

- 1 (a) Complete Table 1.1 by putting a tick (✓) in the appropriate column to indicate whether the listed quantities are scalars or vectors.

Table 1.1

quantity	scalar	vector
acceleration		
density		
temperature		
momentum		

[2]

- (b) A toy train moves along a straight section of track. Fig. 1.1 shows the variation with time  $t$  of the distance  $d$  moved by the train.

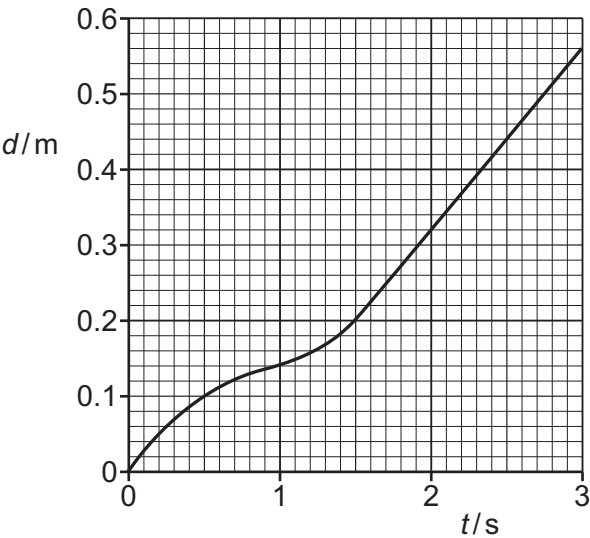


Fig. 1.1

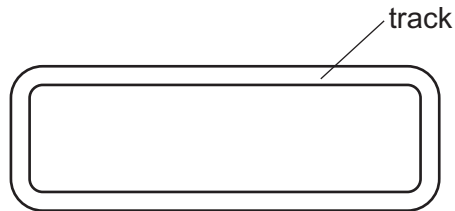
- (i) Describe qualitatively the motion of the train between time  $t = 0$  and time  $t = 1.0$ s.

.....  
..... [1]

- (ii) Determine the speed of the train at time  $t = 2.0$  s.

speed = .....  $\text{ms}^{-1}$  [2]

- (c) The straight section of track in (b) is part of the loop of track shown in Fig. 1.2.



**Fig. 1.2**

The train completes exactly one lap of the loop.

State and explain the average velocity of the train over the one complete lap.

.....  
 .....  
 ..... [1]