

# **Components of a Force, Equilibrium with several forces, Units of forces**

## **CLASS-IX**

**SUBJECT : PHYSICS**  
**CHAPTER NUMBER: 9**  
**CHAPTER NAME : FORCE AND LAWS OF MOTION**

---

**CHANGING YOUR TOMORROW**

---

# HOME ASSIGNMENT

1. A student pulls a box of books on a smooth horizontal floor with a force of 100 N in a direction of  $37^\circ$  above the horizontal surface. If the mass of the box and the books is 40.0 kg, what is the acceleration of the box and the normal force on the box by the floor ?
2. In physics, the concept force is used to describe how the acceleration of a particle is affected by its interactions with other objects. According to its definition, the force  $F$  exerted on a particle, by one or more other objects is a quantity which depends on the properties of all the interacting objects. It is related to the acceleration  $a$  of the particle so that  $F = ma$ . Force is a very important concept in physics and has a meaning somewhat different from that associated with that word in everyday life. Every particle near the surface of the earth interacts with the earth. If this is the only interaction affecting the particle, the resultant acceleration of any such particle is directed downward and has a magnitude  $g$ . (approximately equal to  $9.80 \text{ m/s}^2$ )
  - (a) Does the earth exert a force on every particle near its surface ?
  - (b) Is this a long-range force or contact force ?
  - (c) What is the magnitude of this force on a particle of mass  $m$  ? What is the direction of this force ?
  - (d) Two objects A and B, having respective masses of 2 kg and 10 kg, are both dropped from a tower and fall while interacting solely with the earth (since air resistance is negligible).
    - (1) What then is the gravitational force on A by the earth ? What is the gravitational force on B by the earth?
    - (2) What is the acceleration of the falling object A ? What is the acceleration of the falling object B ?

**THANKING YOU**  
**ODM EDUCATIONAL GROUP**