

I, **Luna Scope**, aged seven-and-a-bit Earth years, have a **MISSION ... TO BE AN ASTRONAUT!**

Look at this cool **ROCK**. I bet it's from an alien world!

EARTH TO LUNA! EARTH TO LUNA ...

We have **lift-off**. Look - she's **FLOATING!**

I want to see every **STAR** twinkling in the Milky Way!

Check out my **OUTFIT**. I made this snazzy space helmet!

Top secret plans for my very own **ROCKET**.

I'd **LOVE** to see what **EARTH** looks like from space!

I am **READY FOR LAUNCH!**
FIVE ... FOUR ... THREE ... TWO ...

HANG ON, LUNA! YOU HAVE FORGOTTEN SOMETHING VERY IMPORTANT!

Oops! My test launch made a **MESS**.

Which planet will I **MOVE TO** first?

I hope **PETS** are allowed in space too!

I've got everything I'll ever need for **LIVING IN SPACE**.

TEAM. Blast and I would make a great crew!

My space **HEROES**.

BUZZ ALDWIN

NEIL ARMSTRONG

SPACEDOG



You can't blast off into space just like that, Luna! Space exploration is **FULL** of unexpected twists, turns and **black holes***. You need to know your space stuff before you get started!

You need my ...

Tell me more, Granny!



* **BLACK HOLES** are mysterious, dense areas of space. They are so **powerful** that nearby stars and planets get sucked inside them. So **keep your distance!**

In 2019, new technology pioneered by US computer scientist **Katie Bouman**, plus a team of international scientists, gave us the first ever image of a black hole **500 million trillion kilometres (km)** from Earth!



First things first - don't forget to pack your spacesuit! You'll need it to go on **spacewalks**. These are when repairs, tests and experiments are carried out outside the spacecraft. A spacesuit turns an astronaut into a **superhuman**, able to cope with:

OUT-OF-THIS-WORLD COLD!
The coldest known place in the universe is **-273 °C** (the **coldest place on Earth** is the Antarctic at around **-90 °C**). That means that spacesuits need lots of layers for warmth. Fingers lose heat quickly, so spacesuit gloves contain special **finger heaters!**

