

UNIT

2

FORCE AND PRESSURE



Learning Objectives



After the completion of this lesson, students will be able to:

- ◆ understand the concept of force and its effects.
- ◆ differentiate thrust and pressure.
- ◆ understand the characteristics of atmospheric and liquid pressure.
- ◆ apply pascal's law in day to day life.
- ◆ understand the applications of surface tension and viscosity.
- ◆ analyse friction in rest and motion.
- ◆ know about the ways of increasing and decreasing friction.
- ◆ solve numerical problems related to force and pressure.

Introduction

We see many objects in our daily life. Some of them are moving and some of them are at rest. A ball at rest, moves when it is kicked. Similarly when we push or pull objects which are at rest, they begin to move. This push or pull is called force. A force acting in a particular area, produces pressure. For example when we fasten a nail on the wall, pressure is exerted. Not only solids, gases and liquids also exert pressure. Pressure exerted by liquids and gases finds application in different fields. Hydraulic lift and hydraulic break are working due to liquid pressure. In this lesson you will study about force and pressure. You will also study about surface tension viscosity and friction.

2.1 Force

We do so many activities in our daily life like, opening a door, kicking a football, striking a carrom coin etc., To do these activities an

external agency is needed. This external agency is called force. Force can either set an object at rest into motion or bring a moving object to rest. It can even change the shape and size of certain objects.

Force is defined as an external agency which changes or tends to change the state of rest or the state of uniform motion of a body or the direction of a moving body or the shape of a body. Force is a vector quantity, which has magnitude and direction. It is measured by a unit called 'newton' (N).

2.1.1 Effects of Force

Observe the strokes of a batsman in cricket game. If he wants to hit the cricket ball to the boundary, the striking force on the ball must be greater. So, the greater the force you apply on a body, greater will be its effect on it.