

Write, which instruments you use, to do following works :

(1) To remove nail from the plank.

(2) To cut cloth.

(3) To sharpen the pencil.



Why you choose particular instrument to do work ?

The instruments with the help of which our work can be easily done are called simple machines.

Simple machines are of six types :

1. Lever :

Sometimes we have to lift up or to move the object of more weight than our capacity or sometimes to cut hard object. Let's see how these works becomes easy.

