

# Chapter 3

## Force and Pressure

### LESSON PLAN

#### SPECIFIC OBJECTIVES

Students will learn about

- ❖ brief introduction to force, its effect, and also pressure
- ❖ turning effect of a force
- ❖ factors affecting turning effect of a force
- ❖ clockwise and anticlockwise moments
- ❖ SI unit of moment of a force
- ❖ some illustrations and applications of moment of forces
- ❖ pressure and thrust, and their SI unit
- ❖ examples of pressure from daily life
- ❖ liquid pressure
- ❖ liquids exert lateral pressure too
- ❖ factors affecting liquid pressure
- ❖ consequences of liquid pressure
- ❖ pressure in gases
- ❖ atmospheric pressure, its standard value, variation and effects

#### Teaching Aids

Pictures/models related to force as a push or a pull and turning effect of a force; pictures showing clockwise and anticlockwise moments; few illustrations showing applications of moment of forces; pictures showing examples of pressure, liquid pressure and atmospheric pressure.

#### Teaching Strategy

- ❖ Students should be asked to study force and its effect, and pressure in brief. They should also be suggested to study turning effect of a force and related examples and definition of moment of the force.
- ❖ The teacher should ask the students to learn factors affecting turning effect of a force using diagram, and perform activity 1 showing that moment of a force depends on perpendicular distance of force from pivot point given at page 44.

- ❖ Students should be encouraged to study clockwise and anticlockwise moments and related diagram, something more and question-answer given at page 45.
- ❖ Students should be asked to study SI unit of moment of a force. They should also be asked to practice numerical examples related to it.
- ❖ The teacher should ask the students to study some illustrations and applications of moment of forces. He/She should also ask the students to solve the check point 1 given at page 47.
- ❖ The teacher should ask the students to study definition of pressure and thrust, and also to learn the matter of screen. He/She should also ask the students to perform activities 2 and 3 related to pressure given at pages 48–49.
- ❖ Students should be asked to study SI unit of pressure and related numerical problems, question-answer given at page 49; examples of pressure from daily life with pictures. They should also be asked to solve check point 2 given at page 52.
- ❖ The teacher should ask the students to study liquid pressure and its related activity 4 showing that a liquid exerts pressure given at page 52. He/She should also ask the students to study liquids exert lateral pressure too and its related activity 5 given at page 53.
- ❖ Students should be encouraged to study factors affecting liquid pressure and activity 6 showing that liquid pressure depends upon its density given at page 53. They should also be asked to perform activity 7 showing that liquid pressure increases with its depth; activity 8 showing that liquid exerts pressure in all directions at a depth and activity 9 showing that a liquid seeks its own level given at pages 54–55.
- ❖ Students should be asked to learn something more given at page 54. They should also be asked to learn formula of pressure exerted by a liquid column, i.e.,  $P = h\rho g$  and consequences of liquid pressure. They should also be asked to solve check point 3 given at page 55.
- ❖ The teacher should ask the students to study pressure in gases; atmospheric pressure and its related activities 10 and 11 given at page 56. They should be asked to study standard value, variation and effects of atmospheric pressure. They should also be asked to solve check point 4 given at page 57.
- ❖ The teacher should ask the students to recap the chapter using wrapping it up and know these terms. He/She should also ask the students to answer the questions given in test yourself and discuss the think zone with other classmates.

### Boost UP

- ❖ The teacher should call each student of the classroom one-by-one and ask to write one example of force on the blackboard. He/She should also ask the students to tell examples of turning effect of a force.
- ❖ The teacher should ask the students to tell factors affecting turning effects of a force; to define clockwise and anticlockwise moments; to tell the SI unit of moment of a force.
- ❖ Students should be asked one-by-one to write one application of moment of force. They should also be asked to tell the definition of pressure and thrust and their SI units. They should also be asked to tell one example of pressure.

- ❖ The teacher should ask the students to tell the definition of liquid pressure; to answer the questions related to liquids exert lateral pressure too. He/She should also ask the students to tell the factors affecting liquid pressure. He/She should also ask the students to tell the answer of questions related to pressure in gases; atmospheric pressure, its standard value, variation and effects.

### Expected Learning Outcomes

Students will be able to know the

- ❖ definition of force, its effects, and pressure in brief.
- ❖ turning effect of a force.
- ❖ factors affecting turning effect of a force.
- ❖ clockwise and anticlockwise moments.
- ❖ SI unit of moment of a force.
- ❖ some illustrations and applications of moment of forces.
- ❖ pressure and thrust, and their SI units.
- ❖ examples of pressure from daily life.
- ❖ liquid pressure and factors affecting it.
- ❖ liquid exerts lateral pressure too.
- ❖ consequences of liquid pressure.
- ❖ pressure in gases.
- ❖ atmospheric pressure, its standard value, variation and effects.

### Evaluative Questions

The teacher should ask the following questions to evaluate the students.

1. Define force.
2. Write one example of a force.
3. What is meant by moment of the force?
4. What is the SI unit of moment of a force?
5. Write on application of moment of a force.
6. What is called the ratio of force and surface area?
7. Why can a camel walk easily on a sandy surface?
8. What is meant by atmospheric pressure?
9. What is the standard value of atmospheric pressure?