

How water melts, boils and freezes

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

Mark your answers using the guide below. Marks are given for correct ideas, not for exact wording. Add up your marks out of 20 and revise the topics where you lost marks, especially graph reading and explanations.

Level: Grade 6 science (Year 7 · Class 6) · **Curriculum:** MS-PS1-4

Question 1 Naming changes (2 marks)

- a. Condensation. (1)
- b. Freezing. (1)

Marking: 1 mark each.

Question 2 Reading the graph (3 marks)

- a. A mixture of ice (solid) and water (liquid). (1)
- b. **100 °C**. (1)
- c. $10 - 2 = \mathbf{8 \text{ min}}$. (1)

Marking: 1 mark each part.

Question 3 Using the rate (3 marks)

- a. $100 \text{ °C in } 20 \text{ min} = \mathbf{5 \text{ °C/min}}$. (1)
- b. $80 \div 5 = \mathbf{16 \text{ min}}$. (1)
- c. It is turning liquid water into steam (separating the particles) rather than raising the temperature. (1)

Marking: 1 mark each part.

Question 4 Evaporation and boiling (2 marks)

Evaporation happens only at the surface, whereas boiling happens throughout the liquid with bubbles. (1) Evaporation occurs at any temperature below the boiling point, whereas boiling occurs only at the boiling point. (1)

Marking: 1 mark for each correct difference.

Question 5 Dew on the grass (3 marks)

The air contains water vapour (1). At night the grass cools, and the vapour touching it loses energy (1) and condenses into liquid drops (1).

Marking: 1 mark each for vapour in the air, cooling, condensation.

Question 6 Correct the statement (2 marks)

The temperature rises until the water reaches its boiling point of 100 °C and then stays constant (1), because the heat is used to change liquid into gas rather than to raise the temperature (1).

Marking: 1 mark for the plateau at 100 °C, 1 mark for the reason.

Question 7 Melting and the particles (3 marks)

The particles gain energy and vibrate more strongly (1). They break away from their fixed positions in the regular pattern (1) and begin to slide past one another while still touching (1).

Marking: 1 mark each for more energy, losing fixed positions, sliding while touching.

Question 8 A puddle on a warm day (2 marks)

The water evaporates (1) because the fastest particles at the surface have enough energy to escape, even below 100 °C (1).

Marking: 1 mark for evaporation, 1 mark for surface particles escaping.