower of the planet Neptune.



3 In 2006 the New Horizons spacecraft launched and headed for Pluto to arrive in 2015 and completed a journey around the planet.



4 Pluto has five known moons and, Charon is the largest.

5 One day in Pluto equals 6 Earth days.



Pluto



Meteorite

4 Meteorites types:

A : Iron meteorites

B : Iron stone meteorites

C : Stone meteorites

1 A body in the solar system consists of rock debris ranging in size from tiny sand grains to large rocks.

2 The visible path of a meteor that enters the Earth's atmosphere (or any other object) is known as a shooting star.

3 If the meteorite reaches the surface of the earth, then in this case it is known as a meteor.

5 Most meteorites are destroyed when they enter the atmosphere. When this happens, the residual debris are known as meteor dust or shooting stars dust. Meteor dust particles can remain in the atmosphere for more than several months.



Comet

4 There are also comets that pass through the solar system once and do not appear or pass again.

1 A small icy body rotates in the solar system and appears when it is near to the sun.

2 Comets have a large glowing head and a tail of dust and gas, and it becomes easy to see the tail of the comet whenever it is near the sun.

3 When it passes by the sun, it starts to evaporate, and it looks like it has a long tail and it gradually erode.

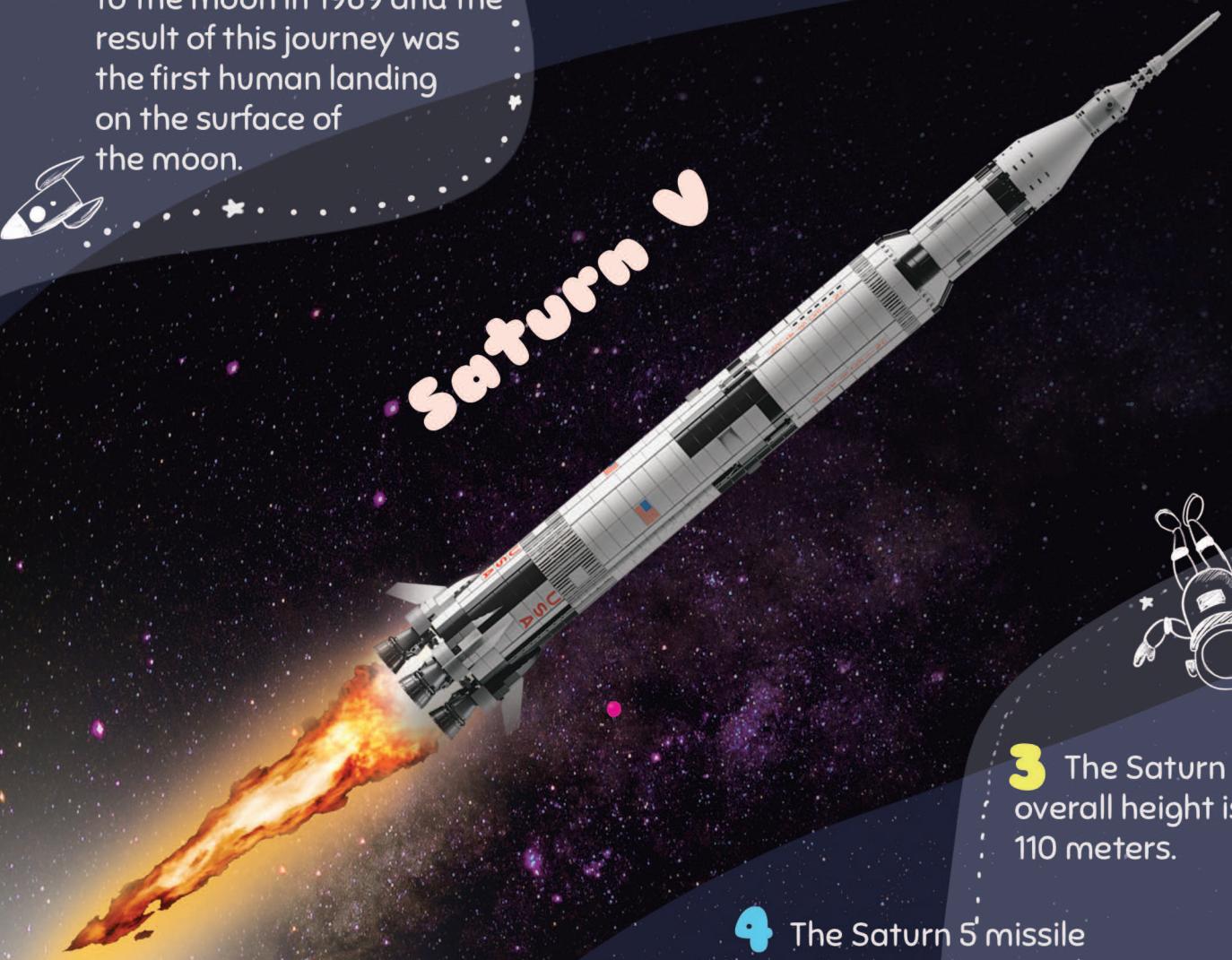


5 If the comet appears at regular intervals, this indicates that it is traveling in a regular oval path around the sun, like Halley's comet, which appears every 76 years.

