





FIRST BOOK



# SPA-CE



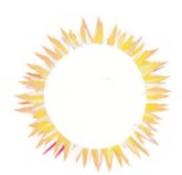




# MA FIRST BOOK SPACE

CAMILLA DE LA BEDOYERE AARON CUSHLEY





# CONTENTS

WHAT IS SPACE?



# THE SOLAR SYSTEM



THE UNIVERSE	8
THE BIG BANG	10
SOLAR SYSTEM	12
EARTH AND MOON	14
THE NIGHT SKY	16
ASTRONOMY	18





## THE SPACE AGE





## **OUTER SPACE**

LIFE OF A STAR	22
THE SUN	24
GALAXIES	26
STARGAZING NORTH	28
STARGAZING SOUTH	30
COMETS	32
ASTEROIDS	33



SPACE WORDS

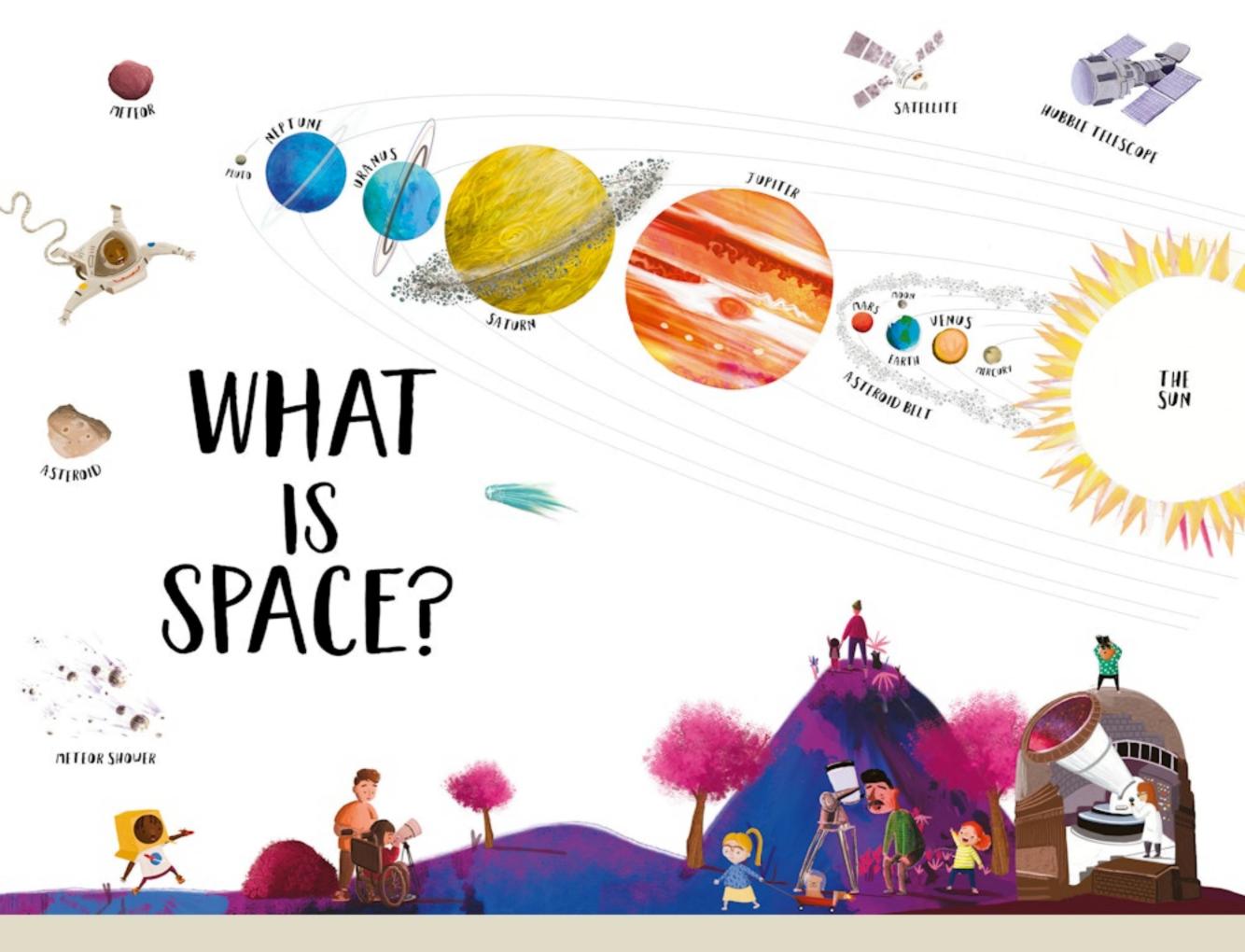
### SHOOTING STAR SEARCH

...62

Can you find the shooting stars hiding in this book? There is one in every scene, all except one.







# THE UNIVERSE

Space is enormous! It starts way above Earth's surface, about 100 kilometres up. Planets, stars, asteroids and comets are some of the things found in outer space.

Everything in space is called the Universe. It was formed about 13.8 billion years ago.



The Solar System - all the planets, including Earth - formed about 4.5 billion years ago.



The Universe is being explored pace agencies, with their astron probes, landers and telescopes

> NASA (National Aeronautics and Space Administration) is one of the most famous space agencies in the world.



Score to still so much for scientiste to of scover about the Universe. I the time. technologies are changing all the time.



the Universe first began.

Scientists use how far light travels in one year - a light-year - to measure distances in space. One light-year is the same as 9.5 trillion kilometres!

> from what we've seen, the Universe is 93 billion light-years across.

# THE BIG BANG

Long ago, everything in the Universe was in a tiny space. It started to stretch and expand into something much, much bigger. This is called the Big Bang.

In 1990, a rocket took the Hubble Space Telescope into space. Hubble helps scientists work out what may have happened when the Universe began.

1. In the beginning, a tiny space was
1. In the beginning, a tiny space was
full of energy and lots of small particles,
Everything was incredibly hot.

Around 13.8 billion years ago,
 this tiny space started to grow.
 No one knows why!

3. The Universe began to expand.
It looked like it was being
stretched!

 Then the Universe began to cool down. The tiny particles slowed down and joined together into groups called atoms.

Seconds after the Big Bang, the new Universe temperature was 1,000 trillion "C - that's 1,000,000,000,000,000 C!

5. A force called gravity made the atoms clump together. This created the first stars and galaxies.

 As stars were born, grew and died, more things in the Universe were made, such as asteroids, planets and comets.

# SOLAR SYSTEM

THE

The Solar System is made up of the Sun at its centre, eight planets that travel around the Sun, and thousands of moons, asteroids and meteors.

The Solar System formed more than 4 billion years ago, from clouds of dust and gas.



The four planets that are closest to the Sun are Mercury, Venus, Earth and Mars. They are solid and mostly made of rock.

A moon orbits a planet. Mercury and Venus
A moon orbits a planet. Mercury and Venus
are the only planets without moons, but there
are over 250 moons in the Solar System,
with more being discovered.



MRCURY

ASTEROID BELT

Planets spin as they orbit the Sun.

The planets travel around the Sun
because they are pulled towards

it by the force of gravity.

MARS

The path that each planet follows around the Sun is called its orbit. A planet's orbit is not a perfect circle. It looks more like an egg shape, or oval.

Jupiter, Saturn, Uranus and
Neptune are huge balls
of gas, known as gas giants.

Jupiter and Saturn are the largest planets in the Solar System.

