



INDIAN SCHOOL NIZWA

PHYSICS CH:9 FORCE AND LAWS OF MOTION Worksheet

Name: _____

Date: _____

Class: IX Sec: ____

I MULTIPLE CHOICE QUESTIONS (MCQs)

- Inertia of a body in linear motion is measured by
 - velocity
 - acceleration
 - mass
 - momentum
- If the mass of a body is doubled and its velocity becomes half, then the momentum of the body
 - becomes half
 - becomes double
 - remains same
 - becomes four times
- Four bodies A, B, C and D have masses 2 kg, 3 kg, 4 kg and 5 kg respectively. Which of these will gain maximum acceleration if same force is applied on all four bodies?
 - B
 - A
 - C
 - D
- A body of mass 1.5 kg is moving with the constant velocity of 5 m/s. The momentum of the body is
 - 10 kg m/s
 - 15 kg m/s
 - 3 kg m/s
 - 7.5 kg m/s
- An external force of 5N changes the velocity of a body of mass 2 kg from 5 m/s to 7m/s .The time for which the force has been applied is
 - 0.9 s
 - 1s
 - 0.8 s
 - 2s

II SHORT ANSWER TYPE

- Two trucks, one loaded and other empty is moving with same velocity on a straight road. Which of them requires a greater force to stop at same time and why?
- Place a water filled tumbler on a tray. Hold the tray and turn around as fast as you can. Why does the water spill?
- A bullet fired against a glass window pane makes a hole in it without cracking it. Give reason
- A runner presses the ground with his feet before he starts his run. Identify action and reaction in this situation.



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5. Explain with reasons:

- b. A jet aero plane releases a lot of hot gases before taking off.
- c. We press the ground while walking forward.

6. Explain why a bicycle stops if we stop pedaling.

7. If we take out a piece of paper from under a book with a jerk, the book will not move. Why?

8. The mass of an object A is 6 kg and that of another object B is 34 kg. Which of the two objects, A or B has more inertia?

II NUMERICALS

1. Calculate the force required to impact to a car with a velocity of 30 m s^{-1} in 10 seconds. The mass of the car is 1,500 kg.

2. A cricket ball of mass 70 g moving with a velocity of 0.5 m s^{-1} is stopped by player in 0.5s. What is the force applied by player to stop the ball ? .

3. What will be acceleration of a body of mass 5 kg if a force of 200 N is applied to it?

4. Two balls A and B of masses m and $2m$ are in motion with velocities $2v$ and v respectively. Compare

- a) Their inertia
- b) Their momentum
- c) The force needed to stop them at the same time.

5. What force would be needed to produce an acceleration of 1 m s^{-2} on a ball of mass 1kg?

6. What is the acceleration produced by a force of 5 N exerted on an object of mass 10 kg?

7. How long should a force of 100 N act on a body of 20 kg so that it acquires a velocity of 100 m s^{-1} ?

8. A 1,000 kg vehicle moving with a speed of 20 m s^{-1} is brought to rest in a distance of 50 m, (i) Find the acceleration; (ii) Calculate the unbalanced force acting on the vehicle

9. Which would require greater force: accelerating a 10 g mass at 5 m s^{-2} or 20 g mass at 2 m/s^2

10. A car of mass 2400 kg moving with a velocity 20 m/s is stopped in 10s on applying brake. Calculate the retardation and retarding force.