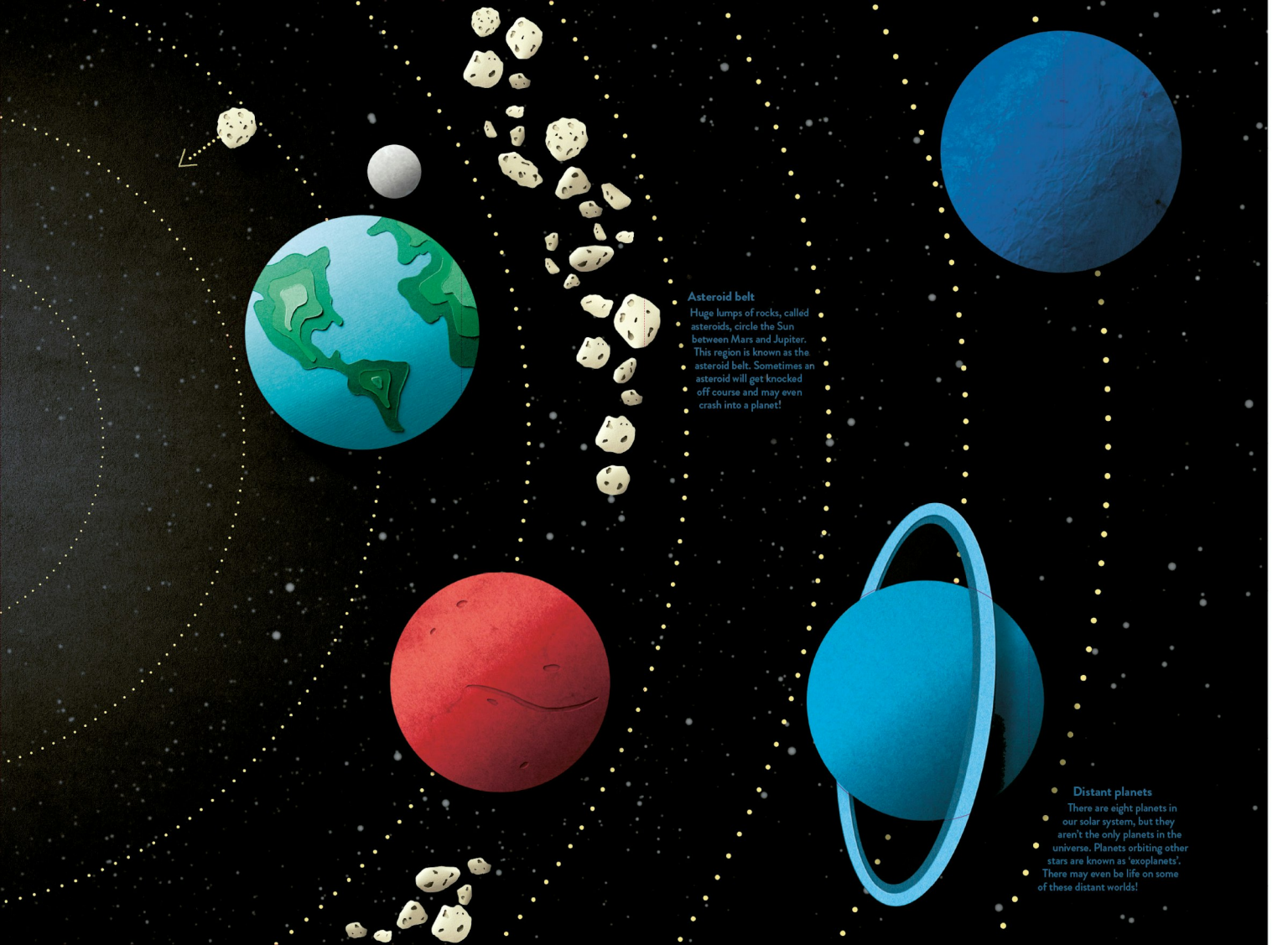


Asteroid belt

Huge lumps of rocks, called asteroids, circle the Sun between Mars and Jupiter. This region is known as the asteroid belt. Sometimes an asteroid will get knocked off course and may even crash into a planet!

Distant planets

There are eight planets in our solar system, but they aren't the only planets in the universe. Planets orbiting other stars are known as 'exoplanets'. There may even be life on some of these distant worlds!

