Chapter 4

Energy – Simple Machines

LESSON PLAN

SPECIFIC OBJECTIVES

Students must learn about

- introduction to energy, work and machines in brief
- definition of machines and their details
- simple machines, their functions and terms related to them
- types of simple machines and their details, i.e., lever, its principle, mechanical advantage and types
- inclined plane and wedge
- pulley, screw; wheel and axle
- care of machines

Teaching Aids

Pictures/models of different machines, i.e., simple and complex; chart showing the terms related to simple machine; pictures and charts related to types of simple machines and care of them.

Teaching Strategy

- The teacher should teach the students about energy, work and machines in brief.
- Students should be asked to study machines and their kinds, i.e., simple and complex, with illustrations. They should be asked to perform activity 1 demonstrating the action of simple machine given at page 58. They should also be asked to learn simple machines, their functions and terms related to it with definition and formula.
- The teacher should ask the students to learn principle of the machine in question-answer given at page 60.
- The teacher should teach the students about types of simple machines, i.e., lever, its principle, mechanical advantage and types with definition, illustrations and examples, and related question-answer at page 62. He/She should also ask the students to perform activity 2 in order to understand effort, fulcrum and load given at page 61.
- The teacher should ask the students to perform activity 3 showing the comparison of weight

of two persons given at page 63. He/She should also ask the students to solve check point 1 given at page 63.

- The teacher should teach the students about inclined plane, wedge and its related examples and illustrations along with question-answer given at page 64.
- Students should be encouraged to solve check point 2 given at page 65. They should also be asked to learn definition of pulley and its types with definition, examples and illustrations.
- The teacher should teach the students about screw and wheel and axle with definitions, examples and illustrations. He/She should also ask the student to learn activities 4 and 5 given at page 67.
- The teacher should ask the students to study care of machines, and also to practice numerical examples related to text of the chapter.
- Students should be asked to solve check point 3 given at page 69. They should also be asked to study wrapping it up and know these terms to recap the whole chapter and to solve the questions of test yourself and discuss the think zone with each other in the classroom.

Boost UP

- Students should be asked to tell the definition of energy and work.
- The teacher should make a list of students in the classroom and divide them into two groups. He/She should write four to five different kinds of machines on the blackboard. He/She should call one student of both the groups and ask him/her to name the kind of machines, i.e., simple and complex.
- Students should be shown different kinds of machines and asked to identify the effort, load and fulcrum positions of the machines.
- The teacher should ask the students to tell the formula of mechanical advantage and efficiency used in solving numerical problems.
- The teacher should arise few questions to the students related to types of simple machines, lever, its principle, mechanical advantage and its types, i.e., first, second and third class levers.
- The teacher should ask the students to answer the few questions related to inclined plane, wedge, pulley and its types, screw and wheel and axle.
- Students should be asked to solve few numerical problems related to topics given in the chapter.

Expected Learning Outcomes

Students must be able to know the

- energy, work and machines in brief.
- definition of machines with few examples.
- brief history of simple machines and their functions, terms with definition.
- types of simple machines, i.e., lever, inclined plane, wedge, pulley and wheel and axle and their details.
- care of machines.

Evaluative Questions

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

1. Define a machine with two examples.
2. Write two functions of simple machine.
3. Define efficiency of a machine and write its formula also.
4. Write the principle of a lever.
5. Write two examples of second class lever.
6. What is meant by an inclined plane?
7. Write one example of wheel and axle.
8. The load arm of lever is 20 cm long and its effort arm is 40 cm long. Find the mechanical advantage of the lever.