

LITTLE EXPLORERS

OUTER SPACE

LIFT THE FLAPS
TO EXPLORE THE
UNIVERSE INSIDE
AND OUT!

VISOR

MIRROR

TETHER

HELMET

CAMERA

CHECKLIST

BACKPACK

CONTROL PANEL

MORE THAN
30 FLAPS!

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OUR SOLAR SYSTEM

Space is everything around our planet, Earth and much further beyond. Nobody knows how big space is, so there is a lot to explore! Our place in space is in a group of planets circling the Sun, known as the Solar System. We live on the third planet from the Sun, so let's start by exploring the neighbourhood...

Asteroid belt



Mars



Venus

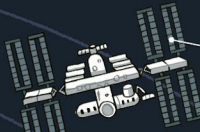
Mercury



The Sun

Rocky planets

The four planets nearest to the Sun are all rocky planets. Like our planet Earth, Mercury, Venus and Mars are all made up of rock and metal.



International Space Station



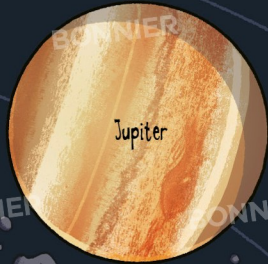
Earth



Saturn



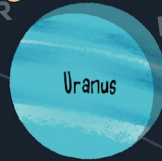
Comet



Jupiter

Dwarf planets

As well as the eight planets, our Solar System also has five dwarf planets, and possibly hundreds more!



Uranus



Neptune

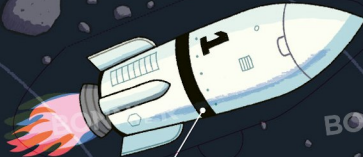
Gas giants

The four planets furthest from the Sun are called gas giants. Jupiter, Saturn, Uranus and Neptune are very large planets, mostly made of swirling gases.



Aliens

We don't know if there is life anywhere else in our Solar System... but we have lots of fun imagining it!



Rocket

Human beings are now clever enough to send rockets into space.



Satellite

Around our planet, special pieces of machinery, called satellites, send information back to Earth.



Asteroid

THE SUN

We are used to seeing the Sun in the sky, but did you know it is actually a star? The Sun is the nearest star to Earth, sitting at the centre of our Solar System. The light and heat from this huge, spinning ball of hot gas is what allows there to be life on Earth.

Stars

There are millions and millions of stars in space, and our Sun is just one. Stars are made when clouds of dust and gas swirl together and heat up.

Great grandad

The Sun is over 4½ billion years old!

Fiery giant

The Sun could hold a million Earths. Can you imagine that?

Super star

We live in a galaxy of stars called the Milky Way. The Sun is just one of the stars in the Milky Way. It looks much bigger than the other stars because we are much closer to it.

Don't look!

The Sun is so bright that looking directly at it can damage your eyes. Leave that to the scientists!

Our Earth

Our planet is the only place we know to have life. Earth moves around the Sun in a place known as the Goldilocks Zone, because it's not too hot and not too cold. It's just right – like baby bear's porridge! It's called the Blue Planet because of all the water on the surface.

Jigsaw pieces

The Earth's surface is made up of plates, like pieces of a jigsaw, which can move around.

In a spin

It takes Earth a year to travel around the Sun.

Day and night

As well as moving around the Sun, Earth itself is always spinning – just like a spinning top! While we face the Sun it's daytime, and on the other side of the world it's night-time.

Down to Earth

We don't feel all this movement of our planet. A force called gravity keeps our feet on the ground and stops us floating into space!

Seasons

As Earth travels, different parts tilt towards the Sun. This makes the seasons, when some places are hotter or cooler at different times of year.

THE PLANETS

A planet is a large, mostly round, object that travels around a star. Our planet, Earth, is one of eight planets that travel around our Sun. Each planet is very different. Let's meet the planets in our Solar System and find out what each one is like.

Rocky worlds

Lift the flaps on the planets on this page to find out about the four rocky planets.



