

Q1 (1 mark)

Distance travelled per unit time (1)

Q2 (1 mark)

m/s or mph or km/h etc (1)

Q3 (1 mark)

How distance changes over time (1)

Q4 (1 mark)

Faster speed (1)

Q5 (2 marks)

Distance (1)

Time (1)

Q6 (1 mark)

Motion compared to another object (1)

Q7 (2 marks)

Two from:

Calculated by dividing total distance travelled by total time taken

The formula is average speed = distance ÷ time

Ensure units are consistent (e.g. metres and seconds or kilometres and hours) before calculating

Q8 (3 marks)

Straight line = constant speed (1)

Equal distance in equal time (1)

No acceleration (1)

Q9 (2 marks)

Horizontal line (1)

Indicates no change in distance (1)

Q10 (2 marks)

Two from:

Comparison between two objects (1)

Depends on both speeds (1)
Shows relative movement (1)

Q11 (3 marks)

$$100 \div 20 \text{ (1)}$$

$$5 \text{ (1)}$$

$$\text{m/s (1)}$$

Q12 (3 marks)

$$60 \div 12 \text{ (1)}$$

$$5 \text{ (1)}$$

$$\text{m/s (1)}$$

Q13 (3 marks)

$$150 \div 10 \text{ (1)}$$

$$15 \text{ (1)}$$

$$\text{m/s (1)}$$

Q14 (3 marks)

$$300 \div 15 \text{ (1)}$$

$$20 \text{ (1)}$$

$$\text{m/s (1)}$$

Q15 (3 marks)

$$600 \div 30 \text{ (1)}$$

$$20 \text{ (1)}$$

$$\text{m/s (1)}$$

Correct unit stated (1)

Q16 (4 marks)

Time = distance $\div$ speed (1)

$$240 \div 6 \text{ (1)}$$

$$40 \text{ (1)}$$

$$\text{s (1)}$$

Q17 (4 marks)

$$180 \div 9 = 20 \text{ m/s (1)}$$

Correct speed (1)

$$20 \times 15 = 300 \text{ m (1)}$$

Correct second distance (1)

Q18 (4 marks)

$$200 \div 25 = 8 \text{ m/s (1)}$$

Correct speed (1)

$$400 \div 8 = 50 \text{ s (1)}$$

Correct time (1)

Q19 (4 marks)

Distance = speed $\times$ time (1)

20×50 (1)

1000 (1)

m (1)

Q20 (4 marks)

Distance = speed $\times$ time (1)

12×40 (1)

480 (1)

m (1)

Q21 (4 marks)

$25 - 18$ (1)

7 m/s (1)

Relative motion idea e.g. Car A is moving 7 m/s faster than Car B

The gap between them changes at 7 m/s if they are in the same lane and direction (1)

(1)

Q22 (4 marks)

$20 + 15$ (1)

35 m/s (1)

The trains are moving towards each other, so the distance between them decreases quickly (1)

This means they cover 35 metres of separation every second as they approach and pass each other (1)

Q23 (6 marks)

Level 1 (1-2 marks)

Simple statements about speed, graphs or motion

Level 2 (3-4 marks)

Clear explanation of at least two ideas (speed, graphs, relative motion)

Level 3 (5-6 marks)

Detailed explanation linking speed calculations, distance-time graphs, and relative motion correctly

Model answer:

Motion can be described using speed, which is calculated using distance divided by time. Distance-time graphs show how distance changes over time and can

show constant speed or stationary motion. A straight line shows constant speed, a steeper line shows faster speed, and a flat line shows no movement. Relative motion compares how one object moves compared to another, such as trains passing each other, depending on their speeds.