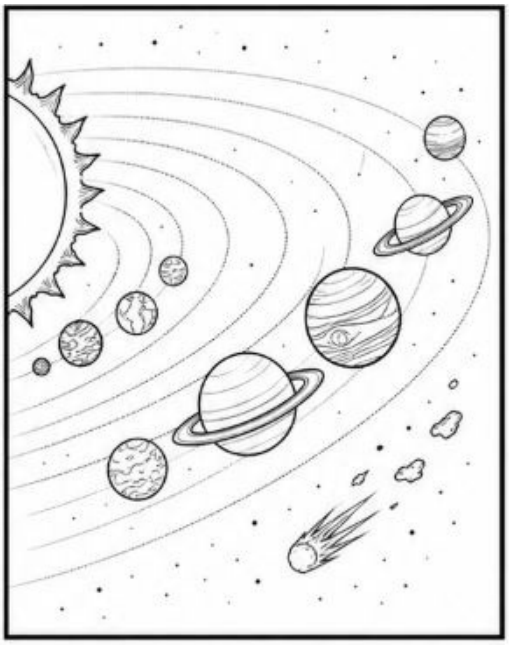
The Solar System



Our Solar System is made up of the Sun, eight planets, moons, asteroids, comets and other objects that travel through space. At the centre of the Solar System is the Sun, a huge star that gives out light and heat. Without the Sun's energy, life on Earth would not be possible.

The planets move around the Sun in curved paths called orbits. They are held in place by gravity, an invisible force that pulls objects towards each other. Mercury is the closest planet to the Sun, while Neptune is the furthest away. Earth takes about 365 days, or one year, to complete one full orbit around the Sun.

The planets are not all the same. Some, such as Mercury, Venus, Earth and Mars, are rocky planets with solid surfaces. Others, including Jupiter and Saturn, are gas giants. These planets are much larger and are mostly made from gases rather than rock.

Scientists study the Solar System using powerful telescopes, satellites and spacecraft. By observing planets, moons and stars, they can collect evidence about how space works. Learning more about the Solar System helps us understand Earth, protect our planet and explore whether life could exist elsewhere.

Directions: Use a coloured pen or pencil to highlight the evidence for each question, then write your answer.

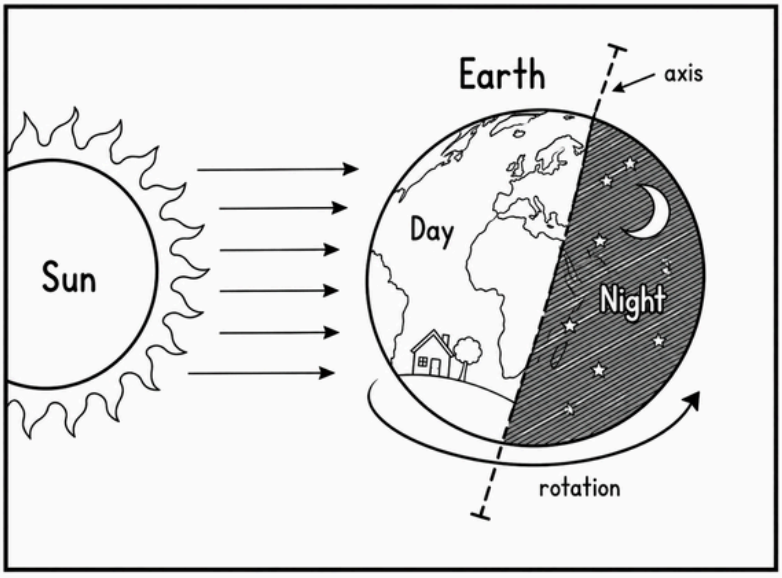
1. What is at the centre of the solar system? **Blue**

2. What does the word 'orbit' mean in the text? **Green**

3. How are rocky plants different from gas giants? **Red**

4. Why do you think scientists study the Solar System? **Orange**

Why Do We Have Day and Night?



Every day, the Sun appears to rise in the east, move across the sky and set in the west. Although it looks as if the Sun is travelling around Earth, this is not actually what is happening. The Sun seems to move because Earth is constantly spinning.

Earth spins on an imaginary line called its axis. This movement is called rotation. It takes about 24 hours for Earth to complete one full rotation. This is the length of one day.

