DK findout!

Solar System

What do you want to findout?

Fun Facts, Amazing Pictures, Quizzes

What is the Solar System?

The Solar System is made up of our star, called the Sun, and everything that travels, or orbits, around it. This includes eight planets and their moons, dwarf planets, asteroids, comets, and smaller bits of rock and dust. The Solar System is one of many solar systems that exist in the Universe.

Asteroids
Asteroids are lumps of rock and metal left over from when the Solar System first formed. Most can be found in the asteroid belt, which is located between the planets Mars and Jupiter.

Rocky planets
Closest to the Sun are the four rocky planets – Mercury, Venus, Earth, and Mars. They all began their existence in the same way, but over time became very different worlds.

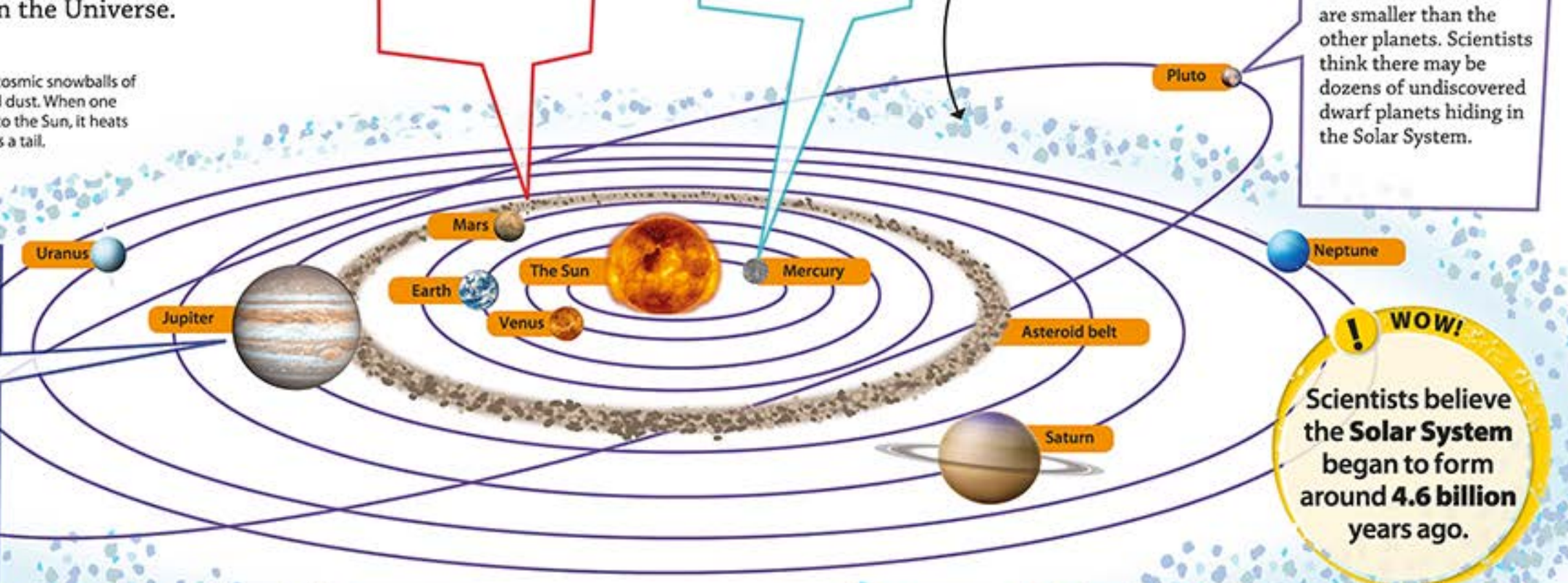
Super-sized
The Solar System is so big that if the Sun were the size of a basketball, the Earth would be the size of a sesame seed – and it would be located more than 25 m (80 ft) away!

The Kuiper Belt
This ring of icy rocks lies beyond the path that Neptune follows around the Sun.

Dwarf planets
Dwarf planets, such as Pluto, also travel around the Sun. These worlds are smaller than the other planets. Scientists think there may be dozens of undiscovered dwarf planets hiding in the Solar System.

Comets
Comets are cosmic snowballs of rock, ice, and dust. When one passes near to the Sun, it heats up and forms a tail.

