

- 1 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.

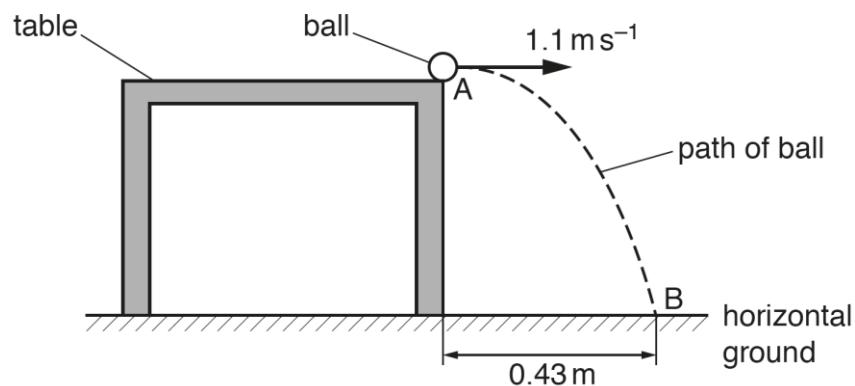


Fig. 1.1

The ball lands on the horizontal ground at point B which is a distance of 0.43 m from the base of the table. Air resistance is negligible.

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

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

- (b) Calculate the magnitude of the displacement of the ball at point B from point A.

displacement = m [3]

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

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

- (i) the acceleration a of the ball,
(ii) the vertical component s_v of the displacement of the ball from A.

Numerical values are not required.

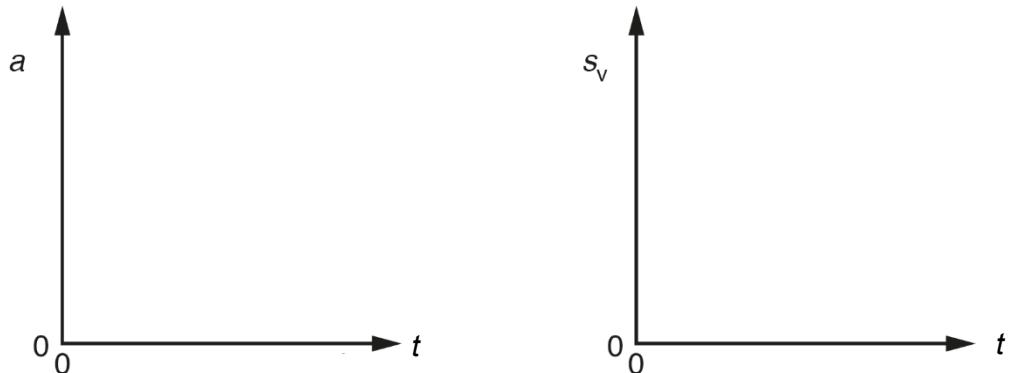


Fig. 1.2

[2]

- (d) Explain why the distance travelled by the ball is different from the magnitude of the displacement of the ball.

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.....[1]

- (e) Another ball of greater mass is projected from the table with the same horizontal velocity of 1.1 m s^{-1} . Air resistance is still negligible.

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

.....[1]