As Earth rotates, different parts of the planet face towards or away from the Sun. The side facing the Sun has daylight because it receives light and heat. At the same time, the side facing away from the Sun is in darkness, so it is night there.

This means that when it is daytime in one part of the world, it is night time somewhere else. The Sun has not disappeared at night; our part of Earth has simply turned away from it. As Earth keeps rotating, we eventually turn back towards the Sun and a new day begins.

Directions: Use a coloured pen or pencil to highlight the evidence for each question, then write your answer.

1. **Why does the Sun appear to move across the sky?** Blue

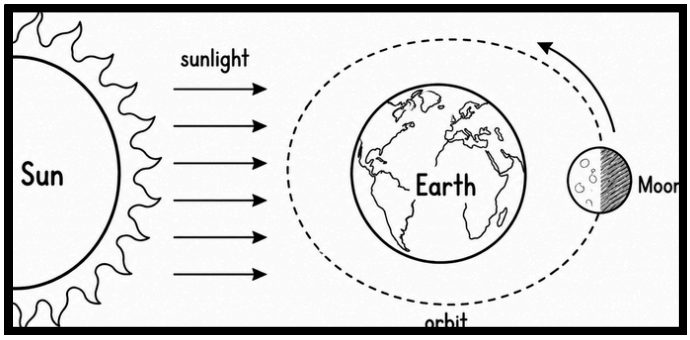
2. **Find and copy <u>one</u> word that means the same as 'spinning'.** Green

3. **How long does it take Earth to complete one full rotation?** Red

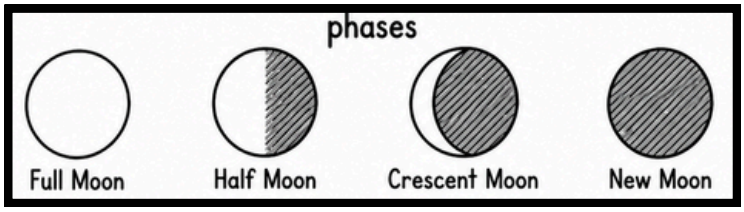
4. **Why is it daytime in some parts of the world while it is nighttime somewhere else? Use evidence from the text.** Orange

The Moon and Its Orbit

The Moon is Earth's only natural satellite. A satellite is an object that travels around a planet. The Moon does not make its own light. Instead, it reflects light from the Sun, which is why we can see it shining in the night sky.



The Moon moves around Earth in a path called an orbit. It takes about 27 days for the Moon to travel once around Earth. At the same time, Earth is also moving around the Sun, so the Moon, Earth and Sun are always changing position.



As the Moon orbits Earth, we see different amounts of its sunlit side. This makes the Moon appear to change shape during the month. These shapes are called phases. The Moon itself is not changing shape, and it is not disappearing. We are simply seeing different parts of the side that is lit by the Sun.

The Moon affects Earth in several ways. Its gravity helps to cause ocean tides, which are the regular rise and fall of sea levels. Scientists study the Moon to learn more about space, Earth's history and what it might be like for humans to explore other worlds.

Directions: Use a coloured pen or pencil to highlight the evidence for each question, then write your answer.

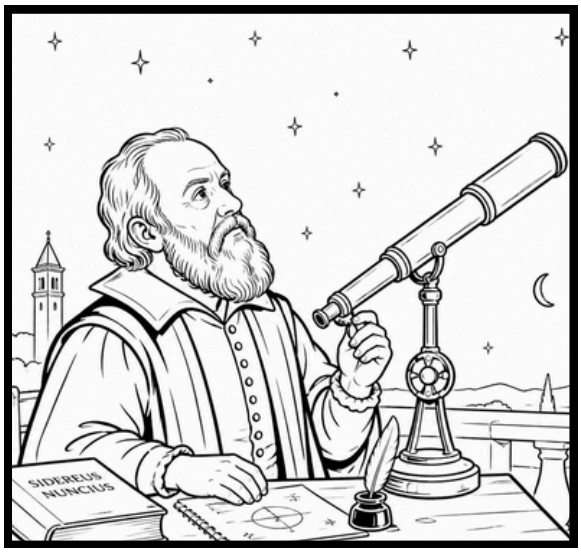
1. **What is a natural satellite?** Blue

2. **Find and copy the phrase that tells you the Moon does not produce its own light.** Green

3. **Why does the Moon appear to change shape during the month?** Red

4. **Explain one way the Moon affects Earth. Use evidence from the text.** Orange

Galileo Galilei



For many years, people believed that Earth was at the centre of the universe. They thought the Sun, Moon, planets and stars all travelled around Earth. This idea was accepted by many important people, so it was difficult to challenge.