Gas planets
The four outer planets – Jupiter, Saturn, Uranus, and Neptune – are the largest planets in the Solar System. They are mostly made of gas and spacecraft are unable to land on them.



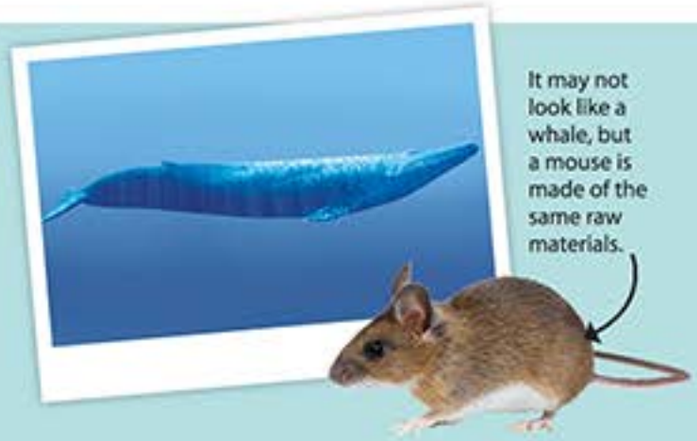
WOW!
Scientists believe the **Solar System** began to form around **4.6 billion** years ago.

Life on Earth

Although there may be life elsewhere in our Solar System, we haven't discovered it yet. The only place we know has life for sure is Earth. Our home planet is at just the right distance from our Sun for liquid water to exist, and has all the other key ingredients to make life possible.

What are we made of?

From the biggest whale in the ocean to a tiny mouse, all life on Earth has one thing in common – it is all made from the same stuff.



Stardust

Nearly everything that makes up our bodies, and everything else on Earth, was created when dying stars exploded. These explosions send raw materials like carbon and oxygen hurtling across space, and these raw materials are what we are made of. That means that you are made of stardust!


Stardust from an exploding star.

What's it like to be an astronaut?

Dr Piers Sellers is a British-American NASA astronaut and climate scientist. In his space career he made three Space Shuttle flights. He completed six spacewalks, during which he helped to build the International Space Station!

FACT FILE

- **Name:** Dr Piers Sellers
- **Born:** 1955
- **Space missions:**
  - 2002 – Space Shuttle *Atlantis*
  - 2006 – Space Shuttle *Discovery*
  - 2010 – Space Shuttle *Atlantis*
- **Total time in space:** 35 days

Space Shuttle
The last Space Shuttle flight took place in 2011.

Piers with the rest of the crew of the Space Shuttle *Discovery*

"Space is the new frontier. It is to us what the oceans were to sailors a thousand years ago. We have to cross space to get to the planets in our Solar System. One day, we will travel to planets around other stars. I hope future space explorers will travel to Mars, then the moons of the outer planets."

On board the International Space Station (ISS).

"Zero-G is great fun. You can float through the air down the big main corridor of the space station. It's like magic. But the view of Earth is the main thing. From the ISS you can see over 1,000 miles in all directions – beautiful."

The view from the ISS

Piers and his crewmates try to get some sleep on board the Space Shuttle *Atlantis*

"It's hard to sleep in space. When you close your eyes you feel like you are falling and so you wake up! You can't shower in zero-G – the water would go everywhere. So you wipe yourself down with a wet washcloth, which works ok. The loo works using an air suction fan to make everything go where it's supposed to go, and that works fine, too!"

"The best part of being an astronaut is spacewalking. Being outside the spacecraft you have a beautiful all-round view of the Earth and space."

Spacewalking
Spacewalks can be very tiring. For this one Piers was outside for more than 7 hours!

Piers on a spacewalk outside the ISS

How do you become an astronaut?

"Currently, you have to be one of the following to be a professional astronaut: military test pilot, engineer, medical doctor, or scientist. So study hard on the STEM subjects [science, technology, engineering, and mathematics] at school. They are hard to begin with, but fascinating and worthwhile."

Professional astronauts
Before becoming astronauts Sunita Williams trained as a pilot and Joan Higginbotham was a engineer.

Jupiter

Jupiter is the fifth planet from the Sun and the largest planet in the Solar System. It is a gas giant with thick bands of brown, yellow, and white clouds. Its atmosphere is made up of hydrogen and helium gas, just like our Sun, and if it was much more massive, it could become a star!

