

KS1 Science: Space

How does the Earth travel around the sun?

- MADDIE MOATE:** It's estimated that the Earth is home to about three trillion trees, and around 9 million different types of animals - including about 8 billion people. It's the only planet in the universe - that we know of - which has life on it. All life on Earth depends on the sun.
- CHILD:** The sun is a huge burning star which gives out heat and light.
- CHILD:** The Earth is the third closest planet to the sun and has perfect conditions for life to exist.
- MADDIE:** The Earth travels around the sun and each complete circle - or 'orbit' - takes about one year.
- CHILD:** But why does the Earth travel around the sun instead of travelling in a straight line through space?
- MADDIE:** It's all to do with gravity. Gravity is the invisible force that pulls objects towards each other.
- CHILD:** The sun has gravity too - pulling the Earth towards it. That's why when we drop these objects they fall down to the ground.
- MADDIE:** Everything in the universe has gravity, including the sun. The sun's gravity is pulling the Earth towards it. Stopping the Earth from floating away.
- CHILD:** Ok, but why doesn't the Earth crash into the sun?
- MADDIE:** The Earth is travelling very fast through space. If the sun didn't have gravity the Earth would travel in a straight line. But the sun's gravity pulls the Earth towards it, causing the Earth to circle around - or orbit - the sun. It takes the Earth 365 days to orbit the sun: that's a whole year.
- CHILD:** Actually! It's 365 and a quarter days!
- CHILD:** But you can't have a quarter of a day.
- MADDIE:** That's why every four years we have to add another day to February to make it right.
- CHILD:** We call that a leap year.
- CHILD:** If the sun is always in the same place, why do we see it move across the sky?
- MADDIE:** Great question! Let's ask an expert.

- DR BECKY: Hi, I'm Dr Becky and I am a space expert. Now although it might look like it's the sun that's moving in the sky, it's actually us here on planet Earth that are moving. Just like when you sit in a car and you look out of the window, and you see buildings zooming past you. It's not the buildings that are moving, it's you in the car. So, in the same way when the Earth moves around the sun on it's orbit, it also spins around once every 24 hours or one day. And so, it appears as if the sun is moving, but actually it's the earth that's spinning. So as our side of the Earth faces the sun, that's when it's daytime for us. And then as the earth spins on its axis and then our side of the Earth faces away from the sun, that's when it's night time.
- MADDIE: Earth has one moon, and while the Earth orbits the sun, the moon orbits the Earth. It takes 27 days for the moon to make one rotation around the Earth. The moon reflects the sun's light. As it moves around the Earth, the amount of sunlight that falls on the surface changes. To us on Earth it looks like the moon changes shape; that's because we are only able to see the part of the moon that is reflecting the sun's light. Every object that exists has gravity. The Earth's gravity pulls the moon, but the moon's gravity also pulls the Earth. This is what causes the tides - the movement of water in the seas and oceans on Earth.
- CHILD: That's why when you go to a beach the ocean can be at high tide, low tide or in between!
- MADDIE: The Earth is constantly changing.
- CHILD: I know what's always changing on Earth - the seasons!
- MADDIE: The seasons change because the Earth is not sitting straight: it's tilted. And as Earth orbits the sun a different part of the Earth is tilting towards the sun. When the upper part of the Earth is tilted towards the sun it gets more light and warmth, so it would be summer there. At the same time, the lower part of the Earth is tilted away from the sun; it gets less light and warmth, so it would be winter there.
- MADDIE: What are you all up to?
- CHILD: We're making up poems about the seasons.
- CHILDREN: Listen to this one. *Spring hums like a bee on the breeze*
Summer sings like the birds in the trees
Autumn crackles like the leaves on the ground
Winter whispers, barely making a sound. Shhhhhh!
- MADDIE: Very nice! Could you write some words or even your own poem about the seasons?
-