

## **Additional Material for Simple Machines**

### **Pulley**

A pulley is a simple machine that uses wheel and a rope to lift the objects. With the help of pulley, an object to be lifted can be tied to one end of the rope and a force is applied in the opposite direction.

There are three types of pulley system.

### **Fixed Pulley**

It is the simplest form of pulley system.

In a fixed pulley, rope moves on a fixed wheel.

In the **App** we have used the fixed pulley.

For example: Flag poles, wells.

### **Movable Pulley**

In a movable pulley, both pulley and the attached load can move from place to place. In this type one end of the rope is attached to the fixed point.

For examples: Crane, Rock climbing equipment.

### **Compound Pulley**

In this type of pulley combination of two or more pulleys are used. This makes the effort less than half of the weight of the load.

This is also called a combined pulley.

For examples: Elevators, On ships to raise and lower sails.

## Lever

There are three classes of levers. The classes are formed based on the positions of load and effort as per the position of the fulcrum.

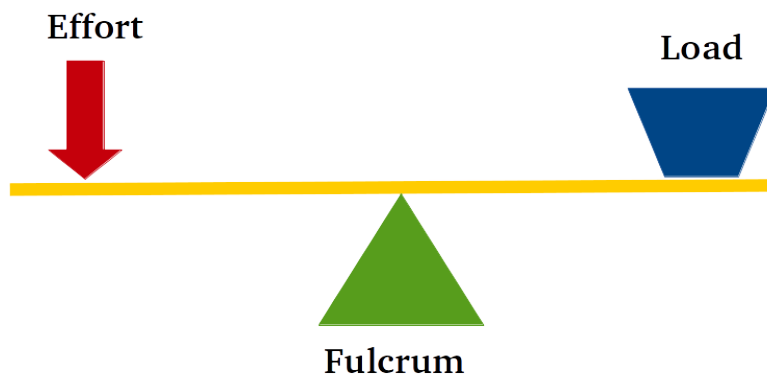
### Class 1 Lever

In a class 1 lever, fulcrum is in between effort and load.

The movement of the load is in opposite direction to the movement of the effort.

Examples of **Class 1 levers** include

- Seesaw
- Scissors
- Pair of pliers



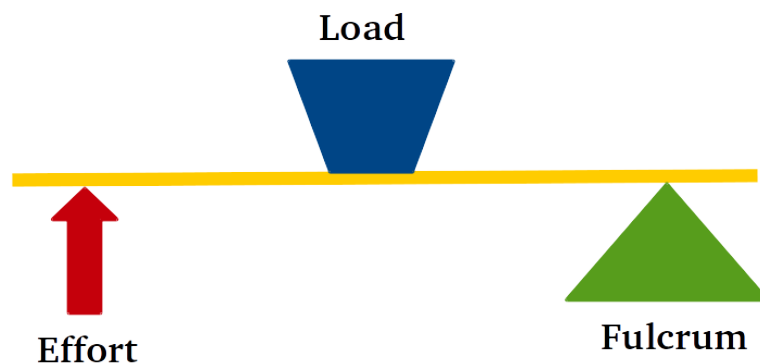
### Class 2 Lever

In a class 2 lever, load is in between effort and fulcrum.

In this type of lever, the movement of the load is in the same direction as that of the effort.

Examples of **Class 2 levers** include

- Wheelbarrow
- Crowbar
- Nut cracker



### **Class 3 Lever**

In class 3 lever, effort is in between load and fulcrum.

In this type of lever, both the effort and load are in the same direction.

Examples of **Class 3 levers** include

- Tweezers
- Stapler
- Tongs

