Reading

Task 1 - The Moon

Do you ever look up in the sky at night and see the Moon shining down and lighting up the night-time town? Do you sometimes wonder what it would be like to visit the Moon or wonder why it shines so bright? Well here's some information that might interest you...

Moon and Sun:

The Moon shines very brightly, but is only reflecting the light of the Sun it can't make its own light. When the Sun comes back up for our day time we think that the Moon goes away but it doesn't, it's just harder to see because it is so bright. Sometimes, if you look carefully, you can see the Moon in the sky during the day time.

Did you know?

Average temperature in the day: 107°C

Average temperature at night: -153°C

Distance from Earth: 238,857 miles

Diameter: 2,160 miles

Length of Day: 708 hours

Selenophobia is fear of The Moon

Orbit:

The Moon is the Earth's only satellite (that means something that orbits a larger object). It takes the Moon about 28 days to orbit the Earth once, we call this a lunar month. During this time we only ever see the same side of the Moon as it rotates slowly whilst it moves around us.

During its orbit the Moon is sometimes covered by a shadow of the Earth, this is what gives us the phases of the moon, when it is waxing (growing bigger) and waning (getting smaller) with shapes including crescent and gibbous.

Moonwalking:

Only 12 people have ever walked on the Moon! The first person to do this was Neil Armstrong on 20th July 1969. There were two other men on the mission: Buzz Aldrin and Michael Collins and they all travelled on the Apollo 11 shuttle.

You may have seen a film of people walking on the Moon and it isn't quite the same as walking on the Earth...walking on the Moon looks bouncy because the Moon's gravity is not as strong as the Earth's, so people take longer to fall back down when they are up in the air.

1. How many people were on the first moon landing mission?

2. How does the moon look like it lights up when it doesn't?

3. What is a satellite?

4. How much colder is the Moon at night than in the daytime?

5. What causes the shadow on the Moon?

6. Why is the Moon colder than Earth at night?

7. Where does the Moon go in the daytime?

8. How long does it take the Moon to orbit the Earth?

9. How far did Neil Armstrong travel to get to the Moon?

10. Work out how long it would take a car travelling at 70mph to get to the Moon.

a: In hours

b: In days

Task 2 - The Sun

The Sun is a star and is at the centre of our solar system. That is why it is called a solar system. The word solar means 'relating to the Sun'. The planets in our solar system stay together because the Sun is so big its gravity keeps us all locked in orbit around it.

Making Energy:

The Sun provides almost all the energy, light and heat needed on Earth and it mainly uses hydrogen and helium for this. Energy is made at its core in the centre of the Sun's sphere. Around the core is the radiative zone which carries the energy to the next layer – the convection zone. It takes about 170,000 years for the energy to move from the core to the convection zone! The photosphere is at the Sun's surface and the energy gets to there from the convection zone in large bubbles. From here, the energy escapes (through the chromosphere and corona) and some of it comes to Earth. It takes about 8 minutes for heat to reach us from the Sun.

Did you know?

Surface temperature: 5505°C

Distance to Earth: 149.6 million km

Radius: 696,342 km

Circumference: 4,366,813 km (2,713,406 miles)

Mass: 1,989,000,000,000,000,000,000,000,000kg

(About 1.3 million Earths could fit inside the Sun)

Lifespan:

The Sun is actually a yellow dwarf star and was created about 4.6 billion years ago. The Sun will eventually run out of energy and fade, but don't worry…this won't be for another 4.5 to 5.5 billion years yet! Before the Sun eventually fades, in an unimaginable time from now, it will get bigger and turn into what is called a 'red giant'. In 1.1 billion years from now, the Sun will be 10% brighter than it is today. This will make Earth a bit like a greenhouse – hot and moist. 3.5 billion years from now, it will be even brighter than that at 40% more than it is today. This will be so hot that the oceans will boil and the ice will melt. It's safe to say that there will be no life on Earth by then, but with space travel already making new discoveries and exploring other planets, where do you think humans will be by then?

