

- 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.

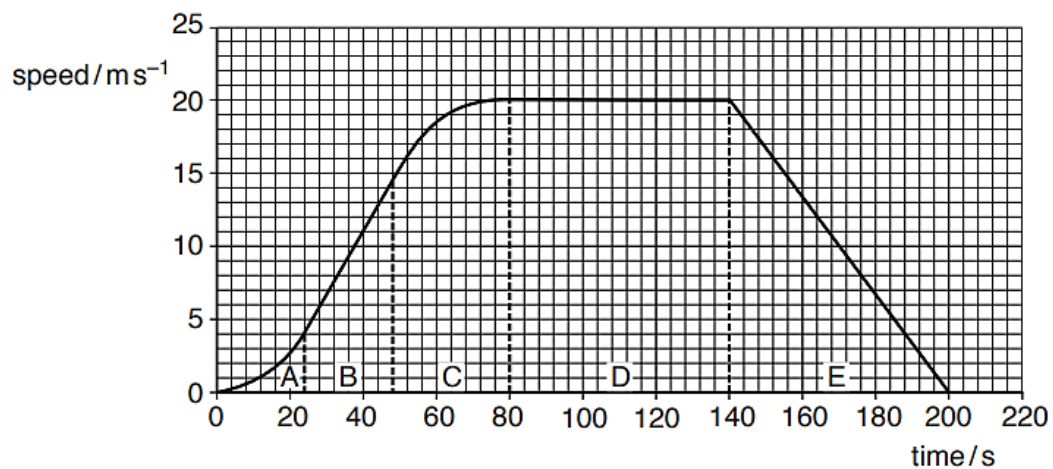


Fig. 1.1

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

distance = m [2]

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

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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.

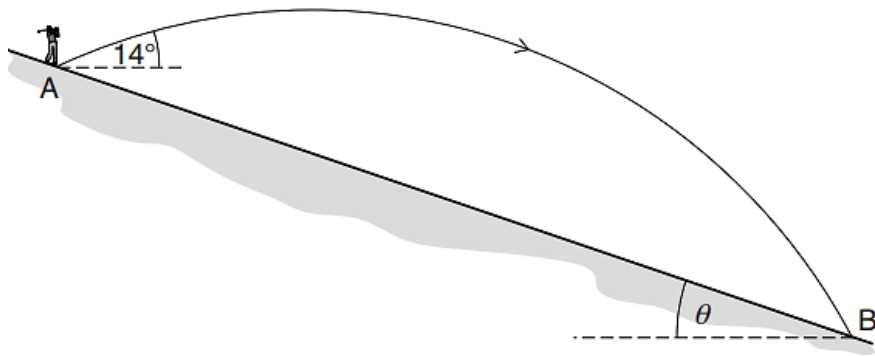


Fig. 1.2 (not to scale)

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

- (i) Determine the angle of the slope to the horizontal, θ .

angle $\theta = \dots\dots\dots^\circ$ [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.

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.....[3]