TUPITER



NEPTUNE



PLUTO

Uranus and Neptune are very far from the Sun's warmth, so they are also known as ice giants.

The time it takes for a planet to spin once is called a day. A day on Earth lasts 24 hours; a day on Jupiter is nearly 10 Earth-hours long.

The asteroid belt lies between Mars and Jupites.
This is where millions of rocky objects erbit the Sun. One of the largest asteroids is called Vesta.
It measures 530 kilometres across.

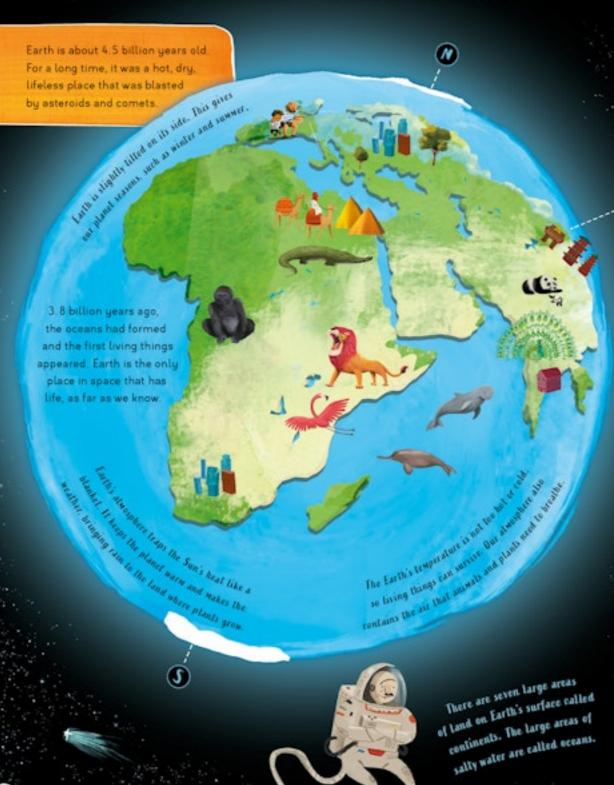
The time it takes for a planet to orbit the Sun is called a year.

A year on Earth lasts 365 days.

13

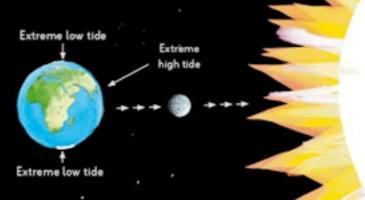
# EARTH AND MOON

Our home planet is called Earth and it is special because life can survive. From space, Earth appears mostly blue because most of it is covered in water.



The Moon is about 384,400 kilometres away from Earth. It orbits Earth once every 27-28 days. It is a dry, rocky place with no lifeforms. The Moon's surface has craters that were created walking to have a started and asteroids hit it. It also has mountaine values and asteroids hit it. It also has mountaine to the started and asteroids hit it. 384,400 kilometres Crashed into Earth, blasting off a

Earth's gravity stops the Moon from flying off into space. The Moon's gravity also pulls Earth towards it. It is not a strong force, but it is enough to pull the oceans towards it. This is what makes the tide go in and out.



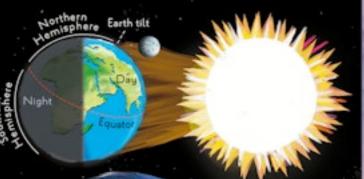
# THE NIGHT SKY

When we look up into the inky darkness of the night sky, we catch a glimpse of the wonders of the Universe. Twinkling stars glow alongside the Moon, and rocky visitors from space zoom past on their long distance travels.

Dust and space rocks called meteors fly towards Earth all the time. As they zoom through the atmosphere, meteors heat up and burn - we can sometimes see this glow from Earth. Most meteors burn up before they hit the ground, but if they do make touchdown, they are called meteorites

The top half of Earth is called the Northern Hemisphere. The bottom half is called the Southern Hemisphere. What we can see in the night sky depends on where we are on Earth.

> The Moon looks bright in the night sky because it reflects sunlight towards us.



We cannot see the Sun in the night sky because Earth completes one spin every 24 hours. It is night-time in places that face away from the Sun, and day-time in places that face towards the Sun.



TING CRISC

NO TOOM

There are eight phases of the A On a clear night, we can see the Moon in the night sky, but its shape seems to change. It takes almost a month for the Moon to go through all its

shapes, or 'phases'.



without a telescope.

The largest artificial satellite that orbits Earth is a giant space station, where

scientists work for months at a time.

Satellites are machines sent into space to help with research, track Earth's weather and transmit messages. They can also measure the size of forests and the temperature of the oceans.

In the morning, the Sun rises in the east, At the

Some planets can be seen from Earth. Venus is the brightest object in the night sky, after the Moon, and can be seen

Cassiopeia is a group

of five bright stars that

Make the shape of a W.

יסוו חסם



Astronomers study space to find out more about the galaxies, stars, planets and comets.

Modern astronomers have special equipment, from simple binoculars to huge telescopes on mountains or in deserts. Space telescopes have been sent beyond Earth's atmosphere to get the best view.

A giant telescope in the Atacama Desert, in South America, is one of the largest and highest telescopes on Earth. It has very sensitive cameras and can detect new stars, black holes and energy left over from the Big Bang.

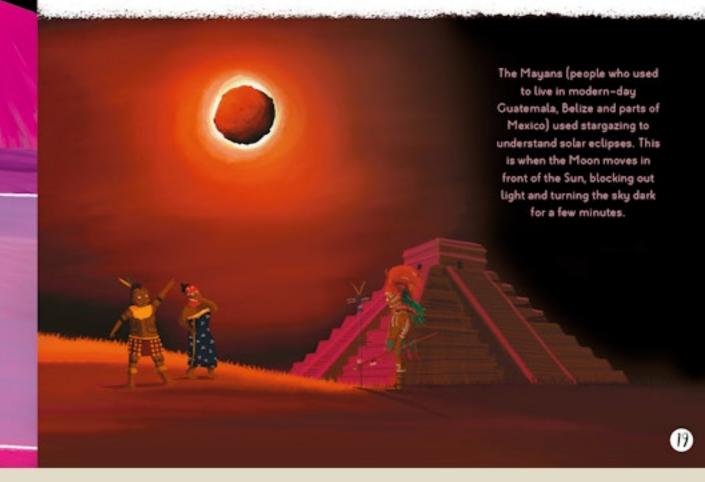
As the Hubble telescope orbits Earth, it takes pictures of distant stars, planets and galaxies. It is able to view objects more than 13.4 billion light-years away from Earth.

An observatory is a special building where astronomers use telescopes and other equipment to look at space.

The first light telescope was invented more than 400 years ago. These simple telescopes are tube shaped and their lenses can magnify images from far away. Modern telescopes also use light to see into space, or different types of energy that we can't see, such as radio waves.



Ancient people of Greece, Babylon (now Iraq) and China were some of the first astronomers. They followed star movements in the sky to work out their calendars, and created 'sky maps' to show star positions throughout the year.









# OUTER SPACE











# - A STAR

A star is born when gas and dust are pulled together by gravity. Some stars glow for billions of years but, as they get older, they change and eventually die.



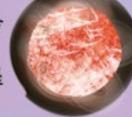
cloud of gas and dust. A star begins with a called a nebula.



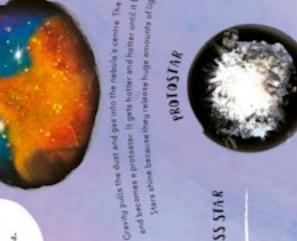
Start here!