1. What gases is the Sun mainly made from?

2. How long does it take energy to reach Earth from the Sun?

3. How far away is the Sun from Earth?

4. What type of star is the Sun now?

5. List the different layers of the Sun from the centre to the outside.

6. What keeps our solar system of planets orbiting the Sun?

7. Solar means 'relating to the Sun'. Think of two (or more) examples where we use the word 'solar'.

8. Will the Sun last forever? If not, why not?

9. In the final paragraph it says that Earth will become 'a bit like a greenhouse'. A greenhouse is warm and moist inside because of the glass that lets heat and light in and keeps it in. Our Earth is not surrounded by glass, so what will let the heat and light in and keep it in?

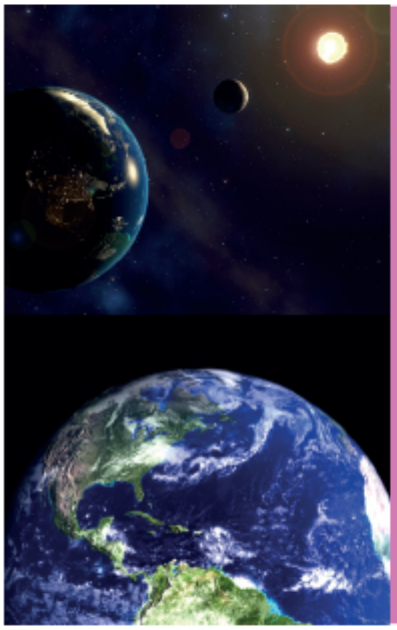
10. Look at the final line - where do **you** think humans will be by then?

Task 3 - The Earth

We all live on Earth…why? Well, Earth is the only planet in our solar system that has all the things we need to survive: 21% oxygen in the air to breathe, water to drink and all at just the right temperature warmed by the Sun. Its name comes from the Old English word 'ertha' and the Anglo-Saxon word 'erda' which means ground or soil.

The Blue Planet:

Earth, the third planet from the Sun, is referred to as 'The Blue Planet' because of how it looks from space – blue. This is due to the fact that over ⅔ of the Earth's surface is covered in water.



Did you know?

Age: approximately 4.54 billion years

Diameter: 13,000 km

Distance to Sun: 150,000,000 km

Surface Temperature: 15°C

Highest point: Mount Everest 8.8 km

Lowest point: Challenger Deep 10.9 km below sea level

I'm Spinning Around:

The Earth spins on its axis once every 24 hours – that's what gives us day and night as we spin to face the Sun and then away from it again. You wouldn't notice but the Earth's spin is actually slowing down by 17 milliseconds per hundred years. Eventually this will lengthen our days but it will take around 140 million years before our day will have increased from 24 to 25 hours. I wonder if children 140 million years from now will have an extra hour at school.

Whilst it is spinning, the Earth is also orbiting The Sun, which takes 365 ¼ days to do one full circuit. This gives us the length of our years. Our seasons are also dependent on the orbit of the Earth as our planet is tilted at an angle. This means that around one side of the Sun we are tilted towards it – giving us warmer temperatures and longer days…our summer. However, around the other side of the Sun we are tilted away from it giving us less light and cooler temperatures – this is our winter. All in all, it's a pretty amazing planet and I, for one, am glad to call it home.

1. What percentage of Oxygen is in the air we breathe?

2. What is the highest thing on Earth?

3. How long does it take the Earth to spin once on its axis?

4. Will the Earth always spin at this speed? If not, how will it change?

5. How many planets are between us and the Sun and can you name them?

6. Why do we experience summer around one side of the Sun?

7. Why is Earth also called 'The Blue Planet'?

8. What 3 things make it possible for us to survive on Earth?

9. Why do we need to add an extra day to our year every 4 years?

10. Which fact or piece of information has amazed you the most and why?

Task 4 – 'Back to Earth with a Bump.'

Last week, British astronaut Tim Peake returned home from an incredible six month stay aboard the International Space Station (ISS), alongside his crewmates Yuri Malenchenko and Timothy Kopra. He is the first British astronaut to have lived on the ISS.

