

Earth, day, seasons and orbits

Grade 6 science (Year 7 · Class 6) · Test answers (mark scheme)

Use these model answers and marking notes to score your test. Give marks for correct method even if the final number is slightly different because of rounding.

Level: Grade 6 science (Year 7 · Class 6) · **Curriculum:** MS-ESS1-2

Question 1 Rotation and revolution (2 marks)

- a. Rotation is the spinning of the Earth on its axis.
- b. Revolution is the orbit of the Earth around the Sun, which takes about 365 days.

Marking: 1 mark each; accept 24 h for the rotation if mentioned.

Question 2 Seasons diagram (3 marks)

- a. Position P.
- b. At P the north of the Earth is tilted toward the Sun, so sunlight is more direct and the days are longer.

Marking: 1 mark for P; 1 mark for tilted toward the Sun; 1 mark for more direct light or longer days.

Question 3 Time difference (3 marks)

- a. $75^\circ - 30^\circ = 45^\circ$.
- b. $45^\circ \div 15^\circ \text{ per hour} = 3 \text{ h}$.
- c. B is east, so ahead: $09:00 + 3 \text{ h} = 12:00$.

Marking: 1 mark for each part; accept error carried forward.

Question 4 Mars year (3 marks)

- a. $687 \div 365 = 1.88 \text{ years}$.
- b. $3650 \div 687 = 5.31$, so 5.3 Mars years.

Marking: 1 mark for 1.88 years; 1 mark for the division; 1 mark for 5.3.

Question 5 Warm summers (2 marks)

In summer the northern hemisphere is tilted toward the Sun, so the Sun is higher in the sky and sunlight is concentrated, and the days are longer, so there is more time to heat the ground.

Marking: 1 mark for tilt or higher Sun; 1 mark for longer days or concentrated light.

Question 6 Orbit and gravity (3 marks)

The Sun's gravity pulls the Earth toward it. The Earth is also moving sideways at high speed. Gravity keeps bending the path into a curve, so the Earth stays in orbit instead of flying away or falling in.

Marking: 1 mark for gravity pulling toward the Sun; 1 mark for sideways motion; 1 mark for the curved path result.

Question 7 Planet groups (2 marks)

Mercury, Venus, Earth and Mars. They are small and rocky, while Jupiter is a huge gas giant.

Marking: 1 mark for all four planets; 1 mark for a correct difference.

Question 8 Light from Mars (2 marks)

$t = 228\,000\,000 \div 300\,000 = 760 \text{ s}$. $760 \div 60 = 12.7 \text{ min}$.

Marking: 1 mark for 760 s; 1 mark for about 12.7 min (12 min 40 s).