

National Institute of Open Schooling  
 Senior Secondary Course – Physics  
 Lesson 3 : Laws Of Motion  
 Worksheet – 03

**Q1.** Though a force is not visible; its effect can be seen or experienced. Observe your surroundings and mention different kind of effects of forces on different objects.

**Q2.** Why do the passengers standing in a bus fall in the backward direction when the stationary bus begins to move suddenly and the passengers are pushed forward when a moving bus stops suddenly?

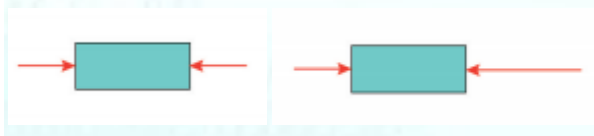
**Q3.** A 200kg stone is moving towards you with velocity  $2\text{ms}^{-1}$  and at the same time a bullet of 2kg with velocity  $100\text{ms}^{-1}$  is moving towards you. Explain with reasons which one is more dangerous and requires more force to stop.

**Q4.** Apply Newton’s third law of motion to explain movements of a ball during a game of football.

**Q5.** First law of Motion or Law of Inertia states that “a body continuous to be in a state of rest or of uniform motion in a straight line unless it is acted upon by a net external force”. Now roll a ball along the ground and observe its motion. Write your observation and explain why ball comes to rest after travelling some distance without any external force acted upon it.

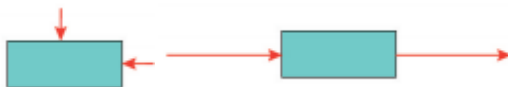
**Q6.** Observe your surroundings and give two examples of friction that are useful and two examples of friction that are not useful. In case of useful how you will increase friction and in case of not useful write the method to reduce friction.

**Q7.** Which diagram represents balanced forces? How do opposing forces affect the motion of an object if the forces are balanced?



a)

b)



c)

d)

**Q8.** Take any solid object from your surrounding and measure it. Lift the load with the help of a rope at a constant acceleration to your house roof. Measure the height of your house roof

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and let the load covers this height of your house roof in 1minute. Calculate the tension in the rope.

- Q9.** Suppose you are standing on a weighing scale on a lift. If the lift is going down with a downward acceleration of  $9 \text{ ms}^{-2}$ , what would be the reading of the weighing scale? Take  $g = 10 \text{ ms}^{-2}$ . Justify your answer with explanation.
- Q10.** It is generally observed that roads on hilly areas or mountain roads are generally winding upwards rather than going straight up. Give reasons for the statement.