1 It is a missile that was manufactured in the United States of America and was launched to the moon in 1969 and the result of this journey was the first human landing on the surface of the moon.

2 It consists of three sections, each containing fuel and engines, in addition to the spacecraft that will land on the Moon and the command unit in which there are three astronauts.

Saturn V



3 The Saturn 5's overall height is 110 meters.

4 The Saturn 5 missile cost the United States \$ 135 million. It was tested twice before using it to send astronauts to the moon.

1 A motor vehicle (space probe) remotely guided from Earth that can explore the surface of Mars when it lands on it.

2 It can scan a larger area of the planet's surface in addition to being able to direct it from the research center on Earth to areas of interest where it collects samples from Mars



Curiosity

3 Four rovers successfully operate on the surface of Mars robotically

1 Is a person who is trained to live in a spacecraft.

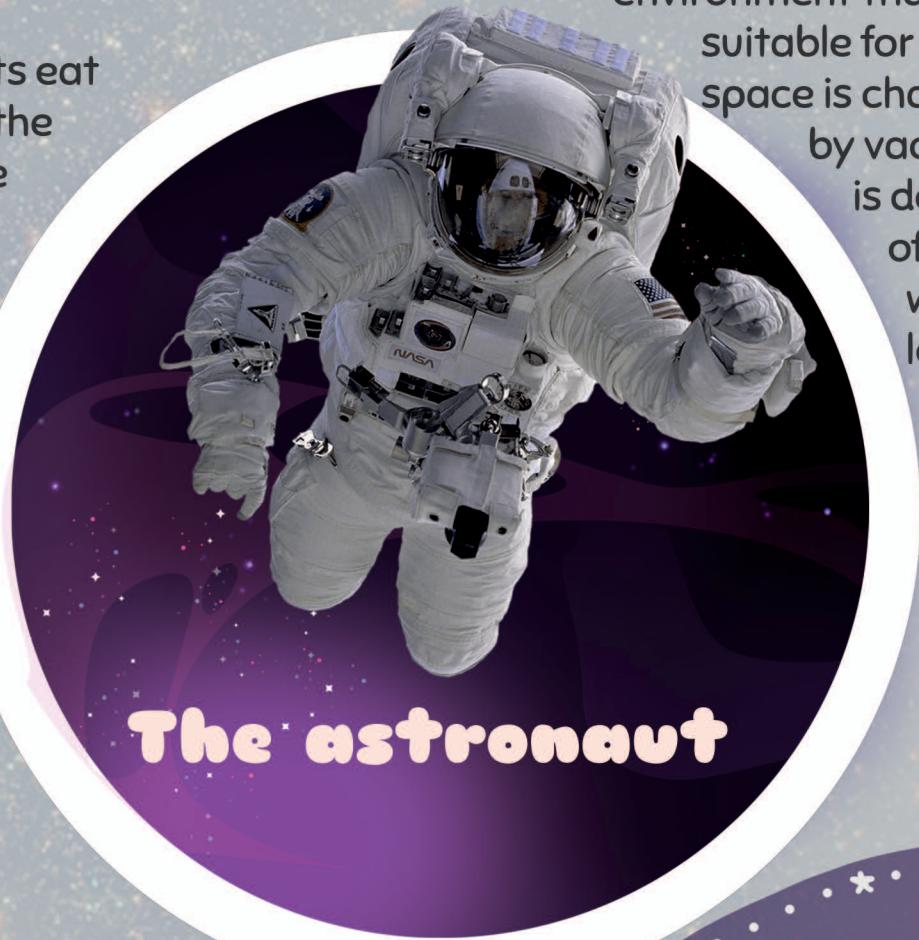
3 Astronauts eat their food in the form of paste packed in packages such as toothpaste packages, as well as canned food designated for them, such as tuna and corn.

2 The astronauts wear suits to preserve their lives, as they work in the space, which is a harsh environment that is not suitable for life. The space is characterized by vacuum that is devoided of air and with very low temperatures.

The astronaut

4 Astronauts can sleep sitting, lying down or standing, and they cannot shower, so instead, they wipe their bodies with wet towels.

5 Astronauts need to exercise due to the fact that the lack of gravity may cause the muscles and joints problems.

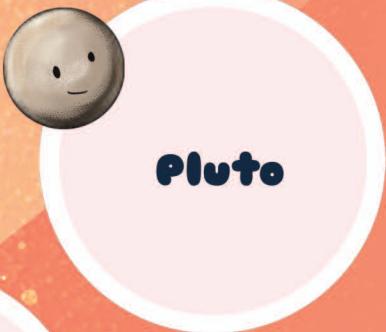


What did you learn?

