

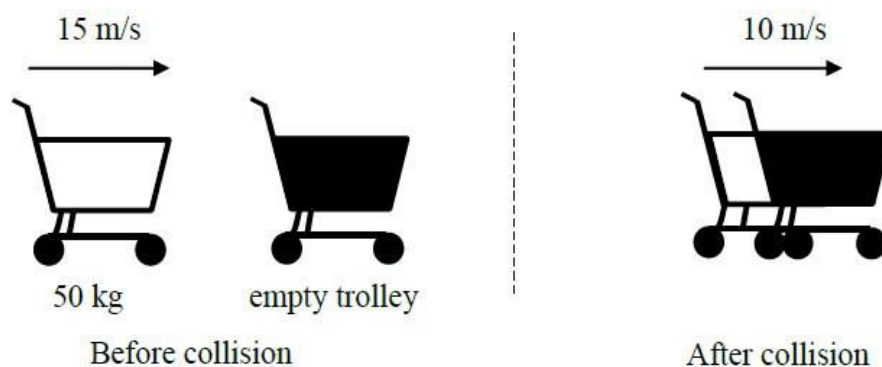
BA SANGAM COLLEGE
YEAR 11
PHYSICS
WORKSHEET 3

1. A body starts from rest and moves with a uniform acceleration of 5 m/s^2 in a straight line.

- (i) What is the velocity after 10 seconds?
- (ii) How far has it travelled in this time?
- (iii) After how long will the body be 200 m from its starting point?

2.

A shopping trolley of mass 50 kg moving with a velocity of 15 m/s in a supermarket hits an empty shopping trolley at rest as shown in the diagram below. Both the trolley's move off together in the same direction with a velocity of 10 m/s after colliding. Determine the mass of the empty shopping trolley.



3.

A Russian aerospace company NPO Lavochkin sends a unmanned spacecraft of total mass of 1538 kg on earth to the moon. The spacecraft lands on the moon which had a gravitational field of 1.6 N/kg

- (i) Calculate the mass of the spacecraft on the moon.
- (ii) Calculate the weight of the spacecraft on moon.

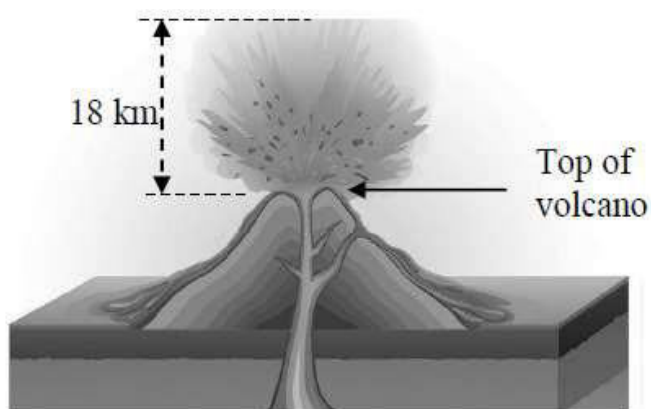
4.

A luxury ship sank after running into an iceberg. The ship had a mass of 4.32×10^8 kg and a momentum of 5.9×10^9 kg m/s.



Calculate the magnitude of ship's velocity when it collided with the iceberg.

5. An active volcano called Mount Saint Helen erupts and throws molten lava to a maximum vertical height of 18 km. The lava rolls off on the sides of the mountain after it travels through the air as shown in the diagram.



Source: <https://www.worldatlas.com>

Calculate the:

- (i) initial velocity with which the molten lava erupts from the top of the volcano.
- (ii) time the lava travels in the air just before it reaches the top of the volcano.