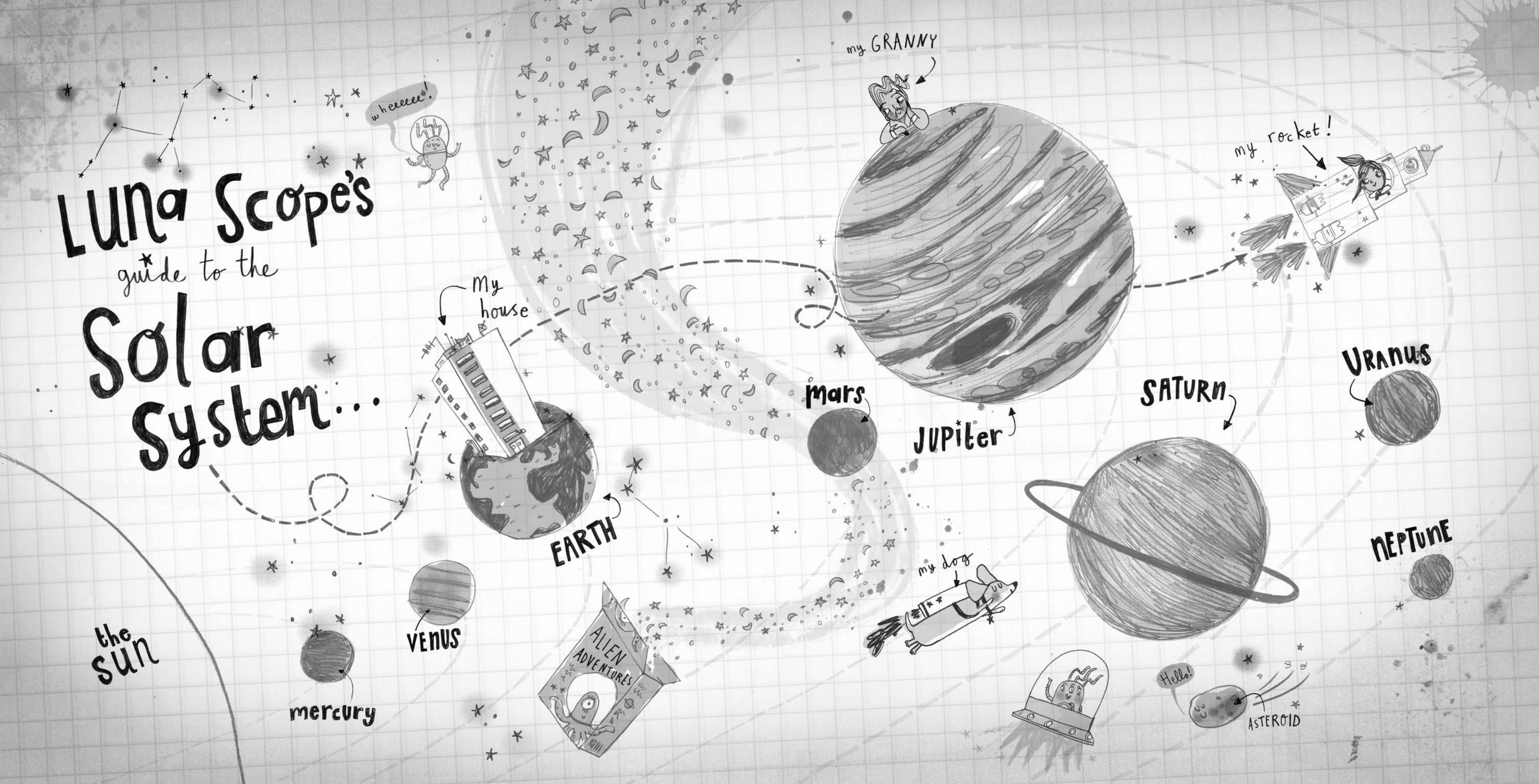
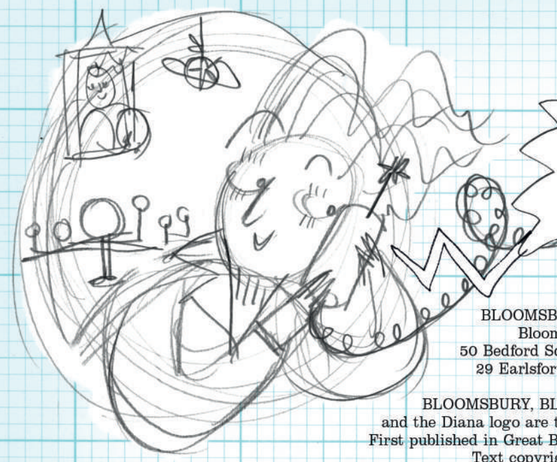

LUNA SCOPE'S
guide to the
Solar System...
wheeeeee!
my GRANNY
my rocket!
My house
EARTH
mars
JUPITER
SATURN
URANUS
NEPTUNE
my dog
ALIEN ADVENTURES
VENUS
mercury
the sun
Hello!
ASTEROID



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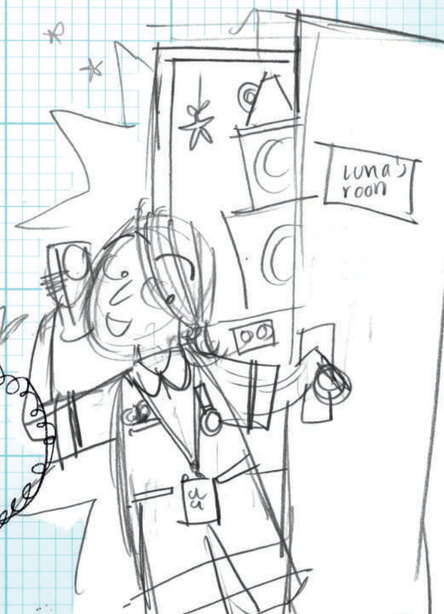


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KATE PANKHURST

WE ARE ALL ASTRONAUTS!