THE SUN

A huge, hot ball of glowing gas, the Sun is in fact our closest star. It is so huge that Earth could fit inside it over 1 million times!

The Sun's immense power comes from reactions deep inside its core. Here, intense pressure makes hydrogen atoms fuse together to make the gas helium, releasing huge amounts of energy. The Sun has been shining for 4.6 billion years and will keep shining as long as it has hydrogen in its core. However, one day this fuel will run out. When this happens, the Sun will expand into a red giant star, then collapse to make a dead star called a white dwarf. There's no need to worry, though – that won't happen for another 7 billion years or so!

Parker Solar Probe
NASA's Parker Solar Probe launched in 2018 and will be the first probe to 'touch' the Sun.

Warning!
The Sun's light is so bright that it can harm your eyes – even through sunglasses! It's advisable to never look directly at it.

Prominence
A prominence is a loop of gas above the Sun's surface. Some are as long as the distance from Earth to the Moon.

Sunspot
Sunspots are dark areas on the surface of the Sun, which are cooler than the region around them. They occur where the Sun's magnetic field is especially strong.

Solar flare
A solar flare is an explosion of energy on the Sun's surface. Some are so intense that they can interfere with radio communications on Earth!

Sun weather
Sometimes the Sun's surface is calm, and other times it is very active. This Sun weather, called the solar cycle, peaks every 11 years.

ASTEROIDS AND COMETS

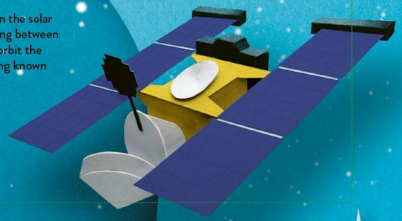
Floating between the planets are billions of lumps of rock and ice. They are the leftovers from the formation of the solar system. Some are nearly as big as planets themselves, while others are little more than dust drifting through space. They can all be split into three different groups – asteroids, comets and dwarf planets – according to their shape and composition.

Most asteroids and comets orbit the Sun, but sometimes events in space can send them hurtling off course and even crashing into a planet or moon.

Asteroids
Asteroids are lumps of metal and rock with a clumpy, potato-like shape.

Meteorite or meteoroid?
Around 200 tons of dust and rock enters Earth's atmosphere every day. Most burns up on entry, showing as a bright streak of light in the sky. If objects hit the ground they are called meteorites. In outer space, they are known as meteoroids.

Asteroid belt
The biggest asteroids in the solar system all occur in a ring between Mars and Jupiter and orbit the Sun, forming something known as the asteroid belt.



Stardust
In 2004, the Stardust probe flew close to a comet and brought back some of its dust to study on Earth.

Comet
A comet is a ball of ice and dust orbiting the Sun. As it approaches the Sun, its icy centre starts to melt, and gas and dust trail behind it in a long tail. These are often so bright they can be seen from Earth!

THE BIG BANG

The universe burst into existence around 13.8 billion years ago, in a moment called the Big Bang. In the blink of an eye, it expanded from smaller than a full stop to bigger than a city.

1: The Big Bang
This happened around 13.8 billion years ago.

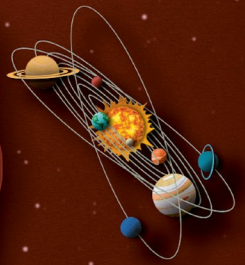
2: The universe expands
The universe doubled in size more than 90 times in a fraction of a second.

3: The first atoms
After 380,000 years, electrons were sucked into orbit around neutrons and protons.

4. The first stars
The first stars formed 200 million years after the Big Bang.

5. The first galaxies
One billion years after the Big Bang, the first large galaxies appeared.

6: The solar system forms
Nine billion years after the Big Bang, our Sun and solar system are born.



Our expanding universe

Ever since the Big Bang, the universe has been growing. Astronomers expected this expansion to slow down eventually, but that's not what is happening. Instead, the expansion seems to be speeding up! Astronomers think this is because of a kind of anti-gravity force called 'dark energy'.

The end of the universe

Nobody knows how the universe might end, but astronomers have predicted three very different possibilities for the future of our universe. Luckily, none of them will happen for billions of years.