FACT FILE

- **Name:** Jupiter
- **Average distance from Sun:** 778 million km (484 million miles)
- **Number of known moons:** 67
- **Average temperature:** -145°C (-234°F) to 24,000°C (43,000°F)

Giant planet

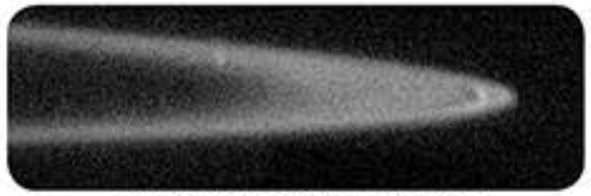
Jupiter is the king of the Solar System. It is an amazing 143,000 km (89,000 miles) wide. Jupiter is so large that all of the other planets could fit inside it!

Juno mission

NASA's Juno spacecraft is helping scientists to understand how Jupiter formed. It is orbiting closer to the gas giant than any spacecraft has before.

Jupiter's rings

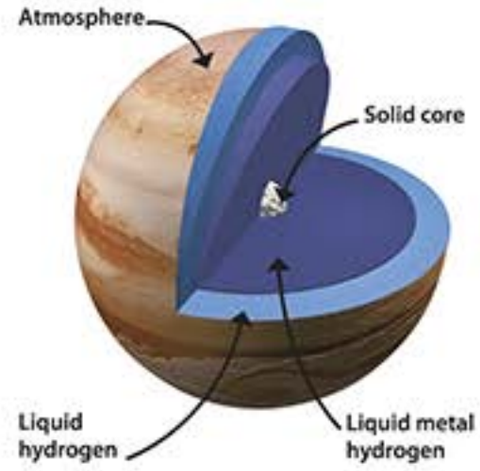
Jupiter has three thin rings, called the Jovian Rings. They are mostly made of dust and can only be seen when viewed from behind Jupiter, when they are lit up by the Sun.



Jupiter's rings photographed by the New Horizons spacecraft in 2007.

Beneath the clouds

Any spacecraft that passed through Jupiter's clouds would be crushed and melted by the huge pressure. Scientists believe that beneath the clouds there is a giant ocean made of liquid metal.



Great Red Spot

One of Jupiter's most famous features is the Great Red Spot. It is a huge storm, more than three times the size of Earth, that has been raging for hundreds of years!

Alien hunters

Are we alone in the Universe? It is one of the great unanswered questions. Some scientists think it is very likely that the Universe is full of life. Their motto is "follow the water", as they believe the best place to find life will be where there is liquid water. Within our own Solar System there are several places of interest to these scientists.

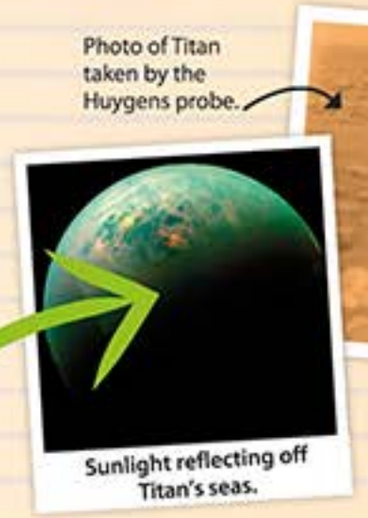
Candidates for life

Although finding intelligent life, like us, in our own Solar System is unlikely, there are worlds that may be home to simple forms of life. Scientists are interested in these places because they have conditions that might be suitable for life to exist.

Enceladus photographed by Cassini.

