DISTANCE-TIME GRAPH

1 Fig. 1.1 is a distance/time graph showing the motion of an object.

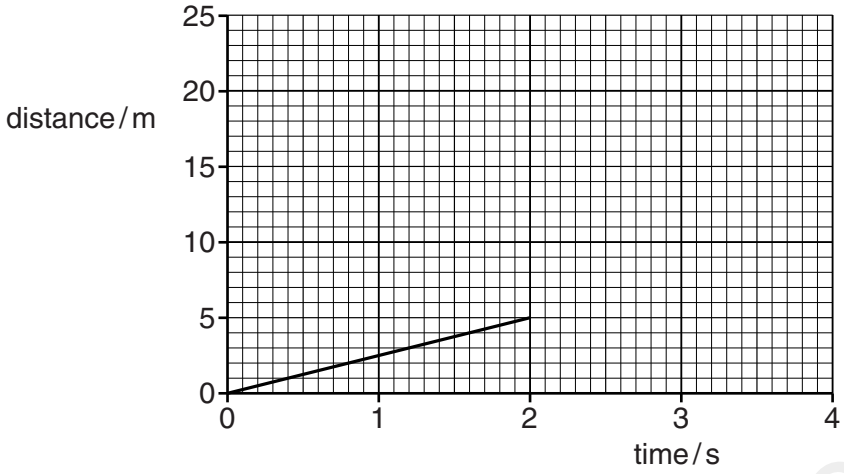

Fig. 1.1

(a) (i) Describe the motion shown for the first 2 s, calculating any relevant quantity.

.....

.....

[2]

(ii) After 2 s the object accelerates.

On Fig. 1.1, sketch a possible shape of the graph for the next 2 s.

[1]

(b) Describe how a distance/time graph shows an object that is stationary.

.....

..... [1]

(c) Fig. 1.2 shows the axes for a speed/time graph.

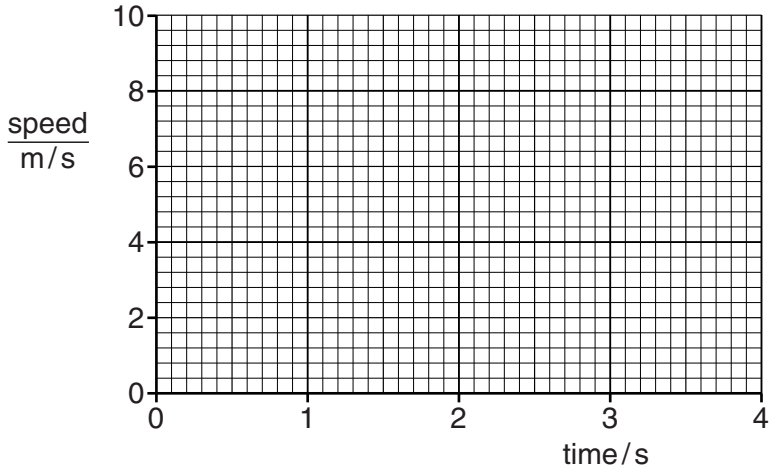

Fig. 1.2

On Fig. 1.2, draw

(i) the graph of the motion for the first 2 s as shown in Fig. 1.1,

(ii) an extension of the graph for the next 2 s, showing the object accelerating at 2 m/s^2.
[3]

(d) Describe how a speed/time graph shows an object that is stationary.

.....

..... [2]

[Total: 9]

(a) **(i)** constant/steady/uniform speed/velocity OR speed/velocity = 2.5 (m/s) B1
speed/velocity = 2.5 m/s accept fraction, average speed/velocity = 2.5 m/s B1 [2]

(ii) shape curving upward but not to vertical, at least to 3.5 s unless reaches 25 m B1 [1]

(b) horizontal (straight) line OR careful sketch
accept parallel to time/*x*-axis B1 [1]

(c) tolerance on both axes ± ½ small square throughout both parts

(i) horizontal straight line at 2.5 m/s from 0 to 2 s, ecf from **(a)(i)** B1

(ii) straight line rising to the right as far as the edge of the graph area M1
Δv = 4 m/s or gradient clearly 2 m/s^2 A1 [3]

(d) horizontal (straight) line M1
at 0 m/s A1 [2]
accept for both marks: line in/along time/*x*-axis OR line with $y/v = 0$ OR careful sketch

[Total: 9]

2.Fig shows a distance-time graph for a moving object.

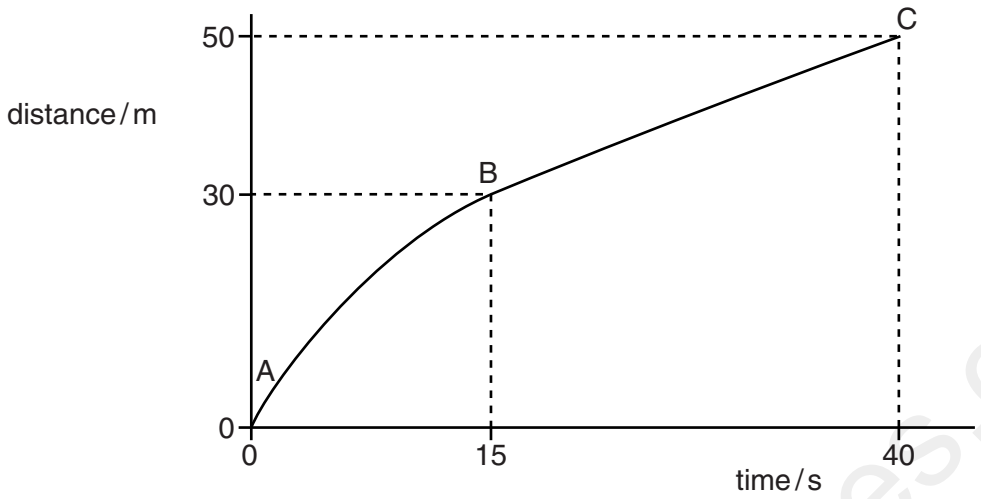

Fig. 1.1

(a) Describe the speed of the object between points

(i) A and B,

.....

(ii) B and C.

.....

[2]

(b) State whether the acceleration of the object is zero, negative or positive, as shown on the graph between points

(i) A and B,

.....

(ii) B and C.

.....

[2]

(c) Calculate the average speed of the object during the 40 seconds.

speed = ... [2]

[Total: 6]

(a)	**(i)**	decreases / <u>average</u> speed 2 m / s	B1
	(ii)	constant / speed 0.8 m / s	B1
(b)	**(i)**	negative	B1
	(ii)	zero	B1
(c)		uses $v = d/t$ in any form or d/t	C1
		(av. vel = 50 / 40 =) 1.3 m / s or 1.25 m / s	A1

[Total: 6]