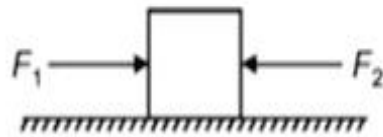


Let us consider two forces F_1 and F_2 acting on a body of mass 2 kg as shown in the figure. $F_1 = 10\text{ N}$, $F_2 = 2\text{ N}$, what will be the acceleration?



Q2:

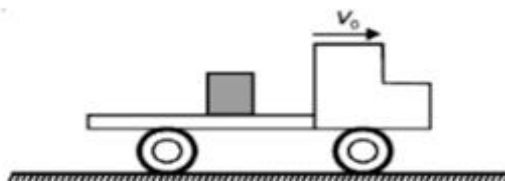
A bus starts from rest and moves down a hill with constant acceleration. The bus travels a distance of 400 m in 10 second. If mass of the bus is 5 metric tonne, then what will be its acceleration and force acting on it? (1 metric tonne = 1000 kg)

Q3:

A stone of mass 1 kg is thrown with a velocity of 20 m/s across the frozen surface of a lake and it comes to rest after travelling a distance of 50 m. What is the magnitude of the force opposing the motion of the stone?

Q4:

An iron block of mass $m = 500\text{ kg}$ is kept at the back of a truck moving at a speed $v_0 = 90\text{ km h}^{-1}$. The driver applies the brakes and slows down to a speed of $v = 54\text{ km h}^{-1}$ in 10 s. What constant force acts on the block during this time if the block does not slide on the truck-bed?



Q5:

What will be the net acceleration of a given block of mass 2 kg kept on a smooth surface?



A force $\vec{F} = (2t\hat{i} + 3t^2\hat{j})\text{ N}$ acts on an object moving in xy plane. Find magnitude of change in momentum of the object in time interval $t = 0$ to $t = 2\text{ s}$.

Q6:

Q7

A car of mass 800 kg is moving with a constant velocity 40 km/h. Find the net force on it.

Q8

How much force is required to stop a bus (in 10 seconds) of mass 5000 kg moving with a speed of 72 km/h?

Q9

A car weighing 1600 kg moving with a velocity of 30 m/s retards uniformly coming to rest in 20 seconds. Calculate the

- (i) Initial and final momentum of the car.
- (ii) Rate of change of momentum of the car.
- (iii) Acceleration of the car.

Q10

A constant force of 5 N can produce an acceleration of 1 m/s^2 on the body of mass m_1 and 2 m/s^2 on the body of mass m_2 . If both the masses are tied together and same force is applied, then what will be the acceleration of the system?