Galileo Galilei was an Italian scientist who lived over 400 years ago. He used a telescope to observe the night sky in more detail than most people had before. Through his observations, Galileo discovered that Jupiter had moons travelling around it. This was important because it showed that not everything in space orbited Earth.

Galileo also observed that Venus appeared to change shape, a little like the Moon. This gave him more evidence that Venus was moving around the Sun. His discoveries supported the idea that the planets orbit the Sun, not Earth.

Many people disagreed with Galileo because his ideas challenged what they believed. However, his work helped change the way people understood the Solar System. Today, Galileo is remembered as an important scientist because he used observation and evidence to question old ideas.

Directions: Use a coloured pen or pencil to highlight the evidence for each question, then write your answer.

1. What did many people believe about Earth for many years? Blue

2. Find and copy one word that means "to look at carefully". Green

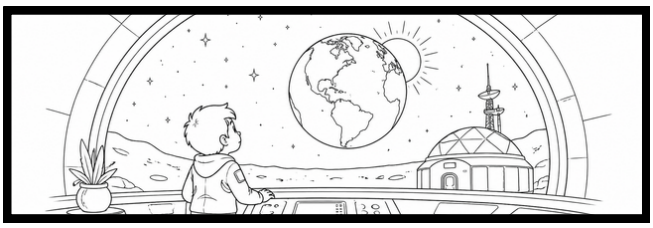
3. Why was Galileo's discovery of Jupiter's moons important? Red

4. Why do you think some people disagreed with Galileo's ideas? Use evidence from the text. Orange

The Night the Sun Disappeared

Nova was halfway through her homework when the warning siren sounded. Outside the window of Moonbase Lumen, the golden surface of the Moon began to darken. Long shadows stretched across the silver dust. One by one, the solar lamps flickered, dimmed and went out. Nova rushed to the observation dome. Above her, Earth hung in the black sky like a blue and white marble. Beside it, the Sun was sliding behind the curve of the planet.

"The Sun is disappearing!" Nova gasped.
Commander Vale looked up from the control panel.
"Not disappearing," she said calmly. "Being hidden."
Nova stared as the last edge of sunlight vanished. Darkness swallowed the dome. For a moment, the only light came from the stars and the soft glow of Earth far away.
"Earth is between us and the Sun," Commander Vale explained. "When one object blocks light from another, it casts a shadow. We are passing through Earth's shadow."
Nova pressed her hand against the glass. The Moonbase was silent. Even the machines seemed to be holding their breath.
"How long will it last?" she whispered.
"Not forever," said Commander Vale.
"Nothing in space stays still. Earth, the Moon and the Sun are always moving."



Slowly, a silver line of light appeared at the edge of the dome. Then the Sun burst back into view, flooding the Moonbase with brightness. Nova smiled. The Sun had not disappeared at all. For a little while, the Moon had simply travelled through Earth's shadow.

Directions: Use a coloured pen or pencil to highlight the evidence for each question, then write your answer.

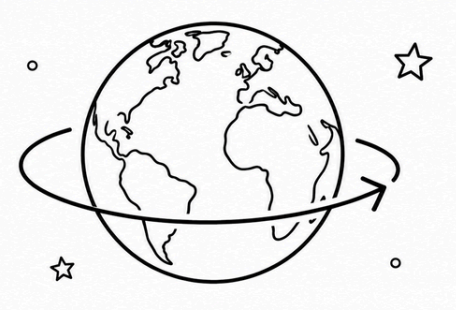
1. Where is Nova when the warning siren sounds? Blue

2. Find and copy the phrase that shows Nova is worried. Green

3. Why did the Sun seem to disappear from Moonbase Lumen? Red

4. How does Nova's understanding change by the end of the story? Use evidence from the text. Orange

Spinning Earth



Earth turns slowly, round and round,
though we do not hear a sound.
On its axis, tilted high,
spinning underneath the sky.

Morning stretches, pale and bright,
chasing shadows from the night.
As we turn towards the Sun,
day begins for everyone.

Then our place turns slowly away,
golden light begins to stray.
Stars appear, the Moon shines bright,
and our side of Earth has night.

Still the planet does not stop,
turning like a giant top.
While we sleep, somewhere far away,
other children start their day.

