

- 2 (a) Define *velocity*.

.....
..... [1]

- (b) A ball of mass 0.45 kg leaves the edge of a table with a horizontal velocity v , as shown in Fig. 2.1.

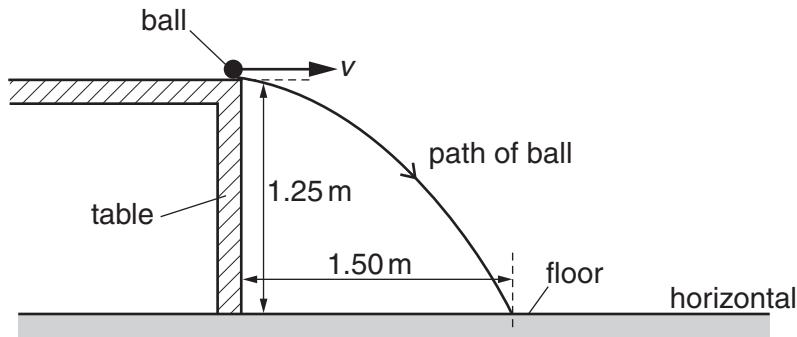


Fig. 2.1

The height of the table is 1.25 m. The ball travels a distance of 1.50 m horizontally before hitting the floor.

Air resistance is negligible.

Calculate, for the ball,

- (i) the horizontal velocity v as it leaves the table,

$$v = \dots \text{ms}^{-1} [3]$$

- (ii) the velocity just as it hits the floor,

magnitude of velocity = ms^{-1}

angle to the horizontal = $^{\circ}$
[4]

- (iii) the kinetic energy just as it hits the floor,

kinetic energy = J [2]

- (iv) the loss in gravitational potential energy as it falls from the table to the floor.

loss in potential energy = J [2]

- (c) Explain why the kinetic energy of the ball in (b)(iii) does not equal the loss of gravitational potential energy in (b)(iv).

.....
..... [1]

[Total: 13]