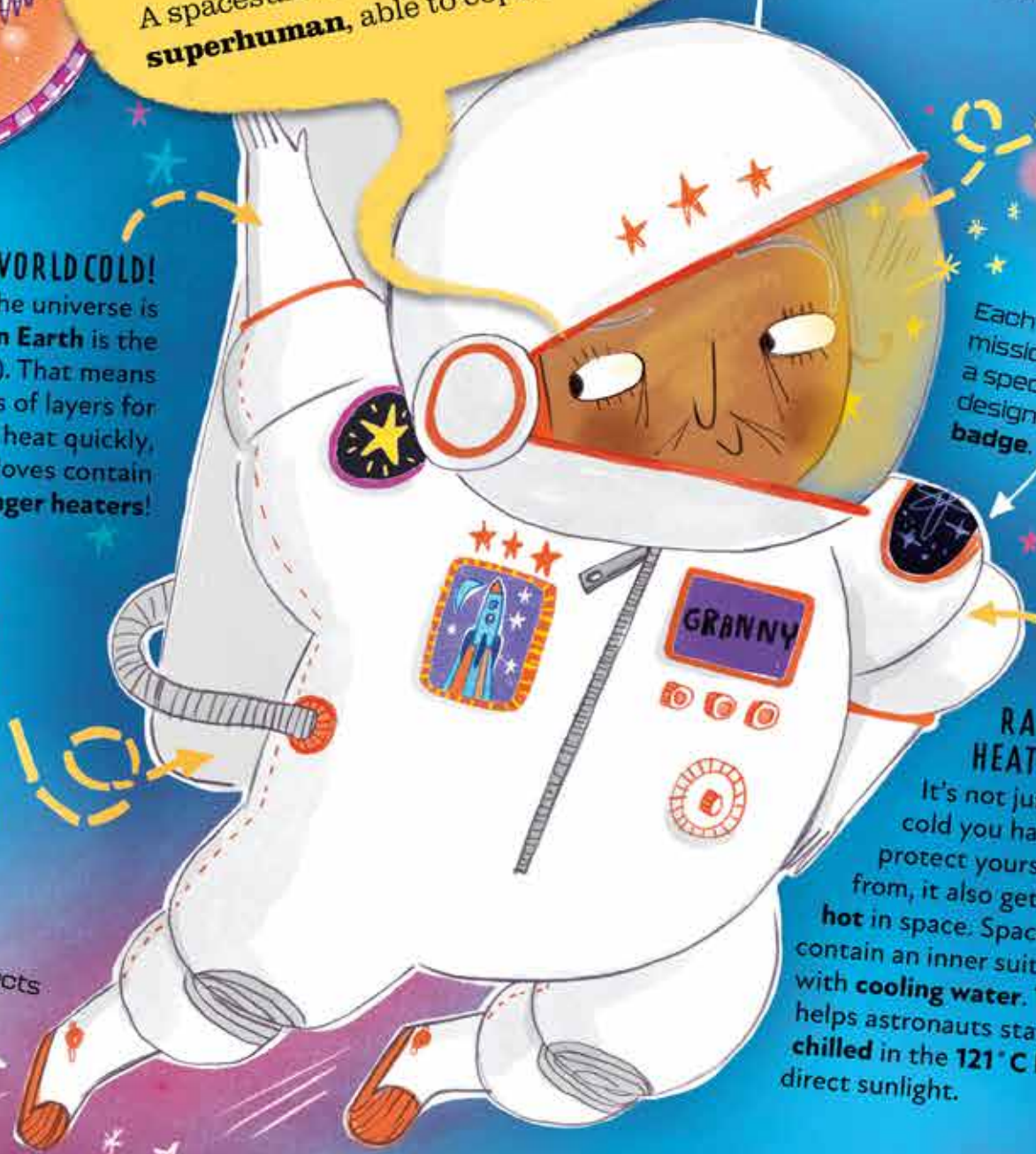
NO OXYGEN!
Humans breathe air, which contains **oxygen**, in order to survive. There isn't any oxygen in space, so astronauts wear **oxygen tanks** so they can breathe. Better keep those tanks **full!**

Spacesuits are **white** because this colour reflects the heat of the Sun best.

DAZZLING LIGHT!
Visors are like **super-duper** space sunglasses. They are coated with **gold** to protect astronauts' eyes from the brightness of the Sun!

Each space mission has a specially designed **badge**.

RAGING HEAT!
It's not just the cold you have to protect yourself from, it also gets **very hot** in space. Spacesuits contain an inner suit filled with **cooling water**. This helps astronauts stay super **chilled** in the **121 °C** heat of direct sunlight.



Those are our outfits sorted, Luna! But before we go **into space**, let's start with where we are now and ...



LOOK UP!