The men were launched into space on 15th December 2015 and in the months before take-off, they trained intensively for their trip. The mission involved conducting experiments, testing out new technology and inspiring the next generation of space travellers. Peake told reporters that the highlight of his mission was a spacewalk where he had to make a repair on the space station. Whilst away from home, Tim also ran the equivalent of the London Marathon on his treadmill.

Having circled the planet nearly 3,000 times in 186 days, the crew returned home to Earth via a Soyuz capsule, which reached speeds of up to 28,000 kilometres per hour (25 times the speed of sound). The touchdown was bumpy due to high winds, however the astronauts landed safely in Kazakhstan. They all returned in good health. Having arrived back on solid ground, the astronauts were pulled out of the capsule and carried as their leg muscles were too weak to walk. Whilst sitting in their space suits, the men were checked over by medical staff. During these checks, Peake was asked how it felt to be home, 'The smells of Earth are so strong and it's wonderful to be back in the fresh air.'

Tim later flew from Kazakhstan to the headquarters of the European Stage Agency in Cologne, Germany where he is recovering and adjusting to life back on Earth. Scientists are carrying out tests to see how his body has been affected by his time in space.

Landing with a bump! Tim Peake lands safely in Kazakhstan.

In a recent press conference, Peake commented on how he'd missed family and friends, and even the rain. Tim expressed how much he was now looking forward to spending some quality time with his family. When asked if he'd return to space in the future, he replied, '...in a heartbeat.'

His service to science has earned him an honour from the Queen. Peake was made a CMG, or companion of the order of St Michael and St George. In response, Tim said, 'I am only one privileged person in a complex team of technicians, scientists, engineers, educators, trainers and flight directors, all working in pursuit of one of the greatest scientific and technical challenges of our time – exploring our solar system for the benefit of people on Earth. This award is for them.'

1. How long had Peake been living on the ISS?

2. Write down **two** jobs Tim had to do on the mission.

3. Why were the astronauts carried out of the capsule?

4. What did Peake notice once he'd left the capsule?

5. What was hard about being on the ISS for so long?

6. Why do you think Tim dedicated his special honour to the entire team?

7. Give **two** reasons why space travel is important.

8. Why has a picture and caption been added to the report?

Task 5 –

- My journey to space
- Nine facts

Today was the most exciting day of my life! I was finally able to fulfil my ambition of travelling into space.

Despite having dreamed of this since I was a young girl, and having completed extensive training, the actual journey was much more arduous and taxing than I'd ever expected.

The 4G force pushing on my chest as we took off felt like ten elephants were sitting on me, and the wave of nausea was a tsunami! I managed to distract myself with the view out of the window and suddenly we were in orbit; my body felt like a feather floating gently on the breeze but the pressure in my head felt like a sledgehammer was hitting it.

It was a day of contrasts but I wouldn't change it!

Even though no one has seen it yet, astronomers believe they have discovered a ninth planet in our solar system.

Nine facts about 'Planet Nine':

- It is 10 times bigger than Earth.
- It might be 20 times further away than Neptune!
- Its orbit is 10,000 to 20,000 years.
- Its gravity seems to affect objects in space that circle around Neptune.
- The discovery of a 'new' planet for the first time in 150 years could change scientists' understanding of how the solar system was made.
- UFO enthusiasts have often written about a mythical 'Planet X'.
- There's only a one in 15,000 chance that it doesn't exist.
- It is a 'real' planet, which replaces the downgraded 'dwarf planet' Pluto.
- The race is on to prove its existence!

1. Which two words mean the same as 'difficult'?

_____ _____

2. Find a metaphor within the text.

_____

3. Do you think the astronaut will enjoy her time in space? Explain why.

_____

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_____

4. Why does the author say, 'It was a day of contrasts...'? Use the text to support your answer.

_____

_____

_____

1. Which word means the same as 'found'?

_____

2. Find two adjectives that are antonyms of each other.

_____ _____

3. Do you think that the existence of Planet Nine will be proven? Explain why.

_____

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4. What effects has Planet Nine had on us and our solar system?

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