RED DUARY



VIRY LOU MASS STAR



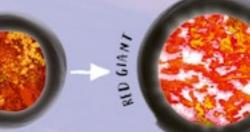
HIGH MASS STAR



of years and slowly fade away to become stars live for trillions white dwarfs. Red dwarf







UPTRNOUA



OLNCK DUAR













# THE SUN

The Sun is a star, a huge ball of glowing gas that gives off lots of energy, such as heat and light. We can see about 6,000 stars twinkling in the night sky, but there are trillions more.

The Sun is the nearest star to Earth, and without it there would be no life. It's almost five billion years old and so big that 1.3 million Earths would fit inside it.

Sunlight travels at 300,000 kilometres a second, which means it takes eight minutes and 20 seconds to reach Earth-

The Sun makes other types of energy, such as X-ray radiation and ultraviolet radiation. Radiation can be harmful. which is why we protect our skin and eyes in strong sunlight.

The Sun is 150 million kilometres from Earth.
It's packed with superheated hydrogen and helium gases that glow at 5,500°C at the surface.

The surface of the Sun is called the photosphere.
It is made of a superhot mixture of gases
called plasma, which is always moving.

At its centre, the Sun's heat rockets to an incredible 15 million "C!

The Sun's atmosphere and spread millions of kilometres atmosphere atmosphere and spread millions of kilometres atmosphere atmosphere

The Sun is the biggest object in the Solar System

'Corona' means crown. The Sun's corona looks like a crown because jets of hot gas shoot out of it. They are called solar flares.

# **GALAXIES**

A galaxy is an enormous group of stars, planets, gas and dust. Our galaxy is called the Milky Way and on a clear night, you can see it without using a telescope.

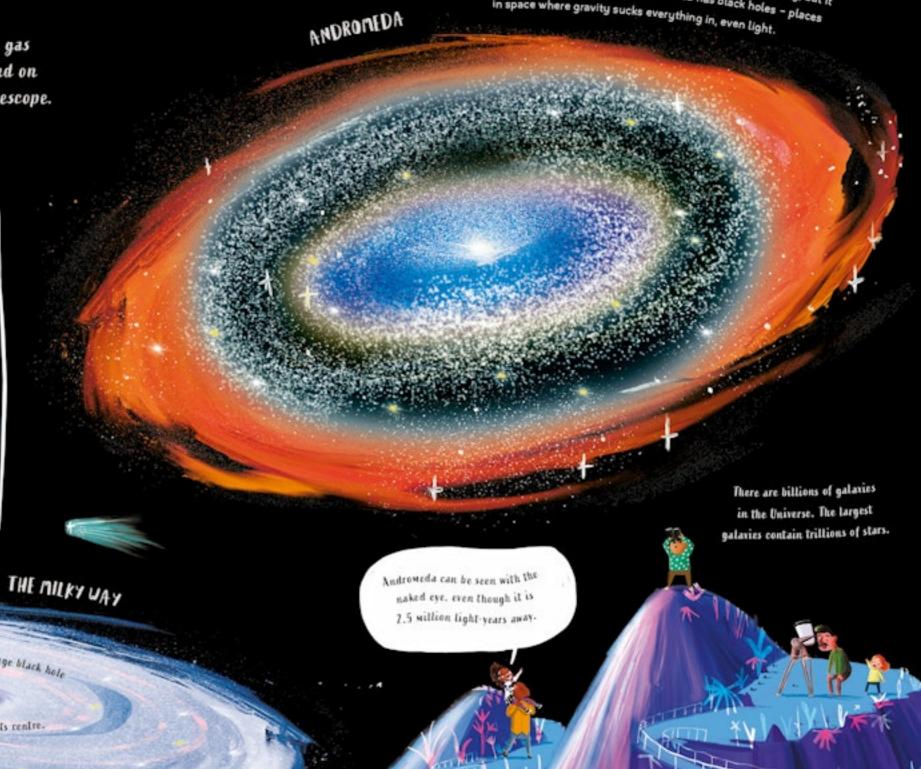
There are three main types of galaxy: spiral, elliptical and irregular. They are all different shapes and sizes.

SPIRAL GALAXY
Spiral galaxies look
flat, like a disc, and have long spiral arms.

ILIPTICAL GALAXY
Elliptical galaxies are smooth and oval shaped, with lots of stars near the centre.

IRRIGULAR GALAXY
Irregular galaxies look like starry blobs. They form when other galaxies crash into

The spiral galaxy Andromeda is the nearest galaxy to the Milky Way, but it is bigger with twice as many stars. Andromeda has black holes - places in space where gravity sucks everything in, even light.



The Milky Way has a huge black hole

Called Sagittarius A' at its centre
The Milky Way is a spiral galaxy. Everything
travels around its centre.

The Solar System,
uears to travels

each other.

The Solar System takes about 250 million years to travel around the Milky Way.

# STARGAZING NORTH

Some stars appear to make patterns in the sky. This is called a constellation. 36 out of 88 officially recognised constellations can be seen from the Northern Hemisphere.

Constellations are often named after characters or animals that people thought they looked like

A pattern of stars is called an asterism
(the word 'aster' means star). Asterisms
can be part of a constellation. The Big Dipper
asterism is also known as the Plough and it is
found within Ursa Major's constellation.

The Little Bear constellation contains one of the most famous stars: Polaris. This bright star is also known as the North Star, or Pole Star. It appears above the North Pole, so you can use it like a compass.

Polaris is the bright star at the end of the Little Bear constellation, which is also sometimes called the Little Dipper.

Constellations appear to move across the sky at night. Polaris doesn't move so it can't be seen from the Southern Hemisphere.

THE BIG



Apart from Regulus, there appear to be 14 stars in the constellation of Leo. but some of them are pairs.



Orion is also called the Hunter. Orion's belt is made up of three bright stars, and its foot is a supergiant star, called Rigel.

When you look for Orion in the Northern Hemisphere, you will always find it in the southern part of the sky-

# STARGAZING SOUTH

CRUX

Stargazers see different constellations in the night sky, depending on where they are and the time of year. In the Southern Hemisphere, there are some constellations that are rarely, or never, seen in the north-while others look a little different.

52 of the 88 officially recognised constellations can be seen in the Southern Hemisphere.

Crux is the smallest constellation in the sky.

It includes the famous Southern Cross - an
asterism of four bright stars. It can be
used to help locate the South Pole.

The brightest star in the Crux constellation is called Acrux and it points towards the South Pole-

The constellation Centaurus is named after a centaur - a mythical creature that is half human, half horse. It includes one of the brightest stars in the night sky. Alpha Centauri A, which is 4.4 light-years away - that's about 40 trillion kilometres!

Centaurus is the ninth largest constellation in the sky.

CENTAURUS

Alpha Centauri is the star closest to the Solar System and it is seen best in the Southern Hemisphere. The stars in the constellation of Scorpius create a shape that looks like a scorpion. It can sometimes be seen in the Northern Hemisphere in summer, near the horizon.

SCORPIUS

Antares is a red supergiant star, and the brightest star in Seorpius. It appears orange and is about 550 light-years from Earth.

Shaula is the second brightest star in Scorpius.
It is actually a cluster of stars and makes
up part of the scorpion's raised tail.

In Greek mythology, Scorpius is sent to kill Orion, the hunter, but can never catch him. Scorpius only rises in the east after the constellation of Orion has already set in the west.