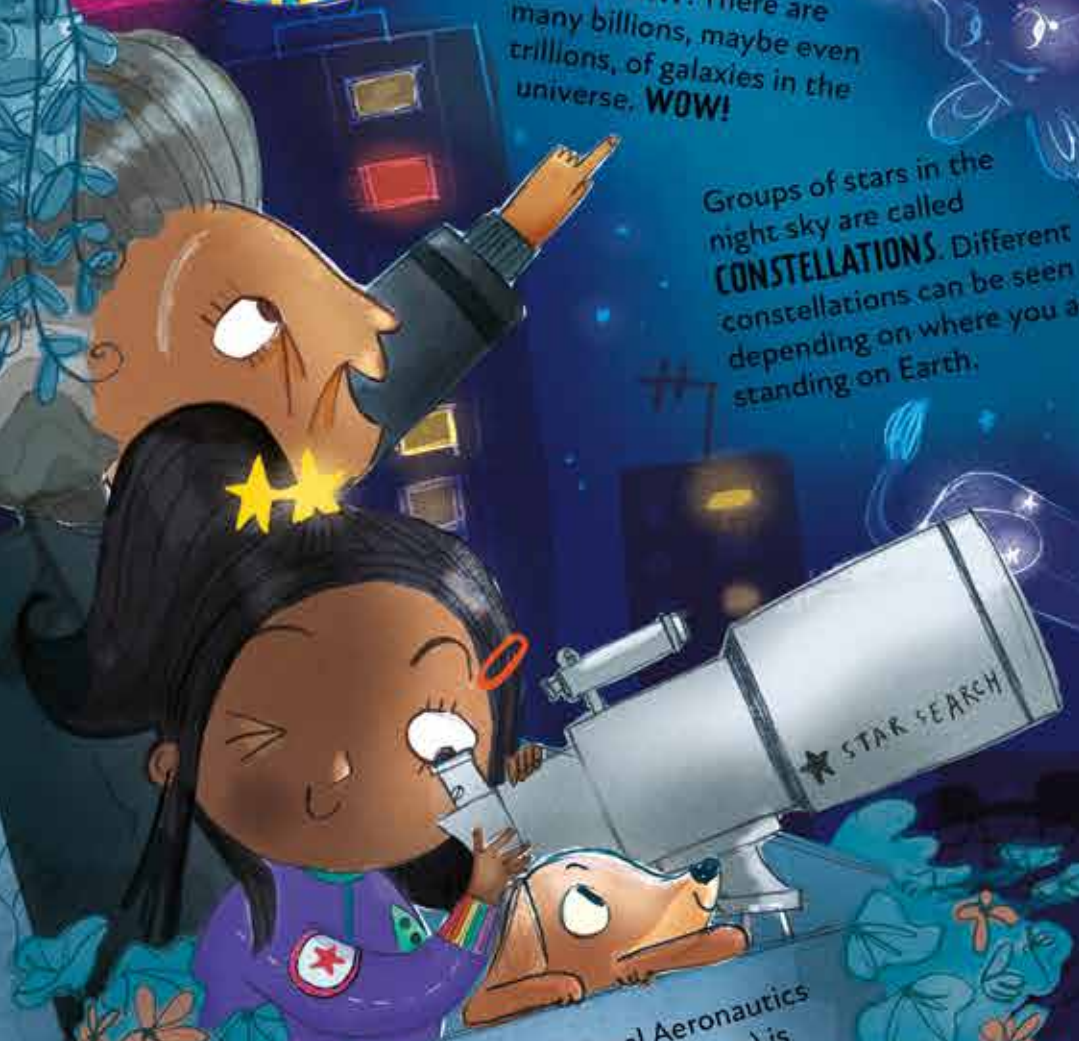
All space travellers need to understand what's in the night sky before going up there. So let's **STARGAZE** and be **AMAZED!**

The stars we can see from Earth are all part of our home galaxy – the **MILKY WAY**. There are many billions, maybe even trillions, of galaxies in the universe. **WOW!**

Groups of stars in the night sky are called **CONSTELLATIONS**. Different constellations can be seen depending on where you are standing on Earth.

The **ANCIENT GREEKS** believed that the **constellations** were placed there by the Gods to remind humans of their **great deeds**.

***NASA** (National Aeronautics and Space Administration) is a US government agency that trains astronauts and researches space and space travel.



URSA MINOR
The small BEAR

URSA MAJOR
The GREAT BEAR

LEO, the LION

LUPINUS
The BEAN

LOOK FURTHER!

TELESCOPES have allowed **astronomers** (people who study stars, planets and the Moon) to see far more than we can with our eyes alone ...

In the 1700s, **CAROLINE HERSCHEL** became the first **professional female astronomer**. For a woman to be paid for her scientific talents was a **remarkable achievement** at the time.



