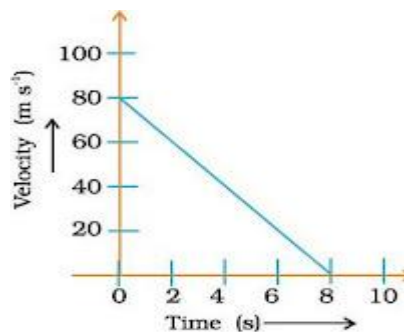


IX Physics: CHAPTER- FORCE AND LAWS OF MOTION

1. When the brakes are applied to the bike the back seater moves forward why? (2)
2. There are three solids made up of aluminium, steel and wood, of the same shape and same volume. Which of them would have highest inertia? (2)
3. Two balls of the same size but of different materials, rubber and iron are kept on the smooth floor of a moving train. The brakes are applied suddenly to stop the train. Will the balls start rolling? If so, in which direction? Will they move with the same speed? Give reasons for your answer (3)
4. Horse need continues of force in order to move a cart with a constant speed. Why? (2)
5. Why do passengers jumping out of a rapidly moving bus fall forward with his face downwards, if they do not run forward? (2)
6. How much force is needed to accelerate a trolley of mass 20g through 1 m/s^2 . (2)
7. A force of 100N acts on a mass of 25 kg for 5 s .What velocity does it generate? (2)
8. A bullet leaves a rifle with a velocity of 100m/s and the rifle of mass 2.5 kg recoils with a velocity of 1m/s. Find the mass of the bullet? (2)
9. A certain force acting on a mass of 15kg for 3s, gives it a velocity of 2m/s. Find the magnitude of force. (2)
10. Why are road accidents at high speeds very much worse than accidents at low speeds? (2)
11. A motor car of mass 200kg is moving with a certain velocity . It is brought to rest by the application of brakes, within a distance of 20m when the average resistance being offered to it is 500N.What was the velocity of the motor car? (3)
12. A body of mass 0.5kg undergoes a change of velocity of 4cm/s in 4s What is the force acting on it (2)
13. A force of 8N acting on an 8kg mass for 4s provides its some velocity.Calculate the velocity (2)
14. A feather of mass 5 g is dropped from a height. It is observed to fall down with a constant velocity . What is the net force acting on it? (2)
15. State Newton's third law of motion. A boy pushes a wall with a force of 20 N. What is the magnitude and direction of the force experienced by the boy? (3)
16. Two bodies of mass 1kg and 2 kg moving in the direction opposite to each other with a speed 5m/s collide. Calculate the total momentum of the system before collision. (2)

17. A rocket can move in air free space but a jet plane cannot. why? (2)
18. A force of 3N acts on a mass of 0.5kg at rest for 10s. Find the final velocity and the momentum of the body after 10s. (3)
19. A force of 80N acting on a certain mass for 3s gives it a velocity of 6m/s. find the mass of the body if the body was initially at rest. (2)
20. Two identical bullets are fired one by a light rifle and another by a heavy rifle with the same force. Which rifle will hurt the shoulder more and why? (2)
21. Suppose a ball of mass m is thrown vertically upward with an initial speed v , its speed decreases continuously till it becomes zero. Thereafter, the ball begins to fall downward and attains the speed v again before striking the ground. It implies that the magnitude of initial and final momentums of the ball are same. Yet, it is not an example of conservation of momentum. Explain why? (2)
22. Velocity versus time graph of a ball of mass 50 g rolling on a concrete floor is shown in Fig. Calculate the acceleration and frictional force of the floor on the ball. (3)



23. A truck of mass M is moved under a force F . If the truck is then loaded with an object equal to the mass of the truck and the driving force is halved, then how does the acceleration change? (3)
24. Two friends on roller-skates are standing 5 m apart facing each other. One of them throws a ball of 2 kg towards the other, who catches it, How will this activity affect the position of the two? Explain your answer. (3)
25. Derive the unit of force using the second law of motion. A force of 5 N produces an acceleration of 8 ms^{-2} on a mass m_1 and an acceleration of 24 m s^{-2} on a mass m_2 . What acceleration would the same force provide if both the masses are tied together? (3)