Orion can be seen in both the Northern and Southern hemispheres, but in the south the hunter appears upside-down!

# COMETS

When a giant cosmic snowball swishes past Earth, it gets heated up and glows, creating a startling sight in the sky. This snowball is a comet, and just one of many flying visitors from space.

Comets are made of frozen gas, ice, rock and dust. The largest ones are the size of towns, but the smallest ones are just a few kilometres wide.

When comets move closer to the the Sun, they heat up and the frozen gases melt. This creates an enormous glowing cloud that can be wider than a planet.

The glowing gas and dust form into a tail that can be millions of kilometres long.

The tail always stretches away from the direction of the Sun.

The most famous comet is called Halley's comet. It flies past Earth about once every 76 years and its next visit will be in 2061.

# **ASTEROIDS**

Asteroids are rocky objects that orbit the Sun. Millions of them can be found in the Asteroid Belt, between Mars and Jupiter.

into Earth, starting fires, storms and volcanic eruptions

that pumped toxic gases into the air. Scientists think

this event caused the dinosaurs to die out.

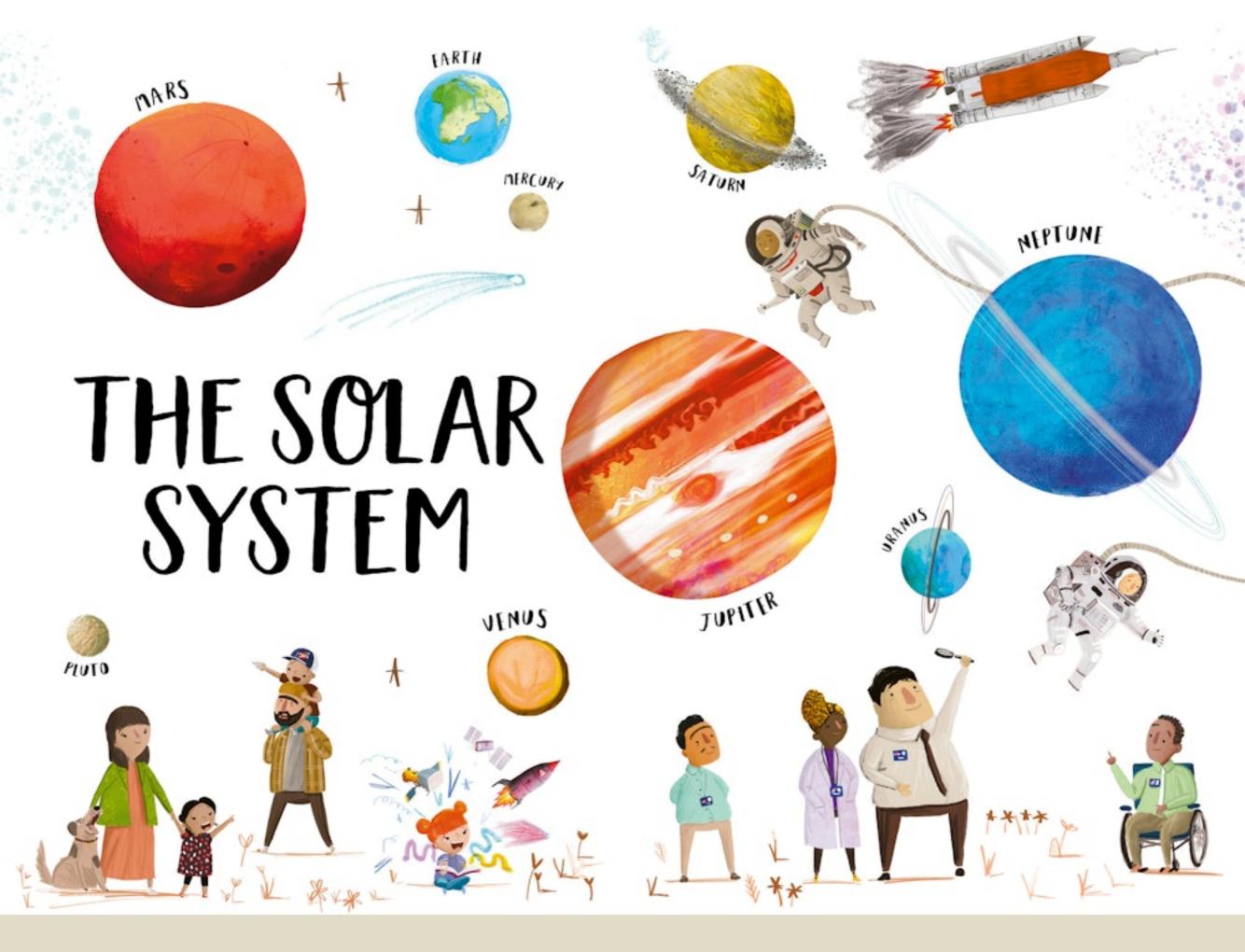
Asteroids are smaller than planets.



Many measure one kilometre or more in diameter - that's nearly 10 football pitches across!



12



# MERCURY AND VENUS

Mercury has the shortest year of any planet.

It takes just 88 Earth-days to

orbit the Sun. That means an eight-year-old Earthling would

have celebrated

33 birthdays

on Mercury

Mercury is the smallest planet in the Solar System, and closest to the Sun. Both Mercury and Venus are best seen at dawn or dusk, when the Sun is below the horizon. After the Moon, Venus is the brightest object in the night sky.

Mercury is the fastest planet in the Solar System, rooming round

The Caloris Basin measures 1,600 kilometres across, making it the largest crates on Mercury and one of the largest craters in the Solar System.

the Sun at 47 kilometres a second.

Long ago, Venus may have been covered in oceans, just like Earth. The oceans disappeared with the heat, and volcanoes released toxic gases to make thick clouds.

> There are thousands of volcanoes on Venus and at least 167 of them are bigger than the largest volcano on Earth.

Space probes have flown beneath Venus' clouds to get a better view. Some of them have been crushed by the atmosphere or burnt up in the heat. Venus is wrapped in a thick blanket of gases, making it even hotter than Mercury.

The air on Venus is much heavier than on Earth - in fact, it's so heavy that a puff of wind wouldn't cool you down, but it could knock you over!

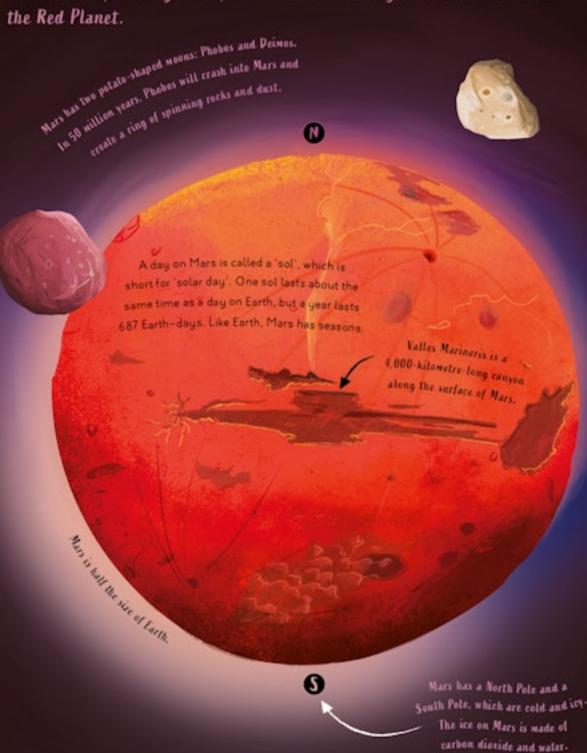
Venus has long days because it spins very slowly - it takes 243 Earth-days for Venus to spin once. It also spins in the opposite direction to other planets.