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I, **Luna Scope** aged 7 and a bit Earth years, have a **MISSION ...**
TO BE AN ASTRONAUT!
I made this **snazzy** space helmet ...
I want to see a **BILLION** stars twinkling in the **Milky Way**!
I think this rock might be from a **ALIEN WORLD!** Cool.
We have lift off! LOOK! She's floating!
DO NOT PRESS
FIZZ
TOP SECRET plans for my own space craft.
HEROES OF SPACE!
NEIL ARMSTRONG
BUZZ ALDRIN
Hmm... That's not all the heroes of space
Meet the **CREW!** Me and BLAST!
Everything I'll ever need for **living in space.**
SPACE
PEANUT BUTTER
Whoops! My test launch made a bit of a **MESS.**
Which planet shall I **VISIT** first?
Good bye my **home planet,** I will miss you!
STARS
I am **READY FOR LAUNCH!**
FIVE... FOUR... THREE... TWO ...
EARTH TO LUNA! EARTH TO LUNA! YOU HAVE FORGOTTEN SOMETHING **VERY IMPORTANT!**

Shooting stars Luna Scope – you can't blast off into space just like that! Space exploration is FULL of unexpected twists, turns and **black holes***. You need to know your space stuff first! You need **G.A.S.P**!







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

In **2019**, computer scientist **Katie Bouman** pioneered new technology that produced the first ever image of a black hole a whopping **500 million trillion kilometres** from Earth!



First things first, don't forget to pack your spacesuit! You'll need it to go on **spacewalks**. This is when **repairs**, **tests** and **experiments** outside the space craft happen. A spacesuit turns an astronaut into a SUPER HUMAN able to cope with ...

OUT-OF-THIS-WORLD COLD!

The coldest known place in the universe is **-273°C** below freezing (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 to live, which contains **oxygen**. 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.

That's our outfit sorted! But before we can go **into space**, let's keep our feet on the ground and just ...


Astronomy Skills
LOOK UP!
All space travellers need to understand what they can see 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 countless 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.
URSA MINOR the Small BEAR
LUPUS the Wolf
CANIS MAJOR The GREAT BEAR
LEO, the LION
STAR SEARCH
The ANCIENT GREEKS believed that the constellations were placed there by the Gods to remind humans of their great deeds.
LIGHT POLLUTION from street lights, towns and cities can sometimes make it hard to see the night sky clearly.
LOOK FURTHER!
TELESCOPES have allowed astronomers to see far more than we can with our eyes alone ...
In the 1700s CAROLINE HERSCHEL became the first professional female astronomer. A woman being paid for her scientific talents was a remarkable achievement. At the time women were expected only to get married and have children.
The HUBBLE TELESCOPE launched in 1990. Orbiting above Earth's atmosphere, it can peek into distant galaxies. Nancy Roman, NASA's first female chief astronomer, was known as 'Mother of Hubble' for making the telescope a reality. Hubble changed our understanding of the universe!
I helped to make HUBBLE possible.
Light from the NIGHTSKY
PRIMARY MIRROR
SECONDARY MIRROR
In 2021 the JAMES WEBB telescope launched. It can see even deeper into space than Hubble. It is observing some of the first stars and galaxies that formed after the Big Bang!
SATELLITES are objects that orbit the Earth. Some send signals, making phones and TVs work.
Hello, hello? Can you hear me?
Puerto Rican astronomer Wanda Díaz-Merced lost her eyesight aged 20, but she refused to give up her dream of studying the stars. Wanda now watches the night sky by listening to it! She uses a technique that turns the starlight gathered by telescopes into sound waves. Her pioneering work has opened astronomy to others with disabilities.
Want to know what other wonders you can see in the night sky? Make a wish on a shooting star and we'll find out!

But 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!

Let us explain! Hey! I'm an **ASTEROID**. A large chunk of rock orbiting the sun ...

When asteroids collide with each other, small fragments of rock called **METEOROIDS** break off. That's me!

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.

Earth's **GRAVITY*** pulls me into the atmosphere. Then you get me, a **METEOR**! The streak of light I make in the sky is a **SHOOTING STAR**.

BUMP! I've landed! Pieces of meteor that make it to Earth are called **METEORITES**. Nice to meet you!

PLANET EARTH

SPACE GEOLOGIST

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 causes objects to attract 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** about 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**. The elements in our bodies were created by the first ever **stars** around **14 billion** years ago!



Right now **gravity** is keeping our feet on the ground, but you need to be prepared for when there's not enough to stop you **floating away!**