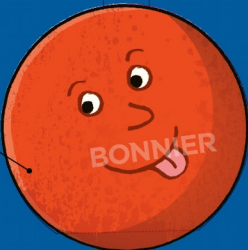
Mercury



Venus



Earth



Mars

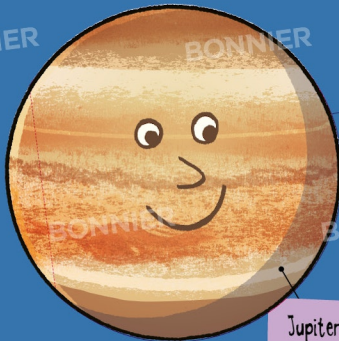
Dwarf worlds

The dwarf planets in our Solar System are smaller and some behave differently to the large planets. So far we have found five dwarf planets, called Pluto, Ceres, Haumea, Eris and Makemake.



Gassy worlds

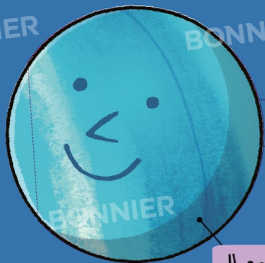
Lift the flaps on the planets on this page to find out about the four gas giants.



Jupiter



Saturn



Uranus



Neptune

Other worlds?

Looking beyond our Solar System, scientists have found lots of other planets, far out in space, travelling around distant stars. So it is possible that there are also more planets in our very own Solar System just waiting to be found!

Remember: these happy guys don't show the true size differences or distances between these eight amazing worlds in space.

OUR MOON... AND OTHER MOONS

Planet Earth has a moon – a nearby neighbour, which we can often see clearly in the sky. But did you know there are lots of other moons out there too? Astronomers have found at least 130 moons orbiting planets in our Solar System, and even more are being discovered.



Mars's moons

Mars has two odd-shaped moons, called Phobos and Deimos. Like Earth's moon, they have craters, but they look more like asteroids.

Saturn's moons

Saturn has more than 60 moons! Titan is Saturn's largest moon – it is even larger in size than the planet Mercury!



Craters

From Earth, we can see the surface of the Moon clearly through a small telescope. Unfortunately for this mouse, it is not made of cheese, but there are lots of holes – called craters. These were caused by pieces of rock hitting the surface. With no weather to blow away the damage, the craters can be seen billions of years later.

Mouse-tronaut!



Jupiter's moons

Jupiter has more than 60 moons, including the largest moon in the Solar System, called Ganymede. Next to giant Jupiter though Ganymede still seems very small!



Ganymede

Flag

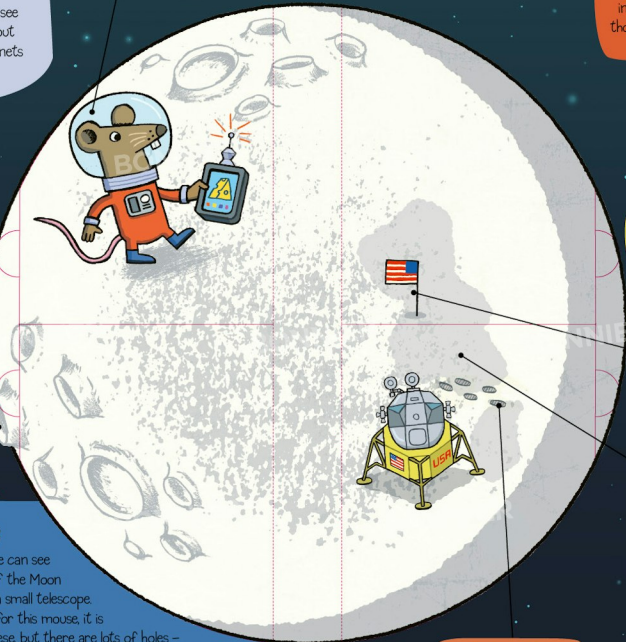
Sea of Tranquility

This dark area on the Moon's surface is not actually a sea. It is a large plain, but early astronomers seeing it from Earth imagined it could be a sea. This is the site of the first lunar landing.

Naming moons

When new moons are discovered, they are usually named after characters from myths and stories. There are so many new moons being discovered that more names are needed all the time. If you had your own moon, what would it be called?

Footprints



STARS AND GALAXIES

At night, we see thousands of twinkly dots of light in the sky. It's amazing to understand that each of these is a star: a very bright ball of hot gases, like our Sun. Galaxies are huge collections of stars, all grouped together. Stars can help us to find our way on Earth and in space, and they can tell us a lot about our universe.

Moon

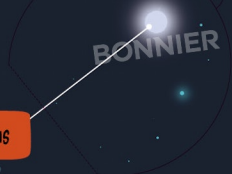


Yellow stars

The nearest star to Earth is the Sun. It is very important to us, but it is just one of many yellow stars.



