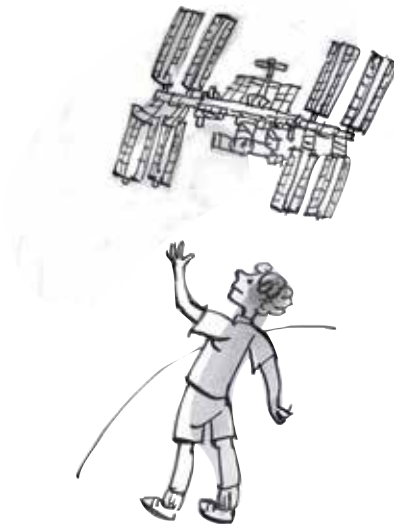


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STEM GLOBAL

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# EXPLORING SPACE



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# SO MUCH TO EXPLORE

Ever since humans first walked the Earth they have been fascinated by what they could see in the sky – the Sun, the Moon and the stars. Some early astronomers even picked out the lights of the closest planets. At first, these wonderful objects were explained through myths and stories. Then, as the science of [astronomy](#) was born and telescopes improved, more was understood.

Now, in the age of [rockets](#), astronauts and [space probes](#) we can explore space as never before. But space is incredibly big – bigger than we can imagine. And there is still much more to find out.

## NASA

[NASA](#) stands for the National Aeronautics and Space Administration. The American organisation opened in 1958 to carry out research and development work in space flight programme, [aeronautics](#) and space science. The first major human spaceflight, Project Mercury, was designed to see if humans could survive in space. Six times NASA landed astronauts on the Moon, and went on to play a key part in the construction of the [International Space Station](#).



*NASA headquarters, the Johnson Space Center in Houston, USA.*

## The challenges

NASA, together with space agencies in Russia and Europe, has also led the way in space exploration and technology. Many unmanned space probes now visit and send back data on our neighbouring planets. We now also understand much about the size and age of our universe through orbiting space telescopes.



*The crew of ISS expedition 24.*



*The [Soyuz](#) rocket stands on the launch pad at Baikonur Cosmodrome in Kazakhstan ready to carry crew 50/51 to the ISS.*

## The [astronauts](#)

Both the USA and Russia have been training astronauts and sending them into space on missions for over 50 years. Nowadays, astronauts from all over the world also take part.

The crew of the International Space Station (ISS) changes regularly – there have been some 58 crews who have taken turns to work up there. Here's a photo of the crew of Expedition 24 before they set off. From the left are: Russian cosmonaut Alexander Skvortsov – the expedition commander – then NASA astronaut Tracy Caldwell Dyson and Doug Wheelock – Russian cosmonauts Michail Kornienko and Fyodor Yurchikhin; and NASA astronaut Shannon Walker – all flight engineers.



# OUR PLANET

Our planet Earth was formed 4.8 billion years ago from a giant cloud of gas, plasma and dust. It's one of the four inner planets known as **terrestrial planets** because they are made up mostly of rocks and metals. Earth is the largest and densest of these. It moves around the Sun in an almost circular path, or **orbit**, of 149,598,262 kilometres (km) that takes 365.25 days, or a year. At the same time, it revolves, or turns, on its **axis** once every 23.9 hours, almost a day.

*Earth and the Moon seen from space.*



## OUR MOON

The Moon is the Earth's one **natural satellite**. A satellite is an object that orbits, or travels around another object such as a planet, in space. The Moon orbits the Earth every 27 days, 7 hours, 43 minutes and 11.5 seconds. It keeps its position on a path around us through the force of its own gravity as well as the Earth's **gravity**, even if it's slowly moving away from us by a few centimetres (cm) each year.

## PARTNERS IN SPACE

Every night, our Moon turns up in the sky with dependable regularity. It's like a partner that's always around. And that is what it is. Scientists believe the Moon was torn away four to five billion years ago when an object about half the size of our planet collided with the us.

Not only does the Moon provide reflected light at night, its gravitational pull helps calm Earth's wobble on its axis. This gives us a much more stable climate. The pull also creates **tides** that have helped us for thousands of years. Certainly the Moon has made life on Earth easier.

### KEY WORDS:

terrestrial planet

orbit

axis

natural satellite

gravity

tide

