

## Grade 7 Natural Science Worksheet

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### Assessment Task: Solar System: universe

#### Organisation of the universe

#### Part One: Definitions of the universe

The San people tell this story:

There was once a strong-willed girl who became so angry when her mother would not give her any delicious roasted root, that she grabbed the roasting roots from the fire and threw the roots and ashes into the sky. The red and white burning roots now glow as the red and white stars and the ashes are the Milky Way. Some people call it the Milky Way and some call it the Stars' Road. No matter what you call it, the path made by the young girl many, many years ago by throwing the bright sparks of the fire high up into the sky, shines like a road in the darkness. You can see it today.

1. What do scientists tell us the Milky Way is? [5]
2. Galaxy, universe, star ... sometimes we get confused with all the scientific terms. In this activity, you are going to take a number of terms that we will be using and you are going to place them in order, from smallest to largest.

Copy down each of the terms, with its definition, under each other on a sheet of paper. Cut the terms apart from each other. Now arrange the terms with their definitions, by placing the smallest objects at the top of the page, working your way down to the largest at the bottom of the page.

**solar system: a star with its orbiting planets**

[6]

**moon: a body of matter which orbits a planet**

**universe: all the matter and energy and space that exists**

**star: a ball of burning gas; the sun is a star**

**galaxy: a group of billions of stars**

**planet: a body of matter which orbits a star; the earth is a planet**

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### Part Two: The sun and the moon

1. When you were younger, you may have been told that the moon is made of cheese! But the moon is definitely not made of cheese. What is the moon made of? Research some facts on the composition of the moon. Record your research as a set of summarised notes.

[10]

2. The ancient Greek people thought that the sun was ruled by a god, they called him Helios. What are the sun and stars made of? Research some facts on the composition of the sun and stars. Record your research as a set of summarised notes.

[10]

### Part Three: Write your own story

Remember the San story about the girl who created the Milky Way? Imagine you are a mother or father living in a little village, thousands of years ago. One night, your little child points to the sky and asks you what the stars are. What story will you tell her?

Write your story and then read it to your partner. Your partner will make suggestions as to how you can improve your story. You help your partner in the same way.

You will then tell your story to the class.

The following rubric will be used to assess you.

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### Rubric to assess writing of story and storytelling

Criteria	Level 4 [4]	Level 3 [3]	Level 2 [2]	Level 1 [1]
Story is in keeping with IKS and explains natural phenomena from a mythical viewpoint.	Outstanding.	Good.	Satisfactory.	Poor.
Story is well written with excellent structure and logical progression.	Outstanding.	Good.	Satisfactory.	Poor.
Partners worked well together to edit the drafts; revision of story improved the story.	Outstanding.	Good.	Satisfactory.	Poor.
Story was well told, with animated facial expression and proper creation of atmosphere.	Outstanding/	Good.	Satisfactory.	Poor.

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### Suggested Solutions

Question number	Possible marks	Solution
1.1	5	<p>Scientists tell us that stars are clustered together ✓ by the billions in groups called galaxies ✓. The Milky Way is one of these galaxies. ✓ It is the galaxy that our solar system, (our sun and planets) belongs to. ✓ The Milky Way is a large galaxy compared to some other galaxies that scientists have seen through powerful telescopes. Scientists calculate that there are about 100 billion stars in the Milky Way. All these stars are arranged in a spiral. Our sun is just one of these billions of stars in the spiral. ✓</p>
1.2	6	<p><b>moon:</b> a body of matter which orbits a planet</p> <p><b>planet:</b> a body of matter which orbits a star; the earth is a planet</p> <p><b>star:</b> a ball of burning gas; the sun is a star</p> <p><b>solar system:</b> a star with its orbiting planets</p> <p><b>galaxy:</b> a group of billions of stars</p> <p><b>universe:</b> all the matter and energy and space that exists</p>
2.1	10	<p>Learner answers may differ; these are some guidelines to be used in marking:</p> <p>If you have looked carefully at the moon, you will see that it has a very rugged surface. ✓ There are light areas and dark areas. The dark areas are called seas, ✓ but they do not contain water. ✓ The seas are flat regions, whereas the light areas are rugged and are higher on average. For this reason, they are also called highlands. ✓ Across the whole surface, craters ✓ caused by meteors ✓ crashing into the surface of the moon, can be seen. In the years from 1969 to 1972 the Moon was explored by astronauts who brought back to Earth some samples of lunar rocks, ✓ so it has been possible to analyse these rocks. Moon rocks are volcanic and similar in composition to earth's volcanic rocks. ✓ But the surface of the moon is dusty ✓ and there is no growth ✓ or decomposition ✓ on the moon, so soil like we find on earth, does not exist on the moon. ✓ Elements found on earth are also found on the moon. Magnesium, silicon, iron, calcium and aluminium are found in moon rock. ✓ There is no nitrogen on the moon. ✓ In the 1990's, a probe called</p>

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		<p>Clementine was sent to the moon. Clementine found that there are large quantities of hydrogen ✓ at the bottom of a few polar craters, both at the north and south poles of the Moon. It is also believed that this hydrogen is most probably water ice that is trapped in the cold, permanently shaded basins of the craters at the poles. ✓</p>
2.2	10	<p>Learner answers may differ; these are some guidelines to be used in marking:</p> <p>The first important thing to keep remembering is that the sun is a star. ✓          The sun is by far the biggest body in our solar system. ✓ The element hydrogen ✓ makes up about 94% of the sun, ✓ helium makes up about 6%, ✓ and all the other elements make up just 0.13%. ✓ Of these other elements, oxygen, carbon, and nitrogen ✓ are the three most abundant elements. The sun also has traces of neon, sodium, magnesium, aluminium, silicon, phosphorus, sulphur, potassium, and iron. ✓ This is also true of the universe as a whole: Most of the universe is hydrogen, ✓ with some helium, and the remainder of the elements occur only in trace concentrations. ✓ Other stars are very similar in composition to our star, the sun. ✓ The element helium is the second most abundant in both the sun and the universe, but it is very difficult to find on the earth. ✓ Helium occurs in certain very deep gas wells on the earth. The name helium comes from <i>helios</i>, which is the Greek name for the sun, and the name that the ancient Greeks gave to their sun god. ✓</p>
3	16	See rubric in Appendix of Assessment Tools

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### Appendix of Assessment Tools

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