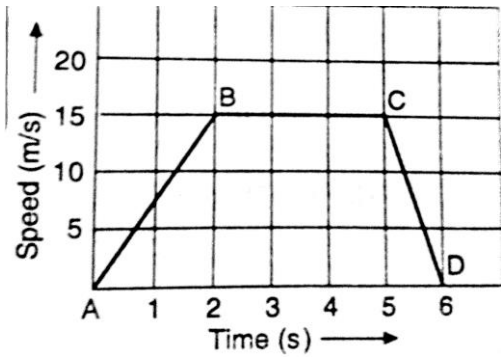
INTERNATIONAL INDIAN SCHOOL, RIYADH.
SAI WORKSHEET-2015-16
SUBJECT: PHYSICS
STD: IX

CHAPTER.2. FORCE AND LAWS OF MOTION

1. Explain the following with reason.

(a)A cricket player moves his hand backwards while catching a fast cricket ball.
(b) If we jerk a piece of paper from under a book. Quick enough, the book will not move.
(c) Why a person is hit harder when he jumps on a cemented floor than a muddy floor?
(d) Why the passengers are jerked forward when a moving bus stops suddenly?

2. The speed-time graph of a car of 1000kg mass is given below. On the basis of this answer the following questions.



(a) When is the maximum force acting on car?
(b) What is the retarding force acting on the car?
(c) For how long is there no force acting on the car?
(d) What is the velocity of the car after 5 second?
(e) Find the acceleration of the car during each of the first two intervals of four second each?

3. using second law of motion, derive the relation between force and acceleration. A bullet of 10g strikes a sand-bag at a speed of 10^3m/s and gets embedded after travelling 5cm. Calculate (i) the resistive force exerted by the sand on the bullet.(ii)the time taken by the bullet to come to rest.

4. The force of attraction between two bodies is 20N. Calculate the force between them when mass of each body as well as the distance between them are halved?

5. State the Newton's 2nd law of motion? How does it relate force and momentum? When do we say momentum is conserved? Discuss the conservation of momentum in each of the following cases.1. a rocket taking off from ground. 2. Flying of a jet aeroplane.

6. A force of 5N gives a mass m1 and acceleration of 8m/s² and a mass m2 an acceleration of 24m/s². What acceleration would it given if both the masses are tied together?

7. A car A of mass 1500kg, travelling at 25m/s collides with another car B of mass 1000kg travelling at 15m/s in the same direction. After collision the velocity of car A becomes 20m/s. Calculate the velocity of car B after the collision.

8. A gun of mass 3kg firs a bullet of mass 30g. The bullet takes 0.003s to move through the barrel of the gun and acquires a velocity of 100m/s. calculates (i).The velocity with which the gun recoils. (ii)The force exerted on gunman due to recoil of the gun.

9. Explain the following with suitable reason.

1. Why is it difficult to walk on a slippery road?
2. If a man jumps out from a boat, the boat moves backwards. Why?
3. Why a runner presses the ground with his feet before he starts his run.

10. The velocity of a body of mass 10kg increases from 4m/s to 8m/s when a force acts on it for 2s. (a) What is the momentum before the force acts? (b) What is the momentum after the force acts? (c) What is the value of the force?