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AND HOW IT MIGHT END

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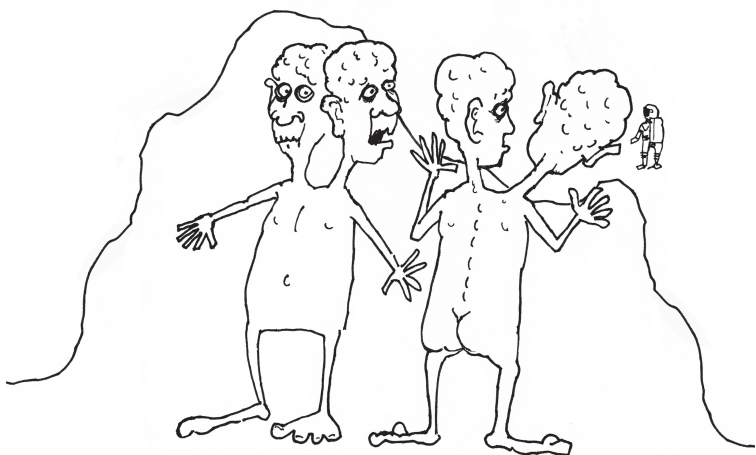
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_____ **3 ... 2 ... 1 ... Liftoff!** _____



If you've ever wondered what it would be like to walk on the surface of the Moon or wanted to pinpoint your place in the Universe – if you've ever dreamed of becoming an astronaut or hoped that one day you might meet an alien, look no further. This book will tell you everything you've ever wanted to know about space, from the edge of Earth's atmosphere to the edge of the Universe, if there is one.



See the sights of the Solar System, take a trip around the Milky Way, explore the Universe from beginning to end and find out what it's really like to live in space.

Get ready ... and ... liftoff!

THE EARTH, THE MOON AND IN BETWEEN



A Remarkable Rock

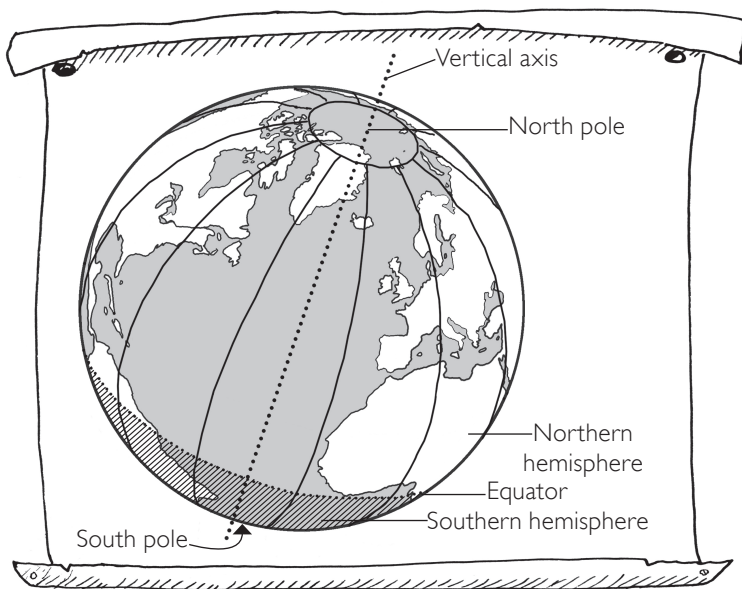


Earth is a rocky planet, the fifth largest in a group of eight planets that form part of the Solar System – all revolving around a star called the Sun. Nothing remarkable in that. After all, there are billions of other stars in the Universe, and plenty of far larger planets. Except Earth is the only known place in the Universe to support life – and that means you.

The world is remarkable, and for a long time people thought everything they could see in the sky – the Sun, Moon, stars and other planets – revolved around Earth. Understandable, really, but science has shown that things aren't so simple. Earth isn't the centre of the Universe, yet it is still incredible.

Planet Blueprint

You're about to read a lot more about Earth, so here are some of the most important bits labelled:



Quite A Waistline

If Earth was perfectly spherical, its diameter would be the same wherever you measured it. However, like many planets, it is slightly flattened at the poles and slightly wider at the equator – the imaginary line that runs round the middle of the planet. Earth is 12,756 kilometres in diameter at the equator, which makes it 42 kilometres wider than it is tall.

Round And Round

Earth travels round the Sun in an oval-shaped journey known as an orbit. Earth's average distance from the Sun is roughly 149.6 million kilometres, but this distance varies at different points in its orbit. The closest the planet gets to the Sun is 147.1 million kilometres, and the furthest it gets is 152.1 million kilometres – a difference of just 5 million kilometres.

This difference is not a huge variation compared to some planets. For example, Saturn's orbit means that it has a difference of more than 150 million kilometres between its nearest and farthest points from the Sun.

What A Spinner!

Earth may feel rock-solid and perfectly still to you, but the planet is actually constantly on the move. Every 23 hours, 56 minutes and 4.09 seconds, it completes a full 360 ° rotation on its vertical axis. To do this, the planet is rotating rapidly. In fact, it's spinning so fast that the surface at the equator is speeding along at approximately 1,670 kilometres per hour, or km/h – almost twice the speed of a jet airliner!

That's not all – as it spins on its axis, the Earth is hurtling through space on its orbit around the Sun at a speed of 30 kilometres per second, or km/s. Not impressed?

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Well change that into kilometres per hour and you get 107,218 km/h. *Whoosh!*



At that rate, Earth completes an orbit once every $365\frac{1}{4}$ days – 365 days, 5 hours, 48 minutes and 46 seconds, to be precise.

That's why, every four years, an extra day is added to the end of February to make a leap year of with 366 days instead of 365 to make up the difference.

Tilted

Earth doesn't move through space in a bolt upright position. It is tilted towards the Sun at a constant angle of 23.5° . While the planet orbits the Sun, its tilt creates the seasons. As one hemisphere is tilted more towards the Sun for part of the journey, it enjoys its summer with warmer temperatures and more hours of daylight, while the other hemisphere is cast into winter. As the Earth continues its orbit, the seasons are reversed.

