

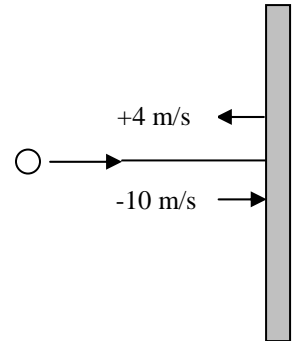
- 1- A ball with mass of 5 kg moving in straight line with velocity of 10 m/s to the right direction. Suddenly it hits a wall and due to the impact with the wall the velocity has changed to 4 m/s to the left. If the time of the impact is 0.5 s, calculate the average force during the impact?

Answer:

Assuming the final direction of the ball velocity is positive, therefore the initial direction of the ball velocity is negative: $\vec{J} = \Delta \vec{p} \Rightarrow F \cdot t = m(v - v_0) \Rightarrow F \times (0.5) = 5(4 - [-10]) \Rightarrow F = (5 \times 14 / 0.5)$

$$F = 140 \text{ N}$$

- 2- Car X is traveling at half the speed of car Y. Car X has twice the mass of car Y. Which statement is correct?



- a- Car X has half the kinetic energy of car Y.
b- Car X has one quarter of the kinetic energy of car Y.
c- Car X has twice the kinetic energy of car Y.
d- The two cars have the same kinetic energy.
e- None of these.