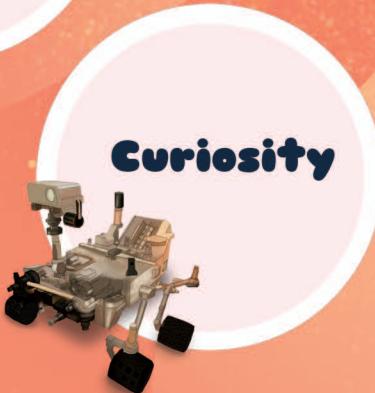
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1 Solar eclipse occurs when the earth, moon, and sun are almost aligned and the moon is in the middle.



2 Looking directly at the sun can cause permanent damage to the eyes or blindness.

3 Special techniques are usually used to protect the eyes while watching the solar eclipse.

Space

4 There are three types of solar eclipse:

- A.Total eclipse
- B.Annular eclipse
- C.Partial eclipse



Solar Eclipse

S The total eclipse may last for more than two hours.





Lunar Eclipse

5 Lunar eclipse can happen three times every year, while solar eclipse can happen five times in one year.



1 Lunar eclipse occurs when the sun, earth and moon are aligned and the earth is in the middle.

2 There are 3 types of lunar eclipses and they are
A-Total eclipse
B- Partial eclipse
C- Penumbral lunar eclipse



3 The lunar eclipse occurs in the middle of the lunar month when the Earth blocks the light of the sun or part of it from the moon.

4 Solar eclipse and lunar eclipse do not occur every month because the moon does not rotate in the same level as the Earth does around the sun.

1 A black hole forms when a star dies, where the star explodes to generate it. Black holes are located in different places in space where the gravity is high, as light cannot penetrate them.

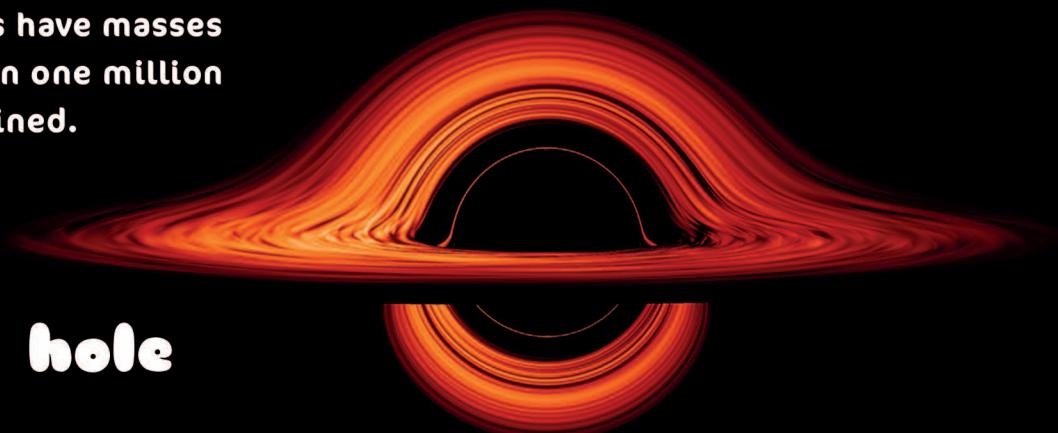
2 There are different types of black holes:

- **Small:** Scientists believe that the size of the smallest black hole may reach the size of one atom. These black holes are very small in size. However they have the mass of a huge mountain. Mass is the amount of matter, or the "filling," inside of an object.
- **Stellar black holes:** its mass may be up to 20 times that of the Sun. There may be quite a lot of stellar-mass black holes in the Milky Way galaxy.
- **Super black holes:** These black holes have masses greater than one million suns combined.

3 The rotating black holes are surrounded by a region within which it is impossible to stand steadily. They are called the ergosphere or the working region.

4 Once a black hole forms, it can continue to grow by absorbing additional matters, just like the dust that surrounds the stars.

Black hole



Parker Solar Probe

1 Parker Solar Probe is a scientific mission to unlock the mysteries of the Sun's corona and solar wind, it was launched in August 12, 2018



2 The Spacecraft was designed and built by Johns Hopkins University Applied Physics Laboratory, and the entire project cost is \$1.5 billion, and the mission will continue until 2025

3 Parker Solar Probe flies through the sun's atmosphere as close as 3.8 million miles to study the solar wind where it begins and will be moving at about 430,000 miles per hour fast enough to travel from New York to Tokyo in less than a minute

4 Parker Solar probe is equipped with a white shield that reflects heat off the front and keeps things cool in the back, and the shield is made from different materials like carbon and carbon foam.



5 Also it has sensors to detect if the heat shield is in the right position and correct itself if it isn't, and it has a cooling system that circulates water to keep the solar cells from overheating