

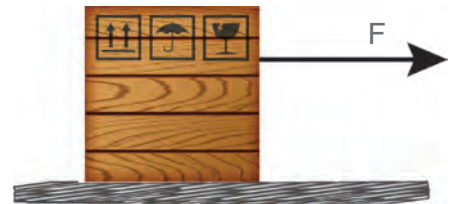
KNOWLEDGE AREA: MECHANICS

Questions

Multiple-choice questions

Four possible answers are given for the following questions. Each question has only ONE correct answer. Choose the correct answer and mark the applicable LETTER with a cross (X).

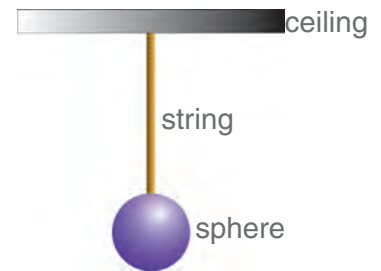
1. A force, F , acts on an object that moves to the right on a rough surface.
The velocity of the object decreases.



The directions of the resultant force and the acceleration are:

	Direction of resultant force	Direction of acceleration
A.	To the right	To the left
B.	To the right	To the right
C.	To the left	To the right
D.	To the left	To the left

2. A sphere, attached to a string, is hanging from the ceiling, as shown in the diagram.
The reaction force of the weight of the sphere is:
- A. the force of the ceiling on the sphere.
 - B. the force of the ceiling on the string.
 - C. the force of the string on the sphere.
 - D. the force of the sphere on the earth.



3. A trolley, mass $1,5 \text{ kg}$ and travelling at $2 \text{ m}\cdot\text{s}^{-1}$, collides perpendicularly with a wall and bounces back at $1 \text{ m}\cdot\text{s}^{-1}$. The magnitude of the change in velocity (in $\text{m}\cdot\text{s}^{-1}$) of the trolley is:
- A. 2
 - B. 1
 - C. 3
 - D. 4,5
4. A railway vehicle, mass $30\,000 \text{ kg}$ collides with another railway vehicle, mass $20\,000 \text{ kg}$, that is at rest. The vehicles connect and the $20\,000 \text{ kg}$ vehicle accelerates at $3 \text{ m}\cdot\text{s}^{-2}$ during the impact. The net force (in kN) experienced by the $20\,000 \text{ kg}$ vehicle is:
- A. 60
 - B. 90
 - C. 6,67
 - D. 10



