

Grade 7 Natural Science Worksheet

Assessment Task: Solar System: planets, moon

The moon

In most ancient cultures, the moon is personified. That means that the moon is given the characteristics of a human person. In some cultures, the moon is powerful and godlike. In the San culture, the moon is even more powerful than the sun and outwits the sun who is jealous of the moon's beauty. In other cultures, the moon is able to influence human behaviour, even at full moon, turning some unfortunate humans into wolf-like creatures. Some cultures say that there is an old man and his dog up in the moon. Some people say the moon is made of cheese! The moon has influenced the English language – words like lunatic and serene are derived from words to describe the moon.

1. What is the moon? Read the notes below and fill in the gaps with words chosen from the box.

When rock samples of the moon were analysed, it was found that the Moon consists mainly of (a)_____, and that it is very similar in composition to rocks on (b)_____. Data obtained from these Moon rocks has led scientists to conclude that the Moon may have formed (c)_____ years ago when the Earth collided with a very large object (the size of (d) or larger), ejecting raw materials that eventually became the Moon. The surface of the (e)_____ lunar crust is covered with a layer of powdery (f)_____. The Moon's surface is a combination of heavily cratered (g)_____ and smooth plains. Unlike the Earth, the Moon does not have a significant (h)_____, and it has no significant atmosphere. Its unprotected surface is constantly being bombarded by the (i)_____. Temperatures can reach as high as (j)_____ and drop as low as (k)_____. Although scientists understand a lot about the moon, many other questions remain. For instance, scientists still don't understand why the (l)_____ is thicker on one side of the moon.

[12 marks]

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dust	123°C	Mars	magnetic field	4.5 billion	volcanic rock
mountains	crust	solar wind	-163°C	60 km thick	Earth

2. Could a space station be set up on the moon? Below you will find some facts about the moon. You and your partner must study these facts. Then, using the facts, you and your partner will decide how you could overcome the problems that the facts present in order to put a space station on the moon with people living in it. Remember when solving a problem that you need to identify the problem first. In this exercise, the problems are not directly stated. You must study the facts and recognise the problem first, before you can solve it. It also helps to think of a few possible solutions before settling on the best solution.

Moon Facts:

Temperatures can reach as high as 123°C and drop as low as -163°C.

No atmosphere – no air, no sound, no clouds, no weather.

Things on the moon weigh one sixth what they weigh on earth – weaker gravity.

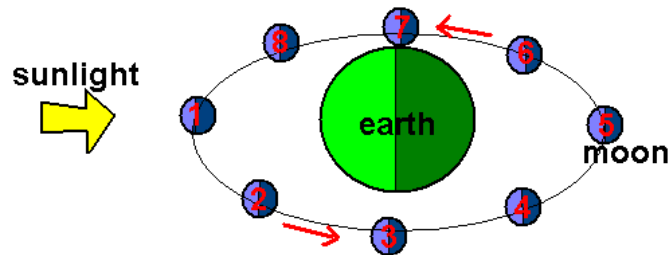
No liquid water.

No fertile soil.

[24 marks]

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3.



What we see from earth

- | | | | |
|---|---|---|---|
| 1 |  | 5 |  |
| 2 |  | 6 |  |
| 3 |  | 7 |  |
| 4 |  | 8 |  |

This diagram shows eight different positions of the moon over a 28 day lunar cycle. Write a note explaining why we see the moon as a different shape in each of these eight positions.

[24 marks]

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Suggested Solutions

Question number	Possible marks	Solution
1	12	<p>When rock samples of the moon were analysed, it was found that the Moon consists mainly of volcanic rock, and that it is very similar in composition to rocks on Earth. Data obtained from these Moon rocks has led scientists to conclude that the Moon may have formed 4.5 billion years ago when the Earth collided with a very large object (the size of Mars or larger), ejecting raw materials that eventually became the Moon. The surface of the 60 km-thick lunar crust is covered with a layer of powdery dust. The Moon's surface is a combination of heavily cratered mountains and smooth plains. Unlike the Earth, the Moon does not have a significant magnetic field, and it has no significant atmosphere. Its unprotected surface is constantly being bombarded by the solar wind. Temperatures can reach as high as 123°C and drop as low as -163°C. Although scientists understand a lot about the moon, many other questions remain. For instance, scientists still don't understand why the crust is thicker on one side of the moon.</p>
2	24	<p>The learners must be encouraged to link a moon fact to a problem. For example, the widely fluctuating and severe temperatures on the moon's surface present problems relating to overheating and insulation. Once the learners have identified a problem, they must pose a possible solution. Solutions should be practical and creative.</p> <p>Award two marks for identification of a problem and between two and four marks for a solution (depending on creativity and effectiveness of solution).</p> <p>Current research indicates that it would not be feasible putting a permanent space station on the moon. Satellite space stations are more flexible and as they orbit much closer to the earth, they can avoid many of the problems associated with living on the moon. But who knows what the future holds!</p>
3	24 – 3 marks per position x 8	<p>To understand what we see each night as the moon appears to change shape, we need to understand that the moon does not make its own light, but reflects the sun's rays. This makes the moon look very bright at night. Different amounts of the moon's sunlit side can be seen as it orbits the earth. This makes it appear as if the moon is changing shape. When the moon is seen as a thin sliver of light, we call this a crescent. Then the moon appears to grow larger. We say that it is 'waxing'. The moon then appears as a full circle. Then the moon grows smaller. We say that it is 'waning'. The moon appears as a crescent again. At new moon, we cannot</p>

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		see the moon at all. It is there, but we can't see the part of the moon that is illuminated by the sun. This cycle reoccurs every 28 days and is known as the lunar cycle.
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