The wind on Venus can whoosh across the surface faster than any winds on Earth – up to 724 kilometres an hour.

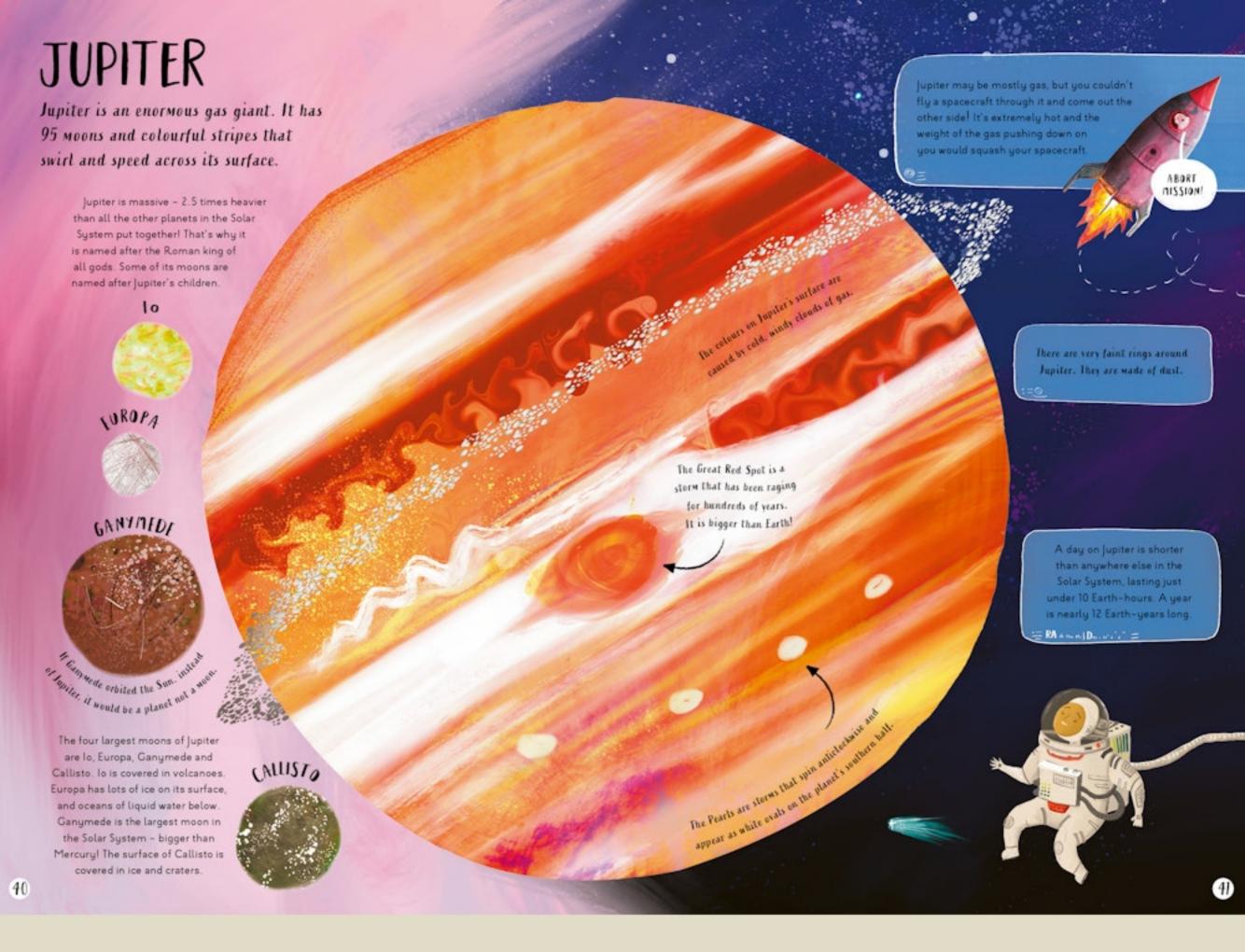
Mercury is so close to the Sun that it can reach a blistering 427°C in the day, which is hot enough to melt metal. At night the temperature drops to -180°C.

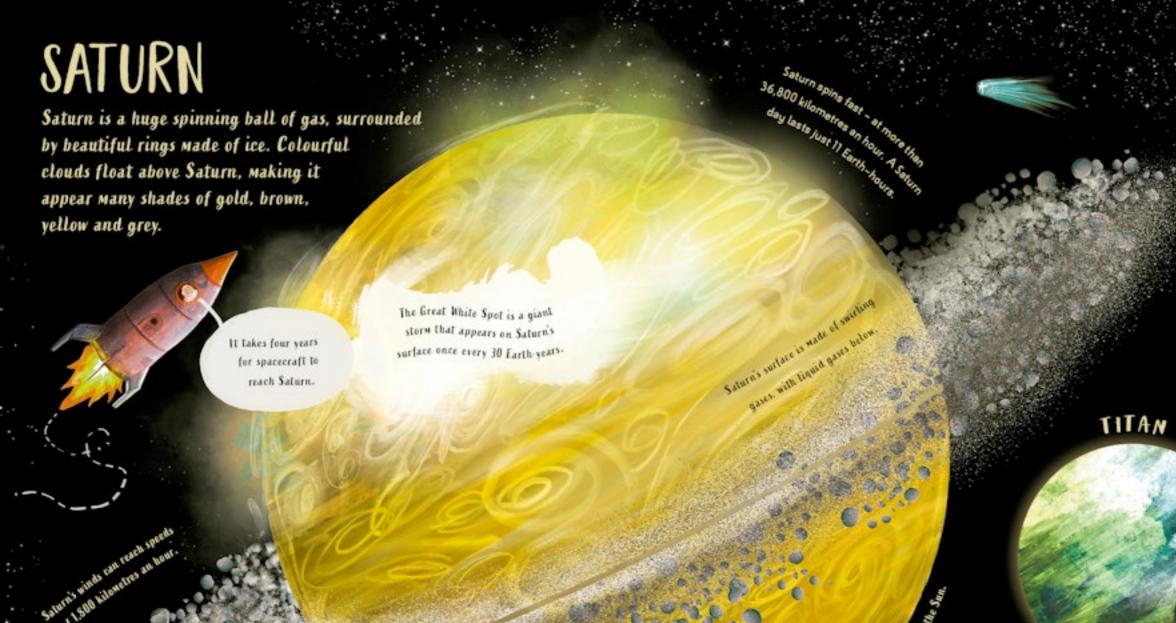
# MARS

Mars is named after the Roman god of war and it appears as a bright-red dot in the sky, making it easy to find on a clear night. It is often called the Red Planet.









Saturn's seven groups of sparkling rings of ice shimmer in the Sun's light. The pieces of ice vary in size. from flecks of dust to huge mountains.

Saturn has more than 146 moons, including Enceladus and Titan, Titan, Saturn's largest moon, has a thick orange atmosphere, which blocks out much of the sunlight.

MADUS

Encaladar, in the and there are foundation distributed by the said there are foundation of the said th

# URANUS AND NEPTUNE

Uranus and Neptune are the mysterious ice giants of the Solar System because they are so far away. Neptune is not visible from Earth without a telescope, and Uranus can only be seen occasionally. In fact, Uranus wasn't discovered until 1781, and Neptune in 1846.

