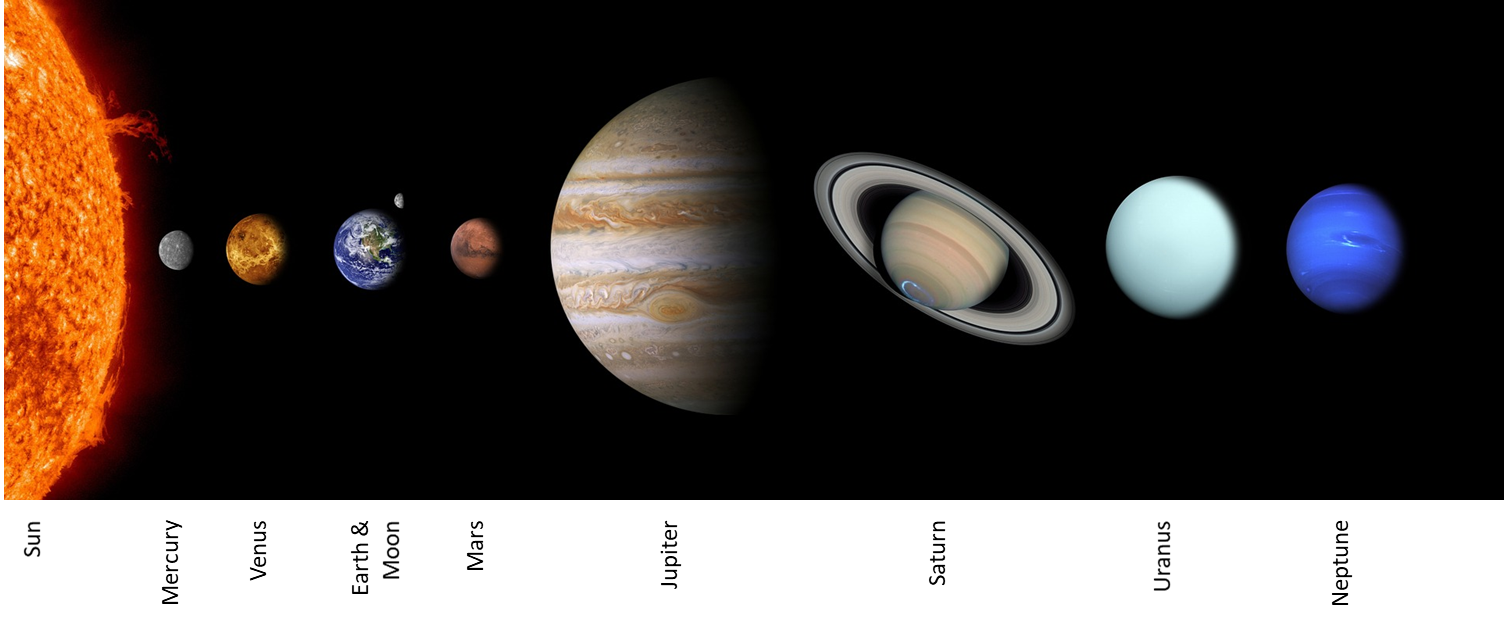
**The Sun**

The Earth and other planets go round the Sun.

The Sun is at the centre of the Solar System.



*Not to scale*

**What can you say about the Sun?**

Which of these statements do you think are right?

For each statement, tick (✓) **one** column to show what you think.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | | I am **sure** this is right | I think this is right | I think this is wrong | I am **sure** this is wrong |
| **A** | The Sun is a planet |  |  |  |  |
| **B** | The Sun is a star |  |  |  |  |
| **C** | The Sun is a huge ball of gas and the gas is burning |  |  |  |  |
| **D** | Nuclear reactions in the Sun make it hot and bright |  |  |  |  |

*Physics > Big idea PES: Earth in space> Topic PES1: Solar System and beyond > Key concept PES1.3: Night sky, stars and galaxies*

|  |
| --- |
| **Diagnostic question** |
| **The Sun** |

**Overview**

|  |  |
| --- | --- |
| Learning focus: | The Sun is one of billions of stars in our galaxy and our galaxy is one of many billions of galaxies in the universe. |
| Observable learning outcome: | * Identify the Sun as a star |
| Question type: | Diagnostic, confidence grid |
| Key words: | Planet, star |

|  |  |
| --- | --- |
| **P** | **PRIOR UNDERSTANDING**  This diagnostic question probes understanding of ideas that are usually taught at age 5-11, to aid transition from earlier stages of learning. |

**What does the research say?**

In a study only about half of 10- and 11-year-olds (n=42) realised that the Sun is a star and three-quarters described the Sun as a huge ball of fire (Sharp, 1996). Around three-quarters also thought of stars as round or ‘star-shaped’ (with five points), but they were not aware of the stars position in space or their movement. The misunderstanding, that the Sun is different to the stars, is persistent and just 55% of adults identify the Sun as a star (Lightman, Miller and Leadbetter, 1989).

This question investigates students’ ideas about what the Sun is. Understanding that the Sun is a star can give students a better understanding of the nature of the stars in the sky.

**Ways to use this question**

Students should complete the confidence grid individually. This could be a pencil and paper exercise, or you could use an electronic ‘voting system’ or mini white boards and the PowerPoint presentation.

If there is a range of answers, you may choose to respond through structured class discussion. Ask one student to explain why they gave the answer they did; ask another student to explain why they agree with them; ask another to explain why they disagree, and so on. This sort of discussion gives students the opportunity to explore their thinking and for you to really understand their learning needs.

*Differentiation*

You may choose to read the questions to the class, so that everyone can focus on the science. In some situations it may be more appropriate for a teaching assistant to read for one or two students.

**Expected answers**

B and D are correct, A and C are wrong

**How to respond - what next?**

Answer B labels the Sun as a star. This is important so that students can make the connection with the Sun and other stars in the sky. Answer A is a common misunderstanding that can be challenged by comparing the Sun to planets and stars.

Answer C, thinking of the Sun as a burning ball of gas is common because this fits with our everyday experience. We also understand that air (O2) is needed for combustion and there is no air in space, so the Sun must be getting its heat and light from some other source.

Answer D labels the source of the Sun’s heat and light. This is helpful in order to clarify that the Sun is not a ball of burning gas and that there is a known other source of its radiation (which enables it to shine for billions of years). Students may find out more about nuclear fusion reactions in their later studies.

If students have misunderstandings about whether or not the Sun is a star, it can help to give them the opportunity to identify the characteristics of both stars and planets, and to compare the Sun to the descriptions of each. This activity could be used to facilitate paired or small group activities and discussions, which encourage social construction of new ideas through dialogue. A version of this activity can be found in the following BEST ‘response activity’ which could be used in follow-up to this diagnostic question:

* Response activity: Stars and planets

**Acknowledgments**

Developed by Peter Fairhurst (UYSEG).

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**References**

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