

# 8 Lecture - PHY101

## Important Subjective

**Define momentum in physics.**

**Answer:** Momentum is a physical quantity that describes an object's motion. It is the product of an object's mass and velocity. The momentum of an object is a vector quantity, meaning it has both magnitude and direction.

**What is the formula for momentum?**

**Answer:** The formula for momentum is momentum = mass x velocity, which can be expressed as  $p = mv$ .

**What is the principle of conservation of momentum?**

**Answer:** The principle of conservation of momentum states that the total momentum of a system of objects remains constant if no external forces act on the system.

**What is the difference between elastic and inelastic collisions?**

**Answer:** In an elastic collision, both the total momentum and kinetic energy of the system are conserved, while in an inelastic collision, only the total momentum is conserved.

**What is impulse?**

**Answer:** Impulse is the change in momentum of an object resulting from an applied force. It is equal to the force multiplied by the time during which it acts.

**What is the relationship between force, time, and impulse?**

**Answer:** The impulse of a force is equal to the product of the force and the time during which it acts. This can be expressed as  $J = Ft$ .

**What is the difference between linear momentum and angular momentum?**

**Answer:** Linear momentum is the product of an object's mass and velocity, while angular momentum is the product of an object's moment of inertia and angular velocity.

**What is the law of conservation of angular momentum?**

**Answer:** The law of conservation of angular momentum states that the total angular momentum of a system remains constant if no external torques act on the system.

**How is momentum used in real-world applications?**

**Answer:** Momentum is used in a variety of real-world applications, such as in the design of car safety features, the understanding of fluid dynamics, and the development of rocket propulsion systems.

**How can momentum be used to solve problems in physics?**

**Answer:** Momentum can be used to solve a wide range of problems in physics, such as collisions, motion in a gravitational field, and fluid flow. It provides a useful tool for analyzing the behavior of objects and systems in motion.