

AS Level Physics A
H156/02 Depth in physics

Question Set 11

- 1 (a) State *Newton's second law of motion*.

[1]

- (b) Fig. 5.1 shows a tennis ball before and after bouncing on the ground.

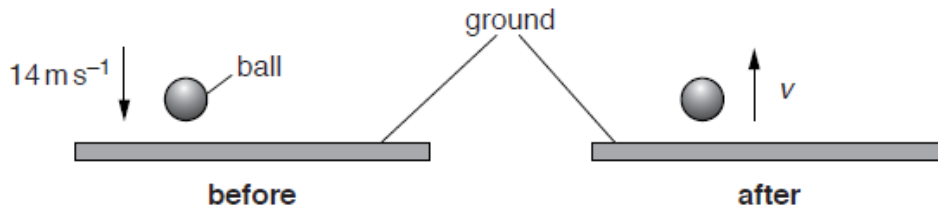


Fig. 5.1

The mass of the tennis ball is 0.062 kg . The tennis ball is slightly warmer after its collision with the ground.

- (i) The tennis ball hits the ground at a speed of 14 ms^{-1} . Calculate the momentum p of the tennis ball as it hits the ground.

$p = \dots\dots\dots \text{Ns}$

[1]

The force acting on the ball during collision with the ground is F . Fig. 5.2 shows a graph of force F acting on the tennis ball against time t .

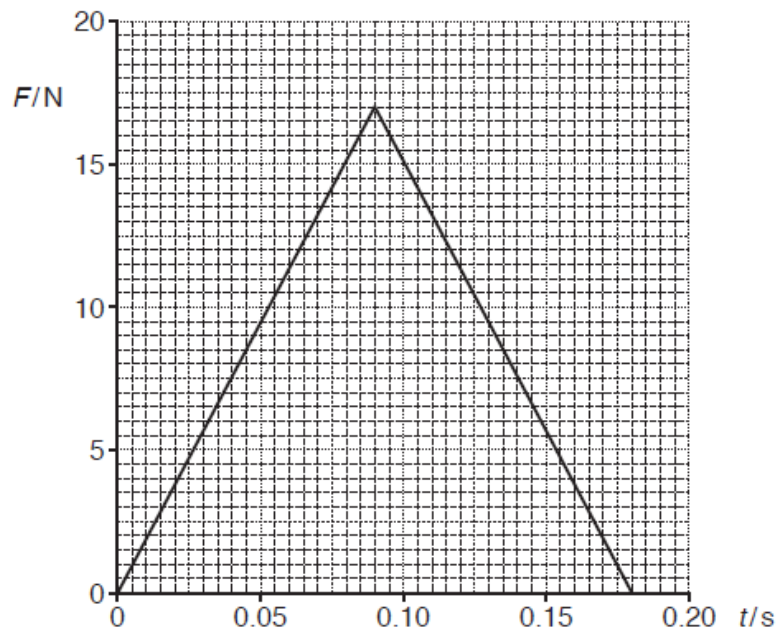


Fig. 5.2

The tennis ball is in contact with the ground for 0.18 s.

- (i) Determine the speed v of the tennis ball as it leaves the ground.

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

- (ii) State what is meant by an elastic collision and explain how your answer to (i) shows that this collision is **not** elastic.

[3]

[2]

Total Marks for Question Set 11: 7

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