Puerto Rican astronomer **Wanda Diaz-Merced** lost her eyesight in her early 20s, but didn't let it stop her. She now observes the night sky by **listening** to it! Wanda uses a technique that turns starlight gathered by telescopes into **sound waves**. Her pioneering work has opened astronomy to other people with **disabilities**.



I helped to make **HUBBLE** possible.

The **HUBBLE SPACE TELESCOPE** launched in 1990 after over 40 years of planning. Orbiting above Earth's atmosphere, it can peek into distant galaxies and changed our understanding of the universe! **Nancy Roman, NASA's* first ever chief astronomer**, was known as the **'Mother of Hubble'** for her role in making the telescope a reality.

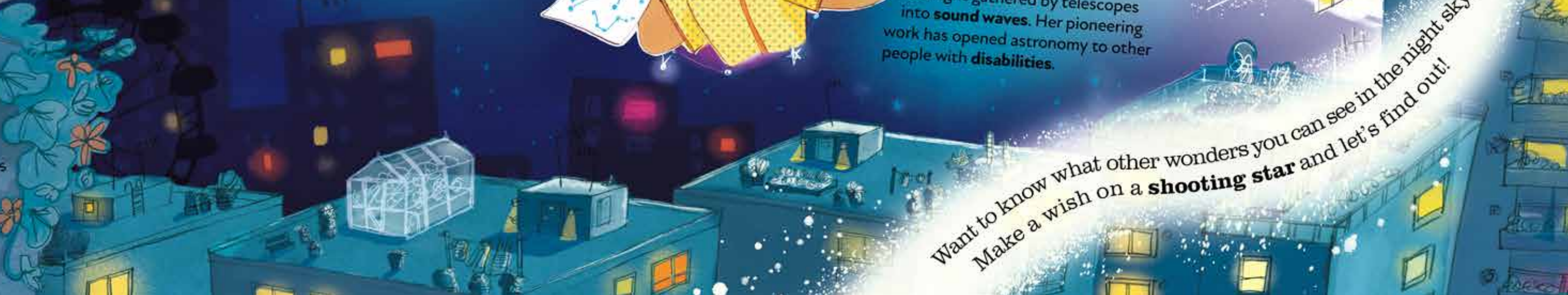
In 2021, the **JAMES WEBB SPACE TELESCOPE** launched. It can see **even deeper** into space than Hubble. It is able to observe some of the first stars and galaxies that formed after the **Big Bang!**

SATELLITES are objects that **orbit** (go around) the Earth. Some send the **signals** that make phones and TVs work.

Hello, hello? Can you hear me?



Want to know what other wonders you can see in the night sky, **Luna?** Make a wish on a **shooting star** and let's find out!



Did you know that a **shooting star** isn't actually a star at all? It is a fragment of space rock whizzing through our atmosphere!



Just popping in to say hi! I'm a **COMET** - a huge ball of dust and ice. As I whizz through space, I leave a bright tail of dust and gas behind me.

JOB: SPACE GEOLOGIST

In the 1960s, **Ursula Marvin** became one of the first **female geologists** to study rocks brought back from the NASA Apollo Moon missions. She also went **meteorite hunting** in the Antarctic and discovered unusual meteorites, flung to Earth millions of years ago after an impact on the Moon!



***GRAVITY** is a powerful, invisible force that attracts objects towards each other. It formed the stars and planets, and is the reason Earth orbits the Sun. It also stops us from floating off into space!

Studying **space rocks** can reveal all sorts of **secrets**, such as what the universe is made from, how old it is and the forces that shape it.

I wear my **meteorite** necklace to feel a little closer to space. It is full of **stardust** and **wonder**, just like you, Luna!

WE ARE ALL MADE OF STARDUST

Our bodies are made up of substances called **elements**. These elements were created by the first ever **stars** around **14 billion** years ago!

Right now **gravity** is keeping us planted on Earth, but you need to be prepared for when there's not enough gravity to stop you **floating away** ...