Neptune is so far from the Sun that we know very little about it. It's a cold. dark planet, with freezing windstorms racing across its surface.



Uranus is mostly made up of icu materials that move like a liquid around a small, rocky core. It is tilted so far over that it spins on its side

Uranus has at least 27 moons. Including Titania, Miranda and Artel-These are named after story characters from William Shakespeare's plays and Alexander Pope's poems-

NEPTUNE



RRIFI

ranus is the third argest planet in the Solar System, It has at least 13 rings.



Uranus' inner rings are dark and narrow, and the

outer ones are bright colours.

It takes a long time for Uranus to journey around the Sun. There are 30,687 Earth-days in one year - that's about 84 Earth-years!

OM THE REAL PROPERTY AND THE STATE OF THE ST

# BEYOND PLANETS

The Solar System does not end at Neptune. It stretches out far into space. Astronomers have found many other objects there that orbit the Sun.



be another gas giant planet. Instead. it's small, rocky and covered in ice. Now scientists call Pluto a dwarf planet.

There are five dwarf planets: Pluto, Eris, Haumea, Makemake and Ceres.

ERIS



Eris is the heaviest dwarf planet.



Наимеа із shaped like a potato.



It takes Makemake 306 Earth-years to orbit the Sun.





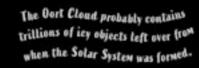
CIRIS

PLUTO

The Kuiper Belt is an area beyond Neptune where millions of rocky objects orbit the Sun. All the dwarf planets are found here. except for Ceres, which is found in the asteroid belt.

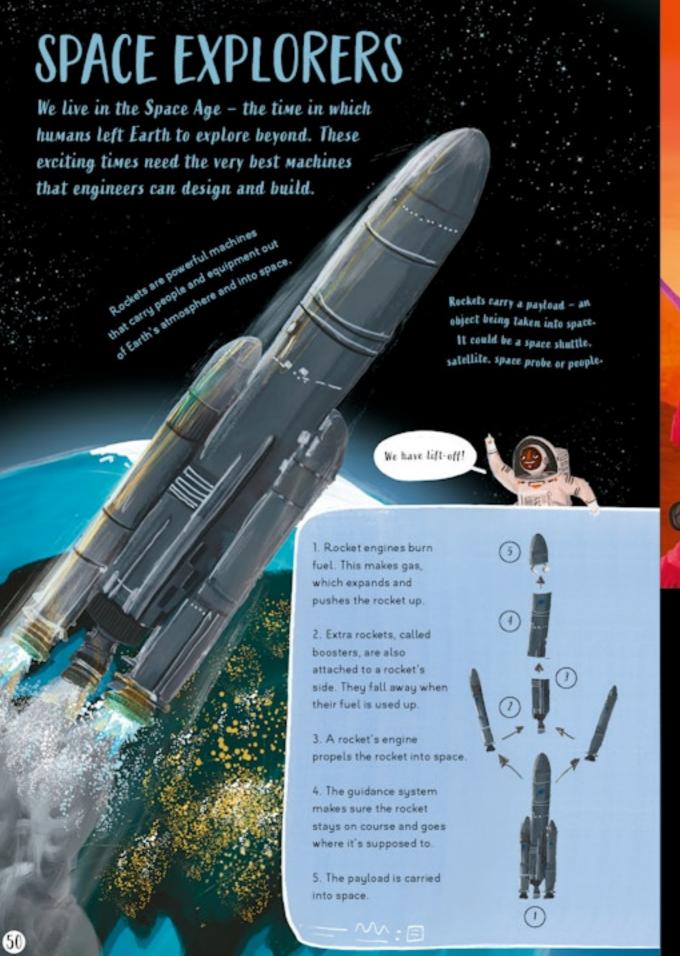


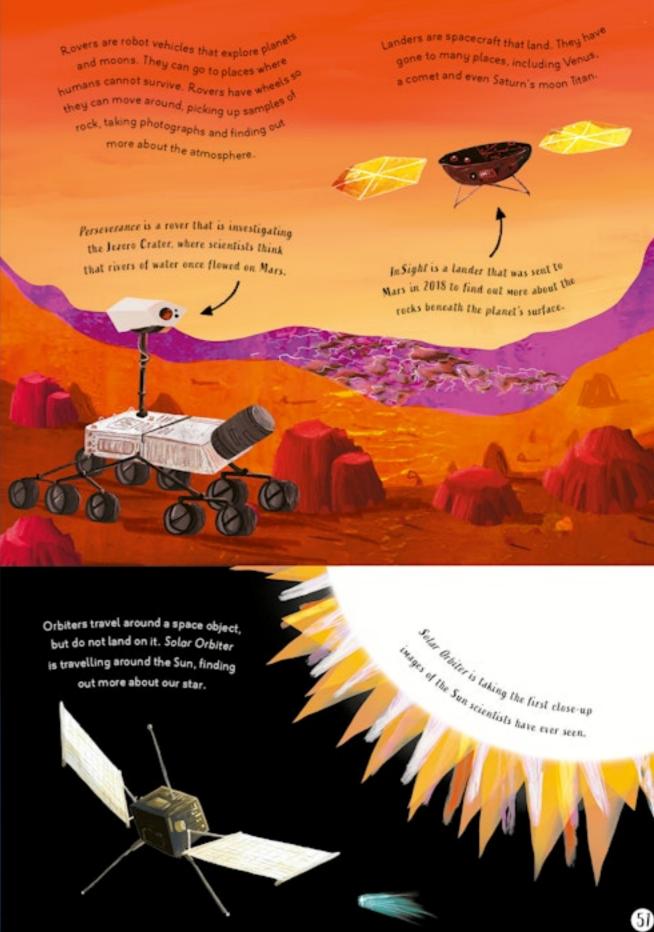
The Oort Cloud lies beyond the Kuiper Belt. We know very little about it because it would take a spacecraft 300 years to get there.





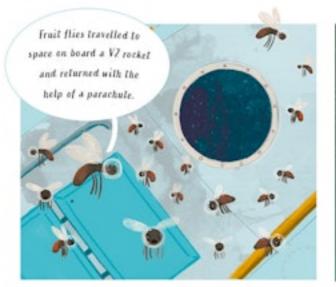






# FIRST JOURNEYS INTO SPACE

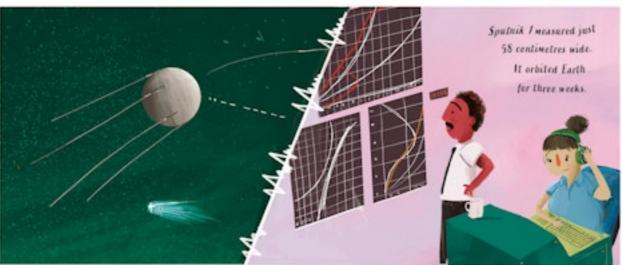
The first journeys into space began more than 70 years ago. Since then, many more space missions have taught scientists how humans can survive in space, and given lots of information to help us understand the Universe.



The first animals in space were tiny fruit flies.

They were taken 100 kilometres above Earth.

Scientists wanted to know if they would be damaged by going into space, but they returned unharmed.



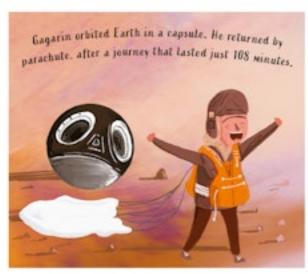
957 The first satellite, Sputnik I, was launched into space. It looked like a small silvery ball and sent radio messages back to Earth.

