

Describing movement and average speed

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

Model answers and mark allocations are given for every question. Award marks for correct method even when an arithmetic slip leads to a wrong final value, and check that each answer has the correct unit.

Level: Grade 6 science (Year 7 · Class 6) · **Curriculum:** MS-PS2-2

Question 1 Key words (2 marks)

A reference object is an object treated as fixed and used to decide whether another object moves. A trajectory is the path followed by a moving object.

Marking: 1 mark for each correct definition.

Question 2 Ferry crossing (2 marks)

$$v = d \div t = 15 \div 0.75 = \mathbf{20 \text{ km/h.}}$$

Marking: 1 mark for the formula and substitution, 1 mark for the answer with unit.

Question 3 Unit change (2 marks)

$$144 \div 3.6 = \mathbf{40 \text{ m/s.}}$$

Marking: 1 mark for dividing by 3.6, 1 mark for the answer with unit.

Question 4 Tram graph (4 marks)

- It is **at rest** (the line is horizontal at 40 m).
- $v = 40 \div 20 = \mathbf{2 \text{ m/s.}}$
- $v = (100 - 40) \div 20 = \mathbf{3 \text{ m/s.}}$
- $v = 100 \div 60 = \mathbf{1.7 \text{ m/s}}$ (1.67 m/s).

Marking: 1 mark for each part.

Question 5 Marathon pace (2 marks)

$$t = 20 \times 60 = 1200 \text{ s. } d = v \times t = 5.5 \times 1200 = \mathbf{6600 \text{ m}}$$
 (6.6 km).

Marking: 1 mark for converting the time, 1 mark for the answer with unit.

Question 6 Moving or not? (3 marks)

Relative to her seat, the passenger does not change position, so she is at rest. Relative to the ground below, her position changes by 250 m every second, so she moves at 250 m/s. Rest and motion depend on the reference object.

Marking: 1 mark for rest relative to the seat, 1 mark for moving relative to the ground, 1 mark for linking this to the choice of reference object.

Question 7 Faster or slower? (2 marks)

$30 \text{ m/s} \times 3.6 = 108 \text{ km/h}$, which is greater than 90 km/h. Bilal is **wrong**: the car at 30 m/s is faster.

Marking: 1 mark for converting to common units, 1 mark for the correct conclusion.

Question 8 Freight train (2 marks)

$t = d \div v = 450 \div 75 = \mathbf{6 \text{ h}}$.

Marking: 1 mark for the formula and substitution, 1 mark for the answer with unit.

Question 9 SI unit (1 mark)

The metre per second, **m/s**.

Marking: 1 mark.