

## Physics Notes Class 11 CHAPTER 4 MOTION IN A PLANE part 1

Those physical quantities which require magnitude as well as direction for their complete representation and follows vector laws are called **vectors**.

Vector can be divided into two types

### 1. Polar Vectors

These are those vectors which have a starting point or a point of application as a displacement, force etc.

### 2. Axial Vectors

These are those vectors which represent rotational effect and act along the axis of rotation in accordance with right hand screw rule as angular velocity, torque, angular momentum etc.

### Scalars

Those physical quantities which require only magnitude but no direction for their complete representation, are called scalars.

Distance, speed, work, mass, density, etc are the examples of scalars. Scalars can be added, subtracted, multiplied or divided by simple algebraic laws.

### Tensors

Tensors are those physical quantities which have different values in different directions at the same point.

Moment of inertia, radius of gyration, modulus of elasticity, pressure, stress, conductivity, resistivity, refractive index, wave velocity and density, etc are the examples of tensors. Magnitude of tensor is not unique.

### Different Types of Vectors

(i) **Equal Vectors** Two vectors of equal magnitude, in same direction are called equal vectors.