Sputnik I took about 98 minutes to orbit Earth. It helped scientists learn more about Earth's atmosphere as well as what conditions are like in space.



Laika became the first animal to orbit Earth on the spacecraft Sputnik 2. Laika helped scientists understand the effects of spaceflight on a living creature.

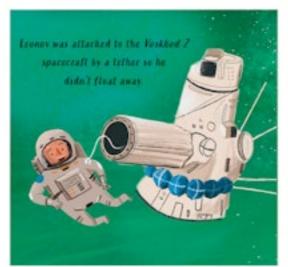




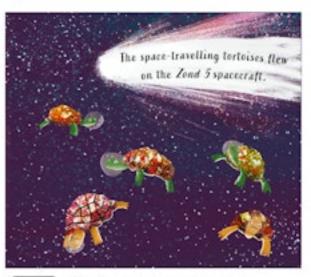
1961 Yuri Gagarin was the first human to travel into space. He flew on board Vostok I to orbit Earth once.



An engineer called Valentina Tereshkova became the first woman in space when she orbited Earth. She is the only woman to travel alone in space so far...



Alexei Leonov was the first person to walk –
or float – in spacel With a backpack containing
air to breathe Leonov spent 12 minutes and
nine seconds outside the spacecraft.

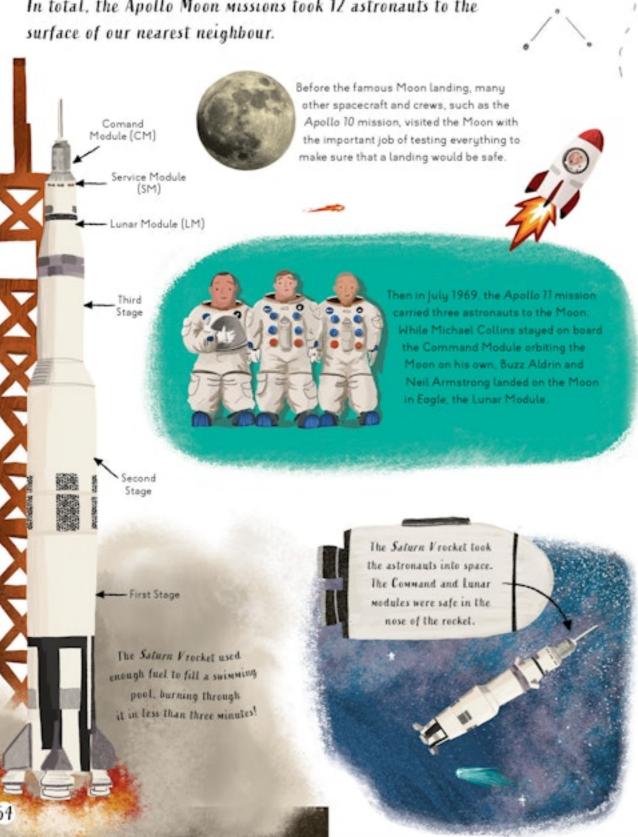


After a three-day journey, the first living things to fly to the Moon were tortoises. The Zond 5 successfully returned to Earth, with images of the Earth and the Moon.



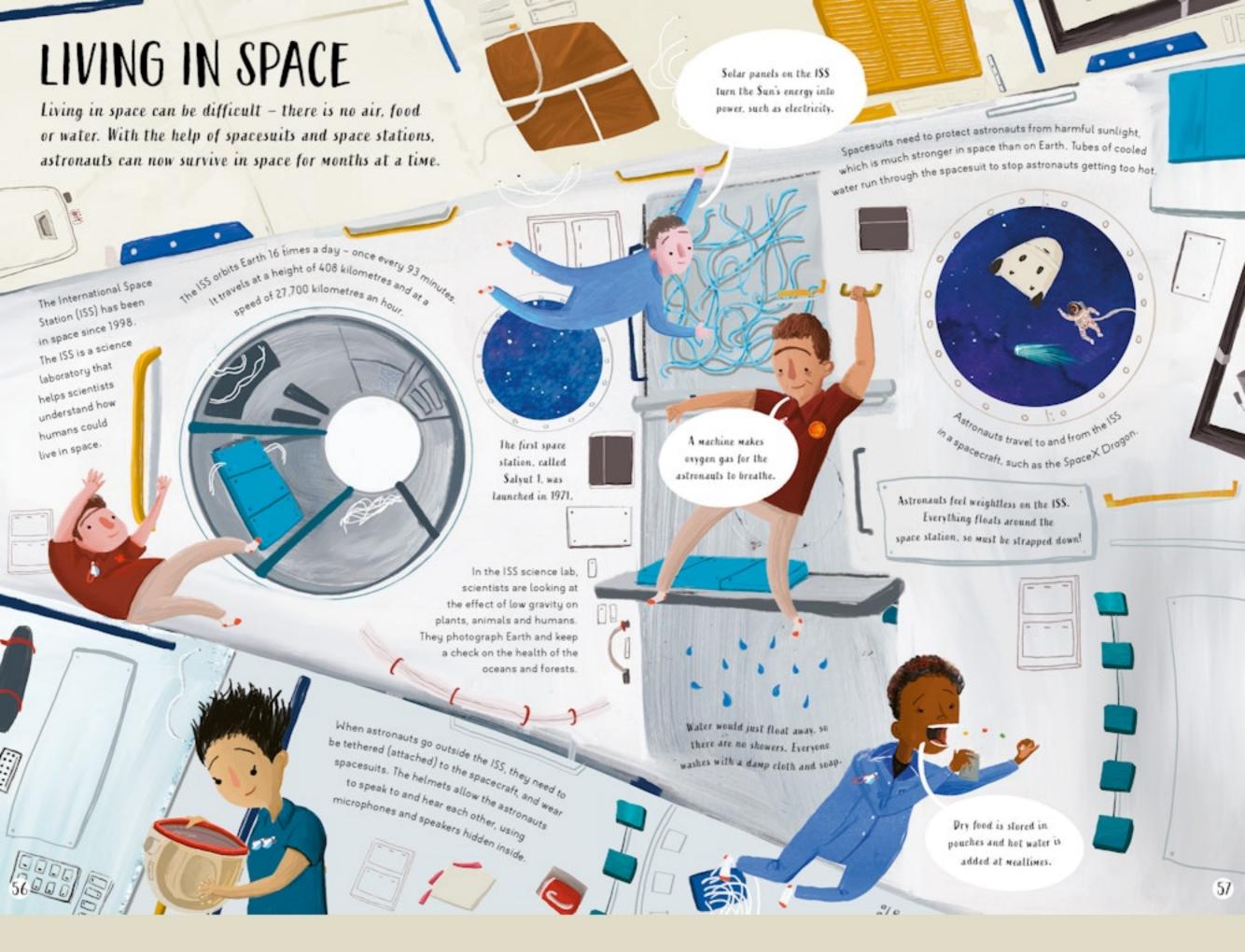


On a historic day in 1969, the first humans landed on the Moon. In total, the Apollo Moon missions took 12 astronauts to the









# EXPLORING DEEP SPACE

Space is an enormous place and travelling across the Solar System takes a long time. A one-way trip to Neptune would take 12 years! Instead of risking human lives on these faraway journeys, machines are sent instead.