Round and round, Earth spins in space,
bringing night and day in place.
Sunrise, sunset, dark and light,
Earth keeps turning through the night.

Directions: Use a coloured pen or pencil to highlight the evidence for each question, then write your answer.

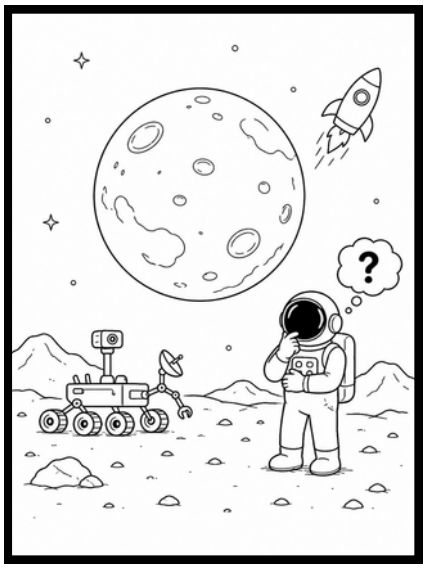
1. **What happens as we turn towards the Sun?** Blue

2. **Find and copy one pair of rhyming words from the poem.** Green

3. **What does the phrase "turning like a giant top" tell you about Earth?** Red

4. **How does the poet show that when it is night for us, it is daytime somewhere else? Use evidence from the poem.** Orange

Should Humans Travel to Mars?



Mars has fascinated people for many years. It is often called the Red Planet because iron-rich dust on its surface gives it a rusty colour. Scientists have sent rovers and spacecraft to Mars to collect evidence, take photographs and study what the planet is like. Some people believe humans should travel there next.

One reason to send humans to Mars is that astronauts could explore in ways that robots cannot. They could make decisions quickly, collect unusual samples and carry out experiments on the surface. This might help scientists learn more about the history of Mars and whether life could ever have existed there.

However, travelling to Mars would be extremely difficult. The journey would take many months, and astronauts would need enough food, water, oxygen and protection from space radiation. Mars is also a harsh place. It is very cold, has dust storms and does not have air that humans can breathe.

Some people think money spent on Mars missions could be used to solve problems on Earth, such as climate change, poverty or protecting wildlife. Others argue that space exploration leads to new inventions and helps us understand our own planet better.

At the moment, humans have not walked on Mars. Whether they should go in the future is still a big question. To decide, people must think carefully about the risks, the cost and what we might learn.

Directions: Use a coloured pen or pencil to highlight the evidence for each question, then write your answer.

1. Why is Mars often called the Red Planet? ◀ Blue

2. Find and copy one word that means “very difficult or unpleasant”. ◀ Green

3. Give one reason why some people think humans should travel to Mars. ◀ Red

4. Should humans travel to Mars? Explain your opinion using evidence from the text. ◀ Orange

Mark Scheme

Before your child answers the questions, encourage them to go back to the text and highlight the evidence that helps them. This means finding the word, phrase or sentence that gives them the answer or clue.

This is an important comprehension skill because it teaches children to prove their answers using the text, rather than guessing or relying on memory.

Your child does not need to highlight large chunks of the text. A short phrase or sentence is usually enough.

Helpful tips for struggling children

If your child is finding it tricky, try these steps:

1. **Read the question together.**
2. **Ask: "What is this question asking us to find?"**
3. **Look for key words.**
4. **Choose an important word from the question and scan the text to find it or a similar word.**
5. **Read around the evidence.**
6. **Once your child finds the key word, read the sentence before and after it to check it makes sense.**
7. **Highlight only the useful part.**
8. **Encourage your child to highlight the sentence or phrase that gives the answer, not the whole paragraph.**
9. **Say the answer out loud first.**
10. **Before writing, ask your child to explain their answer in their own words.**
11. **Write in a full sentence.**
12. **They can use part of the question to help them start.**

The Solar System

Question	Answer	Evidence to Hightlight	Marks
1	The Sun is at the centre of the Solar System.	"At the centre of the Solar System is the Sun..."	1
2	An orbit is the curved path a planet follows as it moves around the Sun.	"The planets move around the Sun in curved paths called orbits."	1
3	Rocky planets have solid surfaces. Gas giants are much larger and are mostly made from gases rather than rock.	"rocky planets with solid surfaces" and "gas giants... are much larger and are mostly made from gases rather than rock"	2
4	Scientists study the Solar System to understand how space works. They can also learn more about Earth, protect our planet and explore whether life could exist elsewhere.	"collect evidence about how space works" and "helps us understand Earth, protect our planet and explore whether life could exist elsewhere"	2

Mark Scheme

Why Do We Have Day and Night?

