

- 1 (a) Fig. 1.1 shows a speed-time graph for a car moving in a straight line. The graph has been divided into 5 stages A, B, C, D and E.

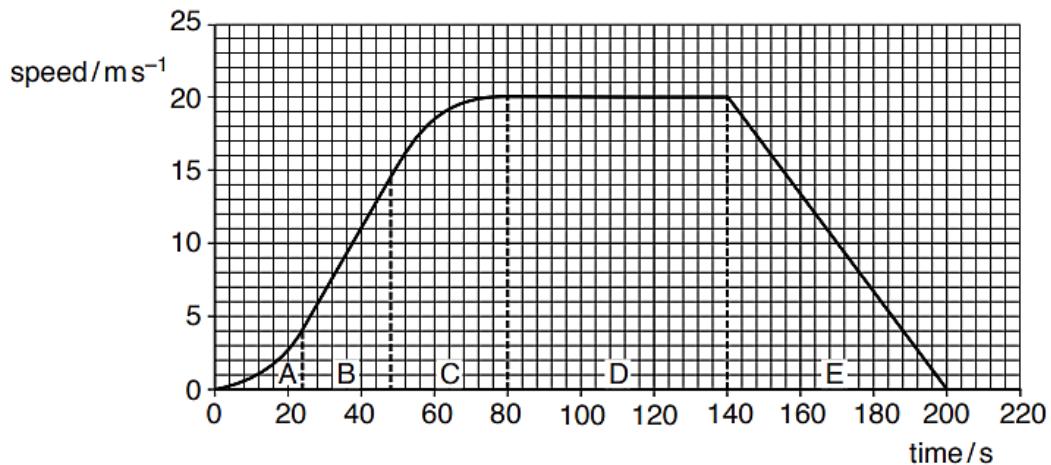


Fig. 1.1

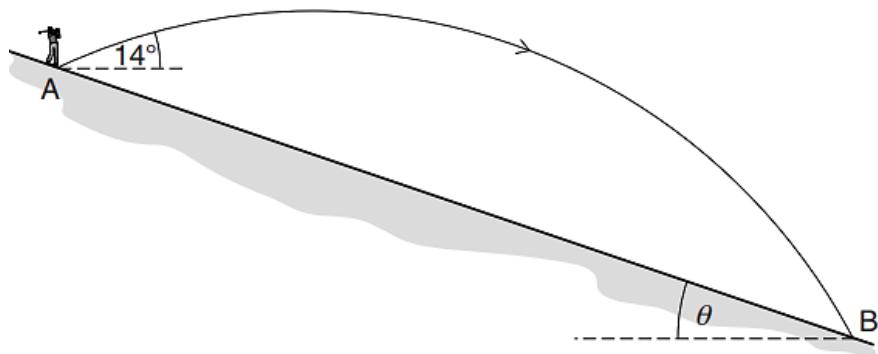
- (i) Using Fig. 1.1, estimate the distance that the car travels during the whole 200 s.

$$\text{distance} = \dots \text{m} [2]$$

- (ii) Estimate the uncertainty in your answer to (a)(i) and explain your reasoning

..... uncertainty = ..... m [2]

- (b) A golf ball is hit from point A on the ground and moves through the air to point B. The path of the ball is illustrated in Fig. 1.2.



**Fig. 1.2** (not to scale)

The ground slopes downhill with constant gradient. The ball has an initial velocity of  $63 \text{ m s}^{-1}$  at an angle of  $14^\circ$  to the horizontal. The ball hits the ground at B after 4.9 s.

- (i) Determine the angle of the slope to the horizontal,  $\theta$ .

angle  $\theta$  = ..... ° [3]

- (ii) In a real situation, air resistance provides a force on the ball in the opposite direction to its motion.
- A. On. Fig. 1.2, sketch a likely path of the ball hit from A when air resistance is taken into account. [1]

- B.** Give reasons for the shape you have drawn in (b)(ii)1. for  
the path of the ball at the start,

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.....  
.....

the position for the highest point,

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.....  
.....

the angle at which the ball hits the ground.

.....  
.....  
.....

[3]

