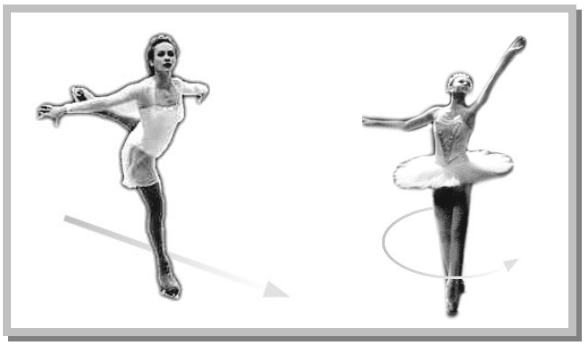
Introduction

Translation is motion along a straight line but rotation is the motion of wheels, gears, motors, planets, and the hands of a clock, the rotor of jet engines and the blades of helicopters. First figure shows a skater gliding across the ice in a straight line with constant speed. Her motion is called translation but second figure shows her spinning at a constant rate about a vertical axis. Here motion is called rotation.



Up to now we have studied translatory motion of a point mass. In this chapter we will study the rotatory motion of rigid body about a fixed axis.

(1) Rigid body: A rigid body is a body that can rotate with all the parts locked together and without any change in its shape.

(2) System: A collection of any number of particles interacting with one another and are under consideration during analysis of a situation are said to form a system.

(3) Internal forces:All the forces exerted by various particles of the system on one another are called internal forces. These forces are alone enable the particles to form a well-defined system. Internal forces between two particles are mutual (equal and opposite).

(4) External forces:To move or stop an object of finite size, we have to apply a force on the object from outside. This force exerted on a given system is called an external force.