

9 In which situation is total linear momentum **always** conserved?

- A in all collisions between two objects
- B in collisions between two objects moving at equal and opposite velocity
- C in collisions between two objects that form an isolated system
- D in collisions between two objects with the same mass

10 An object of mass m moving with velocity 9.0 ms^{-1} has a head-on elastic collision with a stationary object of mass $2m$.

After the collision, both objects are moving. No external forces act on the system.

What is the velocity of the object of mass $2m$ after the collision?

- A -6.0 ms^{-1} B -3.0 ms^{-1} C 4.5 ms^{-1} D 6.0 ms^{-1}

9 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.

19 The momentum of a car of mass m increases from p_1 to p_2 .

What is the increase in the kinetic energy of the car?

- A $\frac{(p_2^2 - p_1^2)}{2m}$ B $\frac{(p_2 - p_1)^2}{2m}$ C $\frac{p_2 - p_1}{2m}$ D $\frac{p_1 - p_2}{2m}$