1. When a body is accelerating, the resultant force acting on it is equal to its

A. change of momentum.

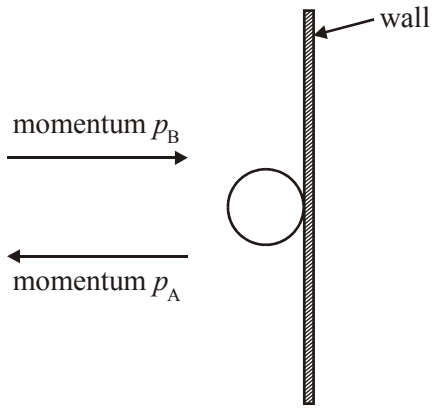
B. rate of change of momentum.

C. acceleration per unit of mass.

D. rate of change of kinetic energy.

(1)

2. A sphere of mass m strikes a vertical wall and bounces off it, as shown below.



The magnitude of the momentum of the sphere just before impact is p_B and just after impact is p_A. The sphere is in contact with the wall for time t. The magnitude of the average force exerted by the wall on the sphere is

A. $\frac{(p_B - p_A)}{t}$.

B. $\frac{(p_B + p_A)}{t}$.

C. $\frac{(p_B - p_A)}{mt}$.

D. $\frac{(p_B + p_A)}{mt}$.

(1)

3. An object is moving at constant velocity. Which **one** of the following quantities **must** have zero magnitude?

A. Weight of object

B. Momentum of object

C. Kinetic energy of object

D. Resultant force on object

(1)

4. A truck collides head on with a less massive car moving in the opposite direction to the truck. During the collision, the average force exerted by the truck on the car is F_T and the average force exerted by the car on the truck is F_C. Which **one** of the following statements is correct?

A. F_T will always be greater in magnitude than F_C.

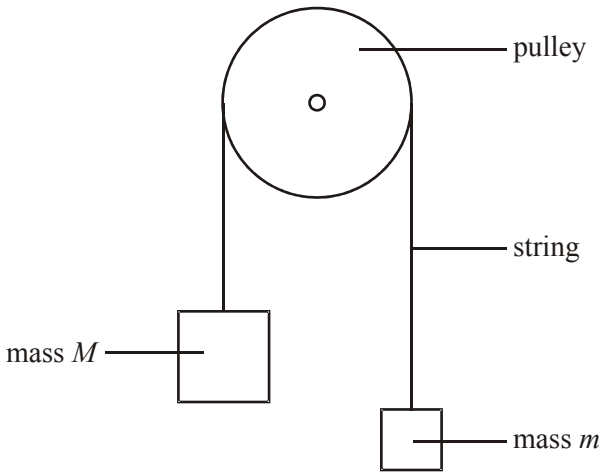
B. F_T will always be equal in magnitude to F_C.

C. F_T will be greater in magnitude than F_C only when the speed of the car is less than the speed of the truck.

D. F_T will be equal in magnitude to F_C only when the speed of the truck is equal to the speed of the car.

(1)

5. A light inextensible string has a mass attached to each end and passes over a frictionless pulley as shown.



The masses are of magnitudes M and m, where $m < M$. The acceleration of free fall is g. The downward acceleration of the mass M is

A. $\frac{(M - m)g}{(M + m)}$.

B. $\frac{(M - m)g}{M}$.

C. $\frac{(M + m)g}{(M - m)}$.

D. $\frac{Mg}{(M + m)}$.

(1)