### VOYAGER

Voyager 1 and 2 left Earth's orbit in 1977. They are now exploring interstellar space – the area between the stars. The Voyager spacecrafts have explored Jupiter, Saturn, Uranus, Neptune and 48 moons. The Voyager spacecraft carry a message in case they should neet and other living thing that night want to learn about life on Earth-

### NEW HORIZONS

New Horizons was the first spacecraft to explore Pluto and its moons. It discovered a heart-shaped area of ice on Pluto.

### ARTEMIS

The Artemis missions will return humans to the Moon. The plan is to build a base camp on the Moon for astronauts to live and work there.

After Pluto, New Horizons went on to explore the Kniper Belt-

Using the base camp, scientists will be able to explore and investigate more and for longer.

### JUNO

In 2011, the Juno spacecraft started its five-year journey to orbit Jupiter. It has helped scientists work out how Jupiter formed and is now exploring Jupiter's moons.

June orbited Jupiter 35 times.

### CASSINI-HUYGENS

Cassini spent 20 years in space, studying Saturn and its rings. It even landed a small spacecraft on Titan, one of Saturn's moons. It discovered that Titan has many ingredients needed to support life – all except warmth.

> Cassini travelled 7.9 billion kilometres, orbited Saturn 294 times and discovered six moons.

PARKIR SOLAR PROBI

> The Parker Solar Probe flies through space at about 700,000 kilometres an hour. It has got closer to the Sun than any other probe to collect information on our star.

> > The Parker Solar Probe is the fastest object ever made.

# LIFE IN OUTER SPACE

The Universe is so huge that scientists believe there may be other planets and moons in the Solar System - and beyond - where life could exist.

Earth is called the Goldilocks planet because, like Baby Bear's porridge, it is 'just right'. It has air, liquid water and the chemicals needed for living things. Space missions are searching for The lames Webb telescope is the most more Goldilocks planets. powerful telescope ever sent into space.

Exoplanets are planets outside the Solar System. They are a good place to start looking for life in outer space. Space telescopes, such as the James Webb Space Telescope, have found thousands of them so far. If they have atmospheres and liquid water, exoplanets may have living things on them. No alien life forms have been discovered yet.

It uses a type of light called infrared to

learn about the history of the Universe.

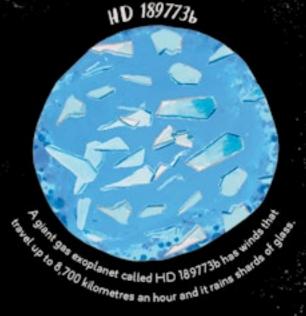


Scientists believe that exoplanet 55 Cancri e may have a solid diamond at its centre.

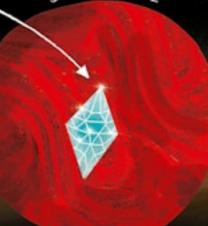
Exoplanet 55 Caneri e is a super-Earth a rocky planet, twice the size of Early

The Roman Space Telescope is able to search a villion galaxies and look closely at the Milky Was to try to find thousands of exoplanels





55 CANCRIF





for Land like companied

The James Webb Space Telescope has a huge metal mirror made The James. The massive sunshield is the size of a tennis court. Its instruments can look at hundreds of objects at once.



Enceladus is one of Saturn's moons. It appears icy, but there is warmth and watery oceans beneath the layers of ice. It's possible that living things are in those oceans.



SC ENCELADOS chilles is the 19th Largest moon in the Sold



# SPACE WORDS



A small, rocky object in space.

### **ASTRONAUT**

A person who travels in space.

### ASTRONOMER

A person who studies space.

### ASTRONOMY

The study of space.

### **ATMOSPHERE**

The layer of gases that surrounds the Earth or other planets or moons.

### BILLION

= 1,000,000,000

### BLACK HOLE

An area in space where gravity is so strong that anything close to it cannot escape.

### COMET

An object in space that is made of rock, dust and icy gases. A comet has a 'tail' which points away from the sun.

### COMMAND MODULE

The control section of a spacecraft.

### CONSTELLATION

One of 88 groups of stars that make an imaginary picture.

### CONTINENT

One of the world's main large areas of land.



### DORMANT

Something that hasn't been active for a very long time.

### DWARF PLANET

An object that orbits the Sun but is smaller than a planet.

### EQUATOR

An invisible line that circles the world around its middle.

### GALAXY

A huge group of stars, gas and dust that are all held together by gravity.

### GAS GIANT

A large planet made mostly of hydrogen and helium and other gases.

### GRAVITY

A force that pulls things towards the centre of a planet or other object in space, such as a moon or sun.

### HEMISPHERE

Half of a sphere.

### HORIZON

The line we see in the distance where land appears to meet the sky

### LIGHT-YEAR

The distance that light travels in one year in the vacuum of space.

### LUNAR MODULE

The part of a spacecraft that lands on the Moon.

### SHOOTING STAR SEARCH

Shooting stars, or meteors, are caused by tiny specks of dust from space. Did you find them all? There is one missing on pages 24–25.

# pages 24-25.

### METEOR / METEORITE

A meteor is a rocky object that flies through Earth's atmosphere, burning as it travels. If it reaches Earth's surface it is called a meteorite.

### MILLION = 1,000,000

### MOON

A natural object that orbits a planet.

### NEBULA

A cloud of gas and dust in space.

### NEUTRON STAR

A type of star that forms after a supernova explosion.

### OBSERVATORY

A place where equipment, such as telescopes, is kept for studying space.

### ORBIT

The path that something follows around a planet or a star.

### PARTICLES

Very small objects.

### PAYLOAD

The objects or people that a spacecraft is carrying.

### PLANET

A large, round object in space that orbits a star.

### SATELLITE

An artificial object that follows an orbit around a planet.

### SHOOTING STAR

Another name for a meteor as it burns in Earth's atmosphere.

### SOLAR SYSTEM

A star and the objects, such as planets, that orbit it.

### STAR

A bright ball of gases in space. The Sun is a star.

### SUN

The Sun is the star at the centre of our Solar System.

### SUPERNOVA

A star that is exploding and becomes much brighter.

### TRILLION

= 1,000,000,000,000

### ULTRAVIOLET RADIATION

A type of energy that exists in sunlight.

### UNIVERSE

Space and everything in it.

### X-RAY RADIATION

A type of energy that passes through many materials that light cannot pass through.











### A TEMPLAR BOOK

FIRST PUBLISHED IN THE UK IN 2024 BY TEMPLAR BOOKS,
AN IMPRINT OF BONNIER BOOKS UK,
4TH FLOOR, VICTORIA HOUSE,
BLOOMSBURY SQUARE, LONDON WC1B 4DA
OWNED BY BONNIER BOOKS
SVEAVÄGEN 56, STOCKHOLM, SWEDEN
WWW.BONNIERBOOKS.CO.UK

TEXT COPYRIGHT © 2024 BY CAMILLA DE LA BEDOYERE ILLUSTRATION COPYRIGHT © 2024 BY AARON CUSHLEY DESIGN COPYRIGHT © 2024 BY TEMPLAR BOOKS

1 3 5 7 9 10 8 6 4 2

ALL RIGHTS RESERVED

ISBN 978-1-80078-474-1

ASTRONOMY EXPERTISE PROVIDED BY JAKE FOSTER OF ROYAL OBSERVATORY GREENWICH, PART OF ROYAL MUSEUMS GREENWICH EDITED BY AMANDA ASKEW AND TAYABAH KHAN DESIGNED BY CHRIS STANLEY PRODUCTION BY NICK READ

PRINTED IN CHINA

