

Chapter 4: Energy — Simple Machines

Worksheet 1

1. Write T for true and F for false statement.

- (i) The ability to do work is called energy.
- (ii) Effort is the force applied to the machine.
- (iii) The distance of the fulcrum from the point at which load acts is called effort arm.
- (iv) A handle of a handpump is first class lever.
- (v) A wedge is a sloping surface which helps us to make our work easier.

2. Fill in the blanks.

- (i) _____ is measured by the ratio of the load to the effort.
- (ii) A _____ is a rod which moves freely about a fixed point called fulcrum (F) or pivot point.
- (iii) _____ is the useful work done by the machine.
- (iv) The simplest form of the pulley is called the _____ fixed pulley.
- (v) A wheelbarrow is _____ class lever.

3. Define the following.

- (i) Load
- (ii) Efficiency of a machine
- (iii) Second class lever
- (iv) First class lever
- (v) Inclined plane

4. Answer the following questions.

- (i) Define machine.
- (ii) Name the fixed point which the machine can turn while doing work.
- (iii) Write two examples of third class levers.
- (iv) What is meant by wedge?
- (v) What is the principle of a lever?

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Worksheet 2

1. Tick the correct answer.

- (i) Which one of the following is (are) a complex machine?
(a) Pliers (b) Shovel (c) Hammer (d) Wall clock
- (ii) This is the force exerted by the machine on the object.
(a) Effort (b) Mechanical advantage
(c) Load (d) Fulcrum
- (iii) In which class lever, the fulcrum lies between the load and the effort?
(a) First class lever (b) Second class lever
(c) Third class lever (d) None
- (iv) Which arrangement consists of two cylinders of different diameters joined together?
(a) Screw (b) Pulley (c) Wedge (d) Wheel and axle
- (v) Which of the following is/are wedge?
(a) Knife (b) Axe (c) Iron nail (d) All of them

2. Fill in the blanks.

- (i) A second class lever has _____ in the middle.
(ii) A boat oar is an example of _____ class lever.
(iii) The mechanical advantage of a _____ class lever is always greater than one.
(iv) A single fixed _____ is used to lift a bucket full of water from a well.
(v) _____ are used to fit doors in door frames.

3. Answer the following questions.

- (i) Name the different types of pulleys.
(ii) What is meant by the pitch of screw?
(iii) Define mechanical advantage of a lever.
(iv) What is complex machine? Give its two examples.
(v) What is meant by pulley?

4. Draw labelled diagrams of the following.

- (i) A single fixed pulley
- (ii) A screw
- (iii) A wedge
- (iv) A wheel and axle arrangement
- (v) An inclined plane