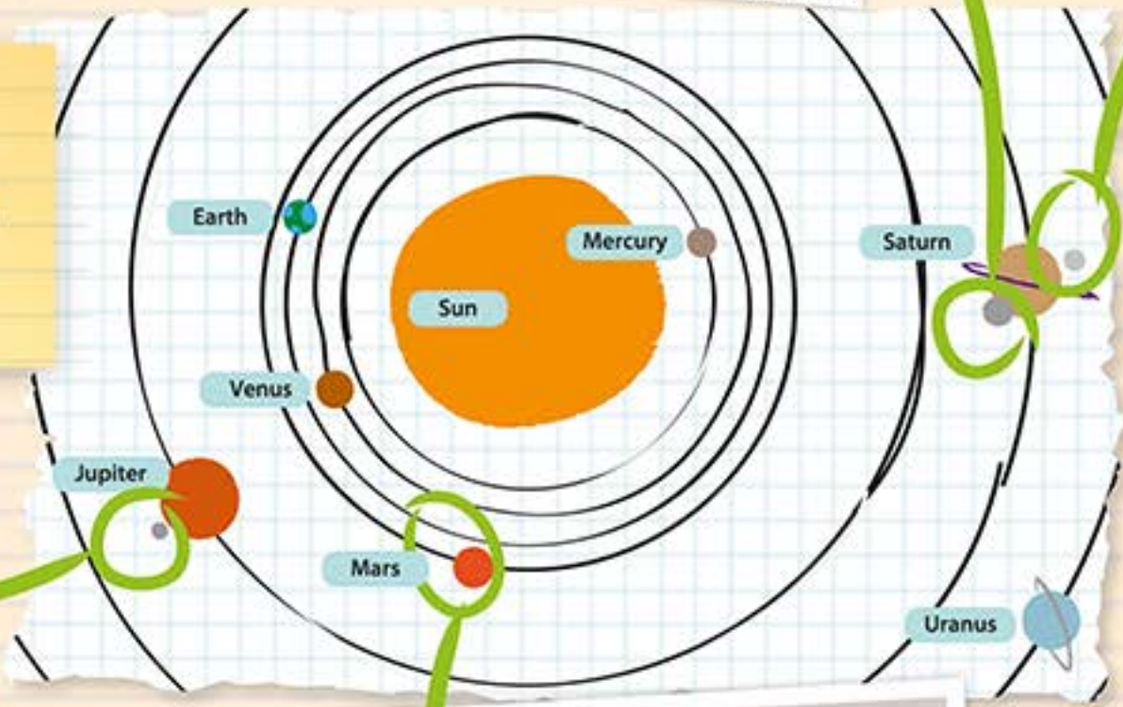
Enceladus
Enceladus is a moon that orbits around Saturn. It has a frozen surface and scientists think there is liquid water underneath. The Cassini spacecraft has been flying through geysers of frozen water that erupt from the surface, and analysing it to see if it could harbour life.

Photo of Titan taken by the Huygens probe.



Sunlight reflecting off Titan's seas.

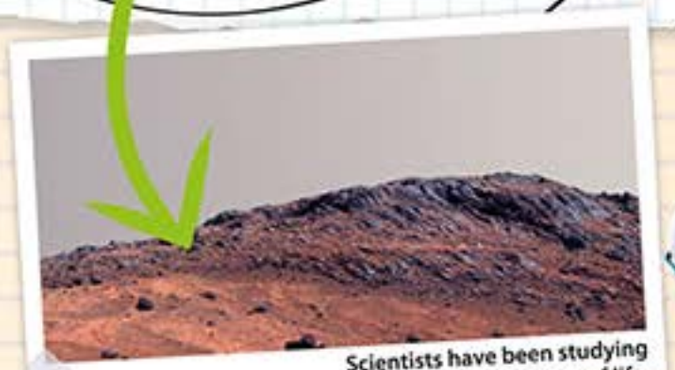
Titan
Titan is Saturn's largest moon. It has a thick atmosphere and seas made of liquid gas. Titan is very interesting to scientists because its atmosphere may be similar to that of the early Earth – before life emerged on our planet.



Europa's ocean is thought to be beneath an ice crust several kilometres thick.

Europa
Scientists believe that there is a liquid water ocean under the thick frozen surface of Jupiter's moon, Europa. Life has been found at the deepest, darkest parts of Earth's oceans, and scientists think the same thing might be possible on Europa.

Mars
Mars is of interest to scientists because of the recent discovery of flowing water on its surface. It is possible that life may have existed on the planet in the past, or that some form of life may still exist today.



Scientists have been studying Martian soil for signs of life.

SETI Institute

SETI stands for "Search for Extra Terrestrial Intelligence". The SETI Institute, based in California, USA, is looking for evidence of life in the Solar System and the wider Universe. SETI scientists try to find places that may have the ingredients needed for life and also listen out for possible signals that may have come from aliens. SETI believe our first contact with intelligent life in the Universe may even be with robots built by alien civilizations!