Momentum

➤ **Definition:**

"the force that keeps an object moving "

➤ **Formula:**

Momentum = mass* velocity

P = mv

➤ Greater the mass = greater the velocity = greater of object momentum

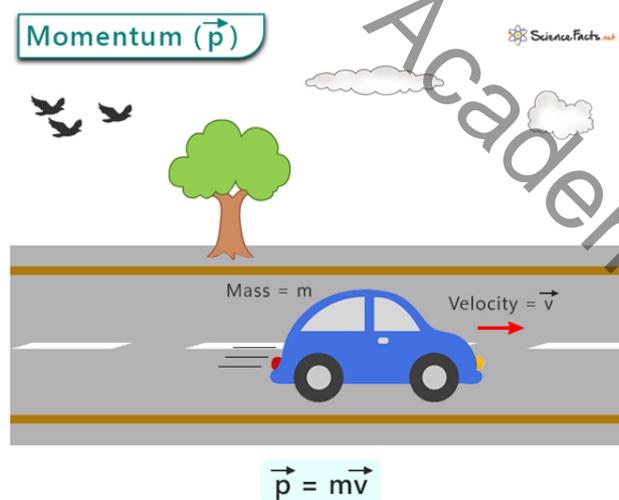➤ momentum is the vector quantity, has direction and size

➤ **Example:**

Q: **A 50kg cheetahs is running at 60 m/ sec. Calculate its momentum**
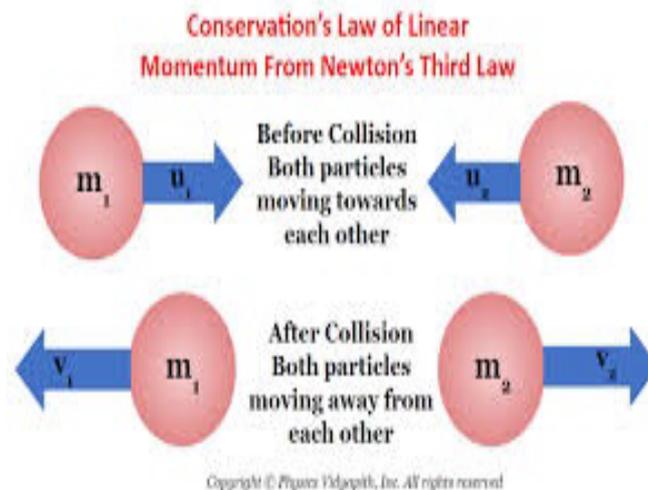
Solution:

Mass= 50 kg , velocity = 60 m/s

P = mv

P = 50 * 60   = 3000kg m/s

➤ **Momentum before and Momentum after**

● In a closed system the momentum before an event and after the momentum is always equal called **conservation of momentum**
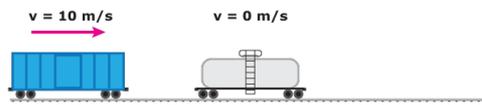
Conservation's Law of Linear Momentum From Newton's Third Law

Before Collision Both particles moving towards each other

After Collision Both particles moving away from each other

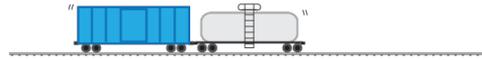Copyright © Physics Vidyapith, Inc. All rights reserved

➤ **Example**

1 -A truck full of goods has a large mass and so it must slow down before a stop light because it has the large momentum with the same velocity and so it is very difficult to stop.

Smaller Mass smaller momentum

larger Mass larger momentum

Two bodies moving with Velocity V

2- A moving car hits another car, crash cause the two cars lock together and then countiue moving in the direction of original moving car but at a lower velocity. When mass of moving object increase causes decrease in velocity.

v = 10 m/s   v = 0 m/s

Collision and Coupling

v = 6 m/s