



WORKSHEET

Full marks 34

1 Key words [4]

9.8 m/s	acceleration	at rest	displacement	distance	retardation	scalar	speed
			uniform velocity	velocity			

2 Label the diagram [2]

flat: at rest
(zero velocity)

①

②

③

④

1. _____ 2. _____
3. _____ 4. _____

3 Multiple choice [5]

i. In a velocity–time graph, what does the slope of the line give? [1]

a. speed b. velocity

c. acceleration d. displacement

ii. A boy walks 3 m east and then 4 m north. What is his displacement? [1]

a. 7 m b. 7 m north-east

c. 5 m, roughly north-east d. 1 m north



- c. Give a reason: a bus going round a bend at a steady 40 km/h has a changing velocity. [2]

6 Long answer

Write a long answer to the following question.

A body moves in a straight line with uniform acceleration a . Its velocity changes from u to v in time t , and it covers a displacement s . Prove that:

- i. $v = u + at$ (2)
- ii. $s = ut + \frac{1}{2}at^2$ (2)

[illegible]

7 Numerical problems

Solve the following problems. Show your working.

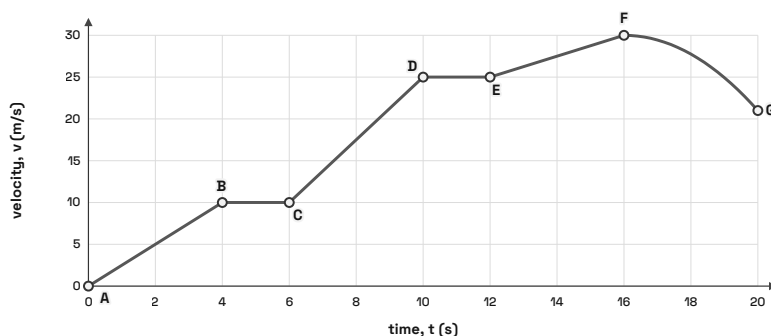
- a. A plane starts from rest and runs south along a runway, taking off after 30 s. Its acceleration during the run is 1.5 m/s^2 . Find the distance it runs along the runway, and its velocity at take-off. [4]

[illegible]

Answer:



b. The velocity–time graph of a bus is shown.



- Name the segments of uniform velocity and of uniform acceleration. (1)
- Among the segments of uniform acceleration, in which does the bus's velocity change fastest? (1)
- Find the acceleration from C to D. (1)
- Find the displacement of the bus from C to D. (1)

[illegible]

Answer:

8 Think

Think, then answer.

A motorcycle moving at 20 m/s brakes with a retardation of 6 m/s². Ramesh puts $t = 4$ s into $s = ut + \frac{1}{2}at^2$ to find how far it goes in 4 s, and gets 32 m. What is wrong with his answer? Find the correct distance.

9 Activity: A marble on a slope (Activities 7.2 and 7.3)

(not marked)

Let a marble roll down a long smooth plank resting on a pile of books. Mark where it is each time a friend calls out a second.

Time (s)	Distance from the start (m)	Distance covered in that second (m)	Velocity in that second (m/s)
1			
2			
3			
4			

Draw a displacement–time graph from your table. What does its shape tell you?

