

Chapter-11: Simple Machines

Answers of exercise questions (Pg. 140-141)

1. Choose the correct answer.

- (a) iii. Ramp
- (b) ii. Wedge
- (c) iii. Gear
- (d) iii. Class-three lever
- (e) ii. Before the effort

2. Circle the odd one out.

- (a) Ramp
- (b) Screw
- (c) Knife
- (d) Slide
- (e) Seesaw

3. Match the following.

- | | | |
|-----------------------|---|---------------------------------------|
| (a) First class lever | - | (iii) Fulcrum between load and effort |
| (b) Third class lever | - | (ii) Effort between load and effort |
| (c) Wedge | - | (iv) Object with slanting edge |
| (d) Pulley | - | (v) Rope around a wheel |
| (e) Wheel and axle | - | (i) Wheel rotates around the centre |

4. Short answer questions.

- (a) (i) Wedge – Blade, knife.
 - (ii) Lever – Scissors, fishing rods.
 - (iii) Inclined plane – Ramps, slides.
 - (iv) Pulley – Flag poles, curtain drapes.
- (b) Wheel and axle work on the principle that a lesser force is needed to turn a wheel than to turn an axle, thus, making the work easier.
- (c) Pulley helps us to lift, lower or move heavy loads.

- (d) A wedge has two inclined planes put together to form a sharp edge.
- (e) (i) Wedge
 - (ii) Lever
 - (iii) Lever
 - (iv) Pulley
 - (v) Screw

5. Long answer questions.

- (a) Simple machines are simple tools with few or no moving parts. Simple machines help us to do work more conveniently.
 - (b) There are two types of pulleys – fixed pulleys and movable pulleys.
 - (i) Fixed pulley – It has a fixed axle. It is firmly attached to one spot and does not move around and changes the direction of force, e.g., pulleys used on flag poles, curtain drapes.
 - (ii) Movable pulley – It is not attached to a fixed axle, and is free to move, e.g., cranes, some elevators
 - (c) Class-one lever – In this, the fulcrum is between the load and the effort.
e.g., claw hammer, scissors etc.
Class-two lever – In this, the load is between the fulcrum and the effort.
e.g., wheel barrow, nut cracker etc.
Class-three lever – In this, the effort is between the load and the fulcrum.
e.g., fishing rod, stapler etc.
 - (d) Definitions:
 - (i) Lever: It is a rigid rod that can turn around a fixed point known as fulcrum.
 - (ii) Pulley: It consists of a rope or a chain that moves over the grooved rim of a wheel.
 - (iii) Screw: It is an inclined plane that is wrapped around a cylinder.
 - (iv) Wedge: It has two inclined planes put together to form a sharp edge.
 - (e) Refer to pg. no. 137 (Activity zone)
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Chapters 11

Simple Machines

Practice Paper with Answers

I. Give the technical term for the following.

1. A device or a tool that make our work easier, faster and more efficient

Ans. Machine

2. A type of simple machine that comprises of a wheel rigidly attached to a rod at its centre

Ans. Wheel and axle

3. A wheel with teeth

Ans. Gear

4. A simple machine used to lift the car

Ans. Screw Jack

5. A flat slanting surface used to move a heavy load from a lower level to a higher level

Ans. Inclined plane

II. Fill in the blanks with the appropriate terms.

1. All complex machines are a combination of simple machines.

2. We can see gears in a watch.

3. The fixed point around which the rod moves is called fulcrum.

4. A screw has grooves called threads.

5. A pulley can change the direction of the force.

III. Give two examples for each of the following.

1. Wheel and axle

Ans. (a) Door knob (b) Screwdriver

2. Complex machines

Ans. (a) Car (b) Washing machine

3. Screw

Ans. (a) Screw Jack (b) Pen cap

4. Simple machines

Ans. (a) Scissors (b) Axe

IV. Write true or false.

1. A screw has two inclined planes put together to form a sharp edge. - False
2. In class-two lever, the effort is in the middle. - False
3. The laws of the lever were discovered by Archimedes. - True
4. Pulley is used to draw water from a well while raising and lowering the bucket. - True

V. Differentiate between the following on the basis of the verb given in the bracket.

1. Wedge and inclined plane (Use)

Ans	<u>Wedge</u>	<u>Inclined plane</u>
	It is used for cutting or splitting.	It helps to raise the object to a height easily.

2. Fixed pulley and movable pulley (movement)

Ans	<u>Fixed pulley</u>	<u>Movable pulley</u>
	It is firmly attached to one spot and does not move around.	It is not attached to a fixed axle, and is free to move.

VI. Define the terms.

1. Inclined plane:
It is a sloping surface with one end higher than the other.
2. Effort:
The force which we apply to move the object is called the effort.
3. Wheel and axle:
A wheel attached rigidly to a rod passing through its centre is called wheel and axle.
4. Load:
The object which we are trying to move or lift is called the load.

VII. Categorize the following into different classes of lever.

Nut cracker, Fishing rod, Tweezer, Pliers, Bottle opener, Hole puncher, Crow bar, Stapler, Claw hammer, Wheel barrow, Human arm, See Saw

Class-one Lever	Class-two Lever	Class-three Lever
Pliers	Nut cracker	Fishing rod
Crowbar	Bottle opener	Tweezer
Claw hammer	Hole puncher	Stapler
Seesaw	Wheel barrow	Human arm

VIII. Cranes, often used in construction sites, have movable pulleys. Give reason.

Ans. It is to lift and move the heavy loads used in construction sites from one place to another.

IX. Draw neat and labelled diagrams of

i. A lever

ii. A wedge

Ans. i. Refer to page no. 136

iii. Refer to page no. 139