Question	Answer	Evidence to Hightlight	Marks
1	The Sun appears to move because Earth is constantly spinning.	"The Sun seems to move because Earth is constantly spinning."	1
2	rotation	"This movement is called rotation."	1
3	It takes about 24 hours for Earth to complete one full rotation.	"It takes about 24 hours for Earth to complete one full rotation."	2
4	It is daytime on the side of Earth facing the Sun because it receives light and heat. It is nighttime on the side facing away from the Sun because it is in darkness.	"The side facing the Sun has daylight..." and "the side facing away from the Sun is in darkness..."	2

The Moon and Its Orbit

Question	Answer	Evidence to Hightlight	Marks
1	A natural satellite is an object that travels around a planet.	"A satellite is an object that travels around a planet."	1
2	"The Moon does not make its own light."	"The Moon does not make its own light."	1
3	The Moon appears to change shape because, as it orbits Earth, we see different amounts of its sunlit side.	"As the Moon orbits Earth, we see different amounts of its sunlit side."	2
4	The Moon's gravity helps to cause ocean tides, which are the regular rise and fall of sea levels.	"Its gravity helps to cause ocean tides, which are the regular rise and fall of sea levels."	2

Mark Scheme

Galileo Galilei

Question	Answer	Evidence to Hightlight	Marks
1	Many people believed that Earth was at the centre of the universe and that the Sun, Moon, planets and stars travelled around Earth.	"people believed that Earth was at the centre of the universe" and "the Sun, Moon, planets and stars all travelled around Earth"	1
2	observe	"He used a telescope to observe the night sky..."	1
3	It was important because it showed that not everything in space orbited Earth.	"Jupiter had moons travelling around it" and "it showed that not everything in space orbited Earth"	2
4	Some people disagreed because Galileo's ideas challenged what they already believed.	"his ideas challenged what they believed"	2

The Night The Sun Disappeared

Question	Answer	Evidence to Hightlight	Marks
1	Nova is at Moonbase Lumen.	"Outside the window of Moonbase Lumen..."	1
2	"The Sun is disappearing!" or "How long will it last?" or "Nova gasped."	"The Sun is disappearing!" Nove gasped / "How long will it last?"	1
3	The Sun seemed to disappear because Earth was between Moonbase Lumen and the Sun, so the base was passing through Earth's shadow.	"Earth is between us and the Sun" and "We are passing through Earth's shadow."	2
4	At first, Nova thinks the Sun is disappearing, but by the end she understands that the Moon had travelled through Earth's shadow and the Sun had not really disappeared.	"The Sun is disappearing!" and "The Sun had not disappeared at all."	2

Mark Scheme

Spinning Earth

Question	Answer	Evidence to Hightlight	Marks
1	As we turn towards the Sun, day begins.	“As we turn towards the Sun, / day begins for everyone.”	1
2	Possible answers: round / sound, bright / night, stop / top, away / day, space / place, light / night	Any correct rhyming pair in the poem	1
3	It tells us that Earth spins round and round, like a toy spinning top.	“Still the planet does not stop, / turning like a giant top.”	2
4	The poet explains that while we are asleep at night, children in other places are beginning their day. This shows Earth is always turning, so different places have day and night at different times.	“While we sleep, somewhere far away, / other children start their day.”	2

Should Humans Travel to Mars?

Question	Answer	Evidence to Hightlight	Marks
1	Mars is often called the Red Planet because iron-rich dust on its surface gives it a rusty colour.	“iron-rich dust on its surface gives it a rusty colour”	1
2	harsh	“Mars is also a harsh place.”	1
3	Humans could explore in ways robots cannot. They could make decisions quickly, collect unusual samples and carry out experiments.	“astronauts could explore in ways that robots cannot” / “make decisions quickly, collect unusual samples and carry out experiments”	2
4	Answers may vary. Children should give a clear opinion and support it with evidence from the text, such as the risks, cost, harsh conditions, possible discoveries or inventions.	Relevant evidence from the text, such as “The journey would take many months…” or “space exploration leads to new inventions…”	2