Venus



Star patterns

Groups of stars in the sky seem to make shapes and patterns. These are given special names. This one is called the Plough or the Big Dipper because of its shape. It is part of a bigger group of stars, called a constellation.



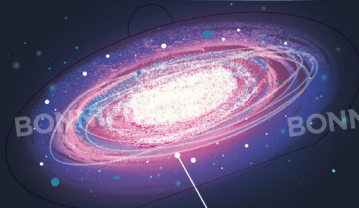
The Plough

Star light, star bright

During the day, we can't see the stars at all. This is because of the very bright light from our Sun scattered across our sky.

Super-scopes

To find out about distant galaxies, scientists use super-telescopes. These are powerful enough to see further than ever before, in search of what we might find next.



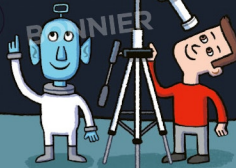
Galaxies

A galaxy is a collection of dust, gas and millions – or even trillions – of stars. The universe probably contains more than 100 billion galaxies!

Nebula



Black hole



There are so many amazing things to see in the night sky. What have you seen? Turn the page to discover even more things you might spot.

SMALL WORLDS

In our Solar System as well as the planets and moons, there are smaller chunks of rock, metal and ice – like mini-worlds going around the Sun. From speeding icy comets to huge rocky asteroids, let's find out about these amazing objects... and how we see them from Earth.

Asteroid belt

Between Mars and Jupiter is an area called the asteroid belt, where there are too many asteroids to count! Scientists think these asteroids could be the pieces of a planet that never came together.

Asteroid

An asteroid is a rocky or metallic lump travelling through space in a big circle around the Sun. Some are small and others are huge. Some even have their own moons!



Meteoroid

A meteoroid is a small piece of an asteroid or comet travelling through space. Sometimes they fall to Earth, where they are called meteorites.



Fireball

When a meteoroid falls towards our planet it is called a meteor; as it burns up high above the Earth. Some are called fireballs if they look even brighter than the brightest planets!



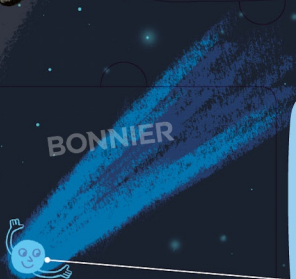
Space junk

Did you know there are hundreds of thousands of pieces of 'space junk' in orbit around Earth? These include pieces of spacecraft and unwanted or lost things from space missions.



Comet

Comets can seem like dirty snowballs in space! Some spend hundreds or even millions of years far away, beyond the planets. When they loop near to the Sun, they form a bright tail that we can sometimes see from Earth.



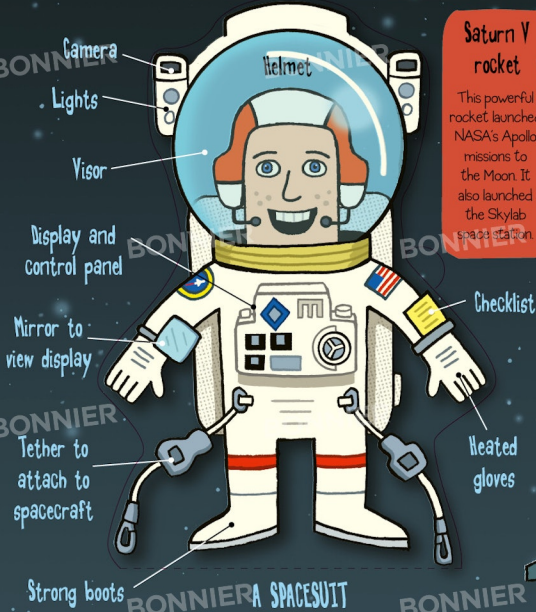
Shooting star

Sometimes from Earth we can see what looks like a star shooting across the night sky. This isn't a star at all – it's a meteor. Sometimes meteor showers create a wonderful light display in the sky!



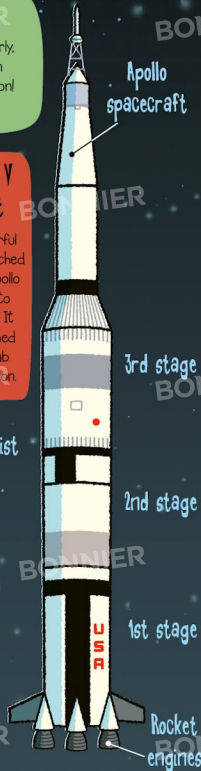
ASTRONAUTS AND SPACECRAFT

There is only so much we can find out about space with telescopes – to explore properly, we have to go there! Since the first human space flight in 1961, astronauts have been going into space and finding out what it's really like. Some have even landed on the Moon! Let's explore some of the amazing things that make space travel possible.



