

Space and the Solar System

The planets, day and night, seasons, the Moon, gravity and weight in space.

Name _____ Date _____ Class _____

Learning objective: I can describe the Solar System and explain day, night, seasons and the phases of the Moon.

✓ I can order the planets ✓ I can explain the seasons ✓ I can calculate weight in space

1 The planets

Number the planets in order from the Sun (1 = closest).

☐

A Mars

☐

B Venus

☐

C Mercury

☐

D Uranus

☐

E Jupiter

☐

F Saturn

☐

G Earth

☐

H Neptune

2 Day, night and years

Use the word bank.

Word bank:

tilted

star

away from

satellite

spins

towards

orbit

- 1 The Earth _____ on its axis once every 24 hours, giving day and night.
- 2 The Earth takes about 365¼ days to _____ the Sun once.
- 3 The Moon is a natural _____ of the Earth.
- 4 We have seasons because the Earth's axis is _____.
- 5 In the UK summer, the northern hemisphere is tilted _____ the Sun, so days are longer.

3 Space words

Match each word to its meaning.

1 star

☐

A the force of attraction between masses

2 galaxy

☐

B a huge ball of hot gas that gives out its own light

3 light year

☐

C the curved path of one object around another

4 orbit

☐

D a group of billions of stars, such as the Milky Way

5 gravity

☐

E the distance light travels in one year

Space and the Solar System

On Earth, $g \approx 10 \text{ N/kg}$. On the Moon, $g \approx 1.6 \text{ N/kg}$. On Jupiter, $g \approx 25 \text{ N/kg}$. **weight = mass $\times$ g**

- 4 Weight in space** An astronaut has a mass of 50 kg. Find their weight in each place.

1 on Earth

2 on the Moon

3 on Jupiter

- 5 Mass or weight?**

- 1 What is the astronaut's mass on the Moon? Explain. [2 marks]

- 6 True or false?**

	TRUE	FALSE
1 The Moon gives out its own light.	☐	☐
2 The Sun is a star.	☐	☐
3 It is colder in winter because the Earth is further from the Sun.	☐	☐
4 Light from the Sun takes about 8 minutes to reach the Earth.	☐	☐

- 7 Explain it**

- 1 Explain why we see different phases of the Moon during a month. [3 marks]

- 2 Why does a light year measure distance, not time? [2 marks]

Answer Key

Space and the Solar System

Question	Answers
1 The planets	Correct order: C, B, G, A, E, F, D, H Mercury → Venus → Earth → Mars → Jupiter → Saturn → Uranus → Neptune
2 Day, night and years	1 spins; 2 orbit; 3 satellite; 4 tilted; 5 towards
3 Space words	1 B ; 2 D ; 3 E ; 4 C ; 5 A
4 Weight in space	1 $50 \times 10 = 500 \text{ N}$; 2 $50 \times 1.6 = 80 \text{ N}$; 3 $50 \times 25 = 1250 \text{ N}$
5 Mass or weight?	1. 50 kg – mass does not change; only weight depends on gravity.
6 True or false?	1 False – it reflects light from the Sun; 2 True ; 3 False – seasons are caused by the tilt of the Earth's axis, not distance; 4 True
7 Explain it	1. The Moon orbits the Earth about once a month; we always see the half lit by the Sun, but from Earth we see different amounts of that lit half as the Moon moves round. 2. It is how far light travels in one year (about 9.5 million million km), so it is a distance.

Teaching note: values of g are rounded for calculation. A common misconception is that seasons are caused by changing distance from the Sun; they are caused by the tilt of the axis.