

Space Physics

GCSE Physics · Written to the shared content for AQA, Edexcel and OCR

Name _____ Class _____ Date _____

1. Worked example

Put these in order of size, smallest first: galaxy, moon, planet, solar system, star, universe. (2 marks)

Step 1 · Order

Moon → planet → star → solar system → galaxy → universe.

Step 2 · Check

A moon orbits a planet; planets orbit a star; a star with its planets is a solar system; billions of stars form a galaxy; billions of galaxies make up the universe.

Answer: Moon, planet, star, solar system, galaxy, universe

Check: The Sun is a fairly ordinary, medium-sized star.

2. Now try one with the steps

Describe how the solar system formed. (3 marks)

Step 1 · Nebula

Step 2 · Gravity

Step 3 · Planets

Answer:

3. Practice

Show your working. The marks tell you how much is expected.

1. Name the star at the centre of our solar system. [1]

2. Name the galaxy that contains our solar system. [1]

3. State the number of planets in our solar system. [1]

4. Describe the difference between a natural satellite and an artificial satellite, with an example of each. [2]
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5. Put these in order of size, smallest first: galaxy, moon, planet, star, universe. [2]
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6. Name the force that keeps the planets in orbit around the Sun. [1]
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7. Describe how the solar system formed. [3]
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8. State why Pluto is classed dwarf planet. [1]
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9. Describe two differences between the inner planets and the outer planets. [2]
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10. Light travels at 3.0×10^8 m/s and the Sun is 1.5×10^{11} m away. Calculate how long sunlight takes to reach Earth. [3]
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11. Explain why the Sun looks much brighter than other stars even though it is a fairly ordinary star. [1]
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12. Neptune is about 4.5×10^{12} m from the Sun. Calculate how long light from the Sun takes to reach Neptune, in hours, to 2 significant figures. [3]
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13. In a scale model, the Earth is placed 15 m from the Sun. Jupiter is 778 million km from the Sun and Earth is 150 million km. Calculate where Jupiter should go, to 2 significant figures. [2]

14. Suggest why the planets closest to the Sun are rocky while those further out are mostly gas and ice. [2]

4. Before you hand it in

"A galaxy is smaller than a solar system."

A galaxy contains billions of stars, many with their own solar systems.

"The Sun orbits the Earth."

The Earth and other planets orbit the Sun; the Moon orbits the Earth.

"Moons only orbit Earth."

Moons are natural satellites of any planet; Jupiter and Saturn have dozens each.

Forgetting to convert km to m in light-time calculations

Multiply km by 1000 (and use standard form) before dividing by 3.0×10^8 m/s.