

Section A

Answer **all** the questions in the spaces provided.

- 1 (a) A ball is projected with a horizontal velocity of 1.1 m s^{-1} from point A at the edge of a table, as shown in Fig. 1.1.

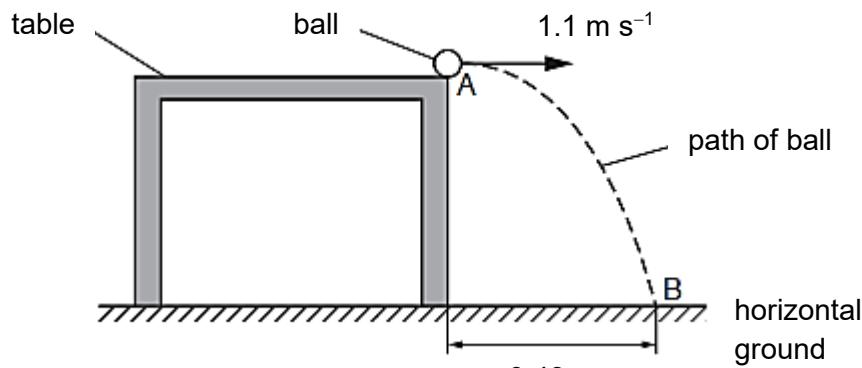


Fig. 1.1

The ball lands on horizontal ground at point B which is 0.43 m away from the base of the table. Air resistance is assumed to be negligible.

- (i) Calculate the time taken for the ball to fall from A to B.

$$\text{time} = \dots \text{ s} \quad [1]$$

- (ii) Use your answer in (a)(i) to determine the height of the table.

$$\text{height} = \dots \text{ m} \quad [2]$$

- (ii) Determine the angle that the path of the ball makes to the horizontal when it reaches B.

angle = ° [2]

- (iv) The ball leaves the table at time $t = 0$.

For the motion of the ball between A and B, sketch graphs on Fig. 1.2 to show the variation with time t of

1. the acceleration a of the ball,
2. the vertical component s_v of the displacement of the ball from A.

Numerical values are not required.

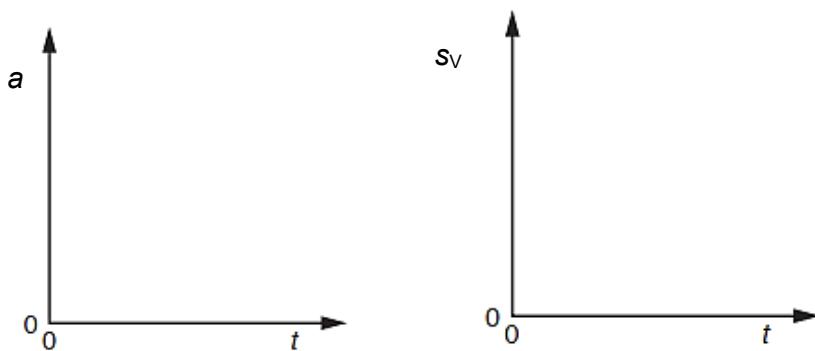


Fig. 1.2

[2]

- (b) A ball of greater mass is projected from the table with the same velocity as the ball in (a). Air resistance is still assumed to be negligible.

State and explain the effect, if any, of increased mass on the time taken for the ball to fall to the ground.

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[1]