

1 (a) Complete Fig. 1.1 to indicate whether each of the quantities is a vector or a scalar.

quantity	vector or scalar
acceleration	
speed	
power	

Fig. 1.1

[2]

(b) A ball is projected with a horizontal velocity of 1.1 ms^{-1} from point A at the edge of a table, as shown in Fig. 1.2.

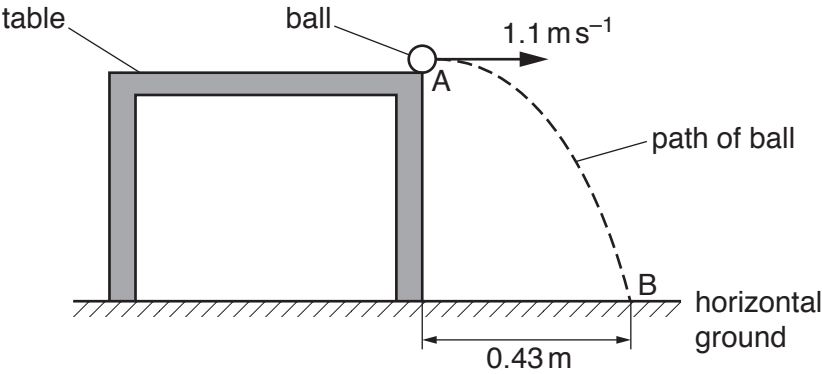


Fig. 1.2

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

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

time = s [1]

(ii) your answer in (b)(i) to determine the height of the table.

height = m [2]

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

the motion of the ball between A and B, sketch graphs on Fig.1.3 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.

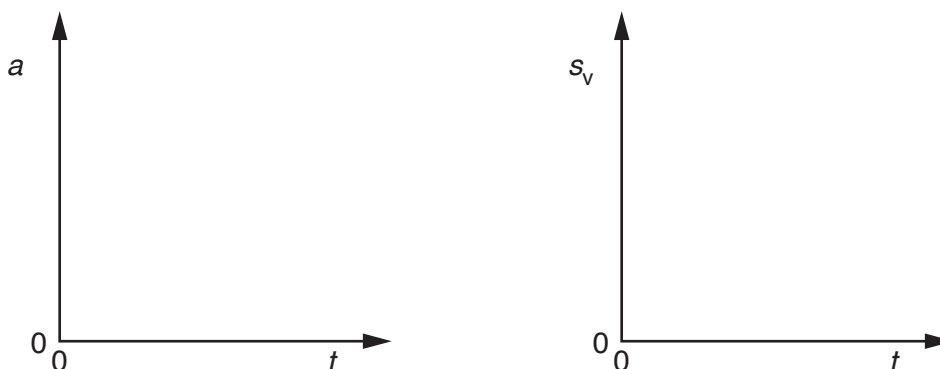


Fig. 1.3

[2]

- (c) A ball of greater mass is projected from the table with the same velocity as the ball in (b). 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.

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.....[1]

[Total: 8]