Saturn V rocket

This powerful rocket launched NASA's Apollo missions to the Moon. It also launched the Skylab space station.

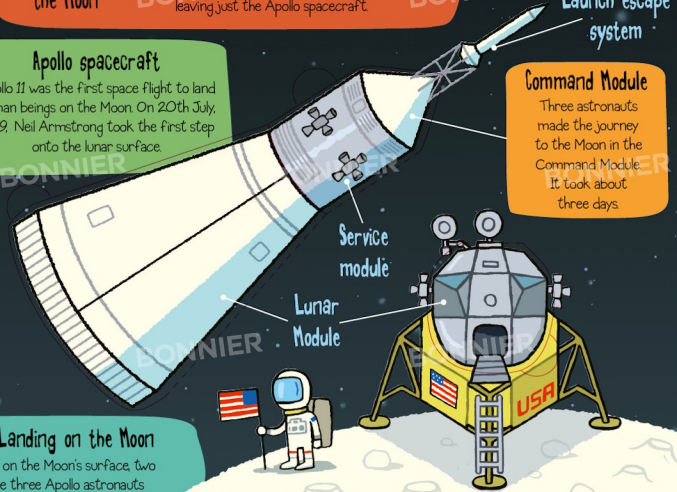


Rocket to the Moon

Each stage of the enormous Saturn V rocket blasted the astronauts further into space. The stages fell away leaving just the Apollo spacecraft.

Apollo spacecraft

Apollo 11 was the first space flight to land human beings on the Moon. On 20th July, 1969, Neil Armstrong took the first step onto the lunar surface.



Command Module

Three astronauts made the journey to the Moon in the Command Module. It took about three days.

Landing on the Moon

To land on the Moon's surface, two of the three Apollo astronauts used the spider-like Lunar Module. This also launched them back up to the Command Module.



Space race

Around the world, countries including the USA, Russia, China, and Japan are busy trying to invent new rockets and find better ways of exploring space. As we learn more about it, travelling to space becomes easier. Maybe one day it will be quite normal to have a holiday in space!

EXPLORING SPACE

Thanks to very skilled astronauts and scientists, and very clever bits of machinery, we are learning more about our universe all the time. Let's take a look at what's out there exploring for us and sending back amazing news.

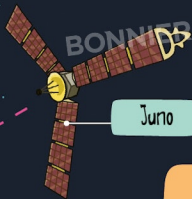
Satellite

Spinning around our planet, satellites tell us all kinds of information – from what the weather will be like, to if an asteroid is coming to hit us!



Lunar rovers

Known as Moon buggies, these amazing rovers allowed astronauts to drive around the Moon! Maybe one day we will be able to drive around distant planets too...



Juno



Alien life?

Many probes are on their way to distant planets and beyond. Some of them are trying to help us answer one of the biggest questions of all: is there life out there? What do you think?



Dawn

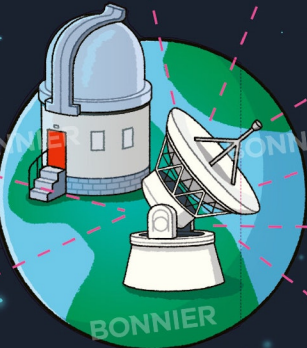
Probes

A probe is a robotic spacecraft – it can travel without astronauts on board! Probes can travel for many years and send back information from the far reaches of our Solar System.



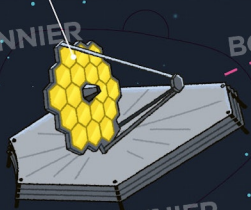
Voyager 1

This incredible probe has travelled further than anyone or anything has been before – ever!



International Space Station

Space telescope



Planetary rovers

A planetary rover explores the surface of other planets. Rovers have been sent to roam the surface of the Red Planet, before astronauts try to land for the first time.



With so many amazing machines to help us, outer space doesn't seem so out of reach anymore. What do you think we might find next: another planet, a new moon or even life on another world? One thing we do know for certain, there is plenty more to explore!