**Answer on Question #72227-Physics-Mechanics-Relativity**

A rubber ball of mass 50 g is thrown towards a vertical wall. It strikes the wall at a horizontal speed of 20ms-1 and bounces back with a horizontal speed of 18 ms-1 as shown below. The ball is in contact with the wall for 0.080 s.

(i) Calculate the change in momentum of the ball.

(ii) Calculate the average force exerted by the ball on the wall.

speed before $= 20\,\mathrm{m\,s}^{-1}$

speed after $= 18\,\mathrm{m\,s}^{-1}$
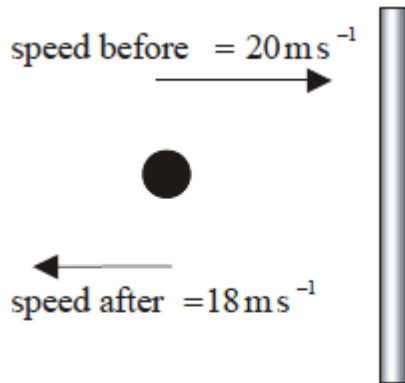
Solution

(i) The change in momentum of the ball is

$$\Delta p = mv_{after} - mv_{before}$$

$$\Delta p = mv_{after} + mv_{before} = 0.05(20 + 18) = 1.9\frac{kgm}{s}.$$

(ii) The average force exerted by the ball on the wall is

$$F = \frac{\Delta p}{t} = \frac{1.9}{0.080} = 23.75\ N.$$

Answer provided by AssignmentExpert.com