

- 9 A car is moving at constant speed in a straight line with the engine providing a driving force equal to the resistive force  $F$ .

When the engine is switched off, the car is brought to rest in a distance of 100 m by the resistive force.

It may be assumed that  $F$  is constant during the deceleration.

The process is then repeated for the same car with the same initial speed but with a constant resistive force of  $0.800F$ .

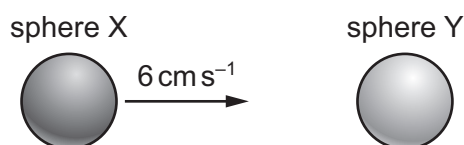
How far will the car travel while decelerating?

- A 120 m                      B 125 m                      C 156 m                      D 250 m

- 10 What is a statement of the principle of conservation of momentum?

- A In an elastic collision momentum is constant.  
B Momentum is the product of mass and velocity.  
C The force acting on a body is proportional to its rate of change of momentum.  
D The momentum of an isolated system is constant.

- 11 Two solid spheres form an isolated system. Sphere X moves with speed  $6 \text{ cm s}^{-1}$  in a straight line directly towards a stationary sphere Y, as shown.



The spheres have a perfectly elastic collision. After the collision, sphere X moves with speed  $2 \text{ cm s}^{-1}$  in the same direction as before the collision.

What is the speed of sphere Y?

- A  $2 \text{ cm s}^{-1}$                       B  $4 \text{ cm s}^{-1}$                       C  $6 \text{ cm s}^{-1}$                       D  $8 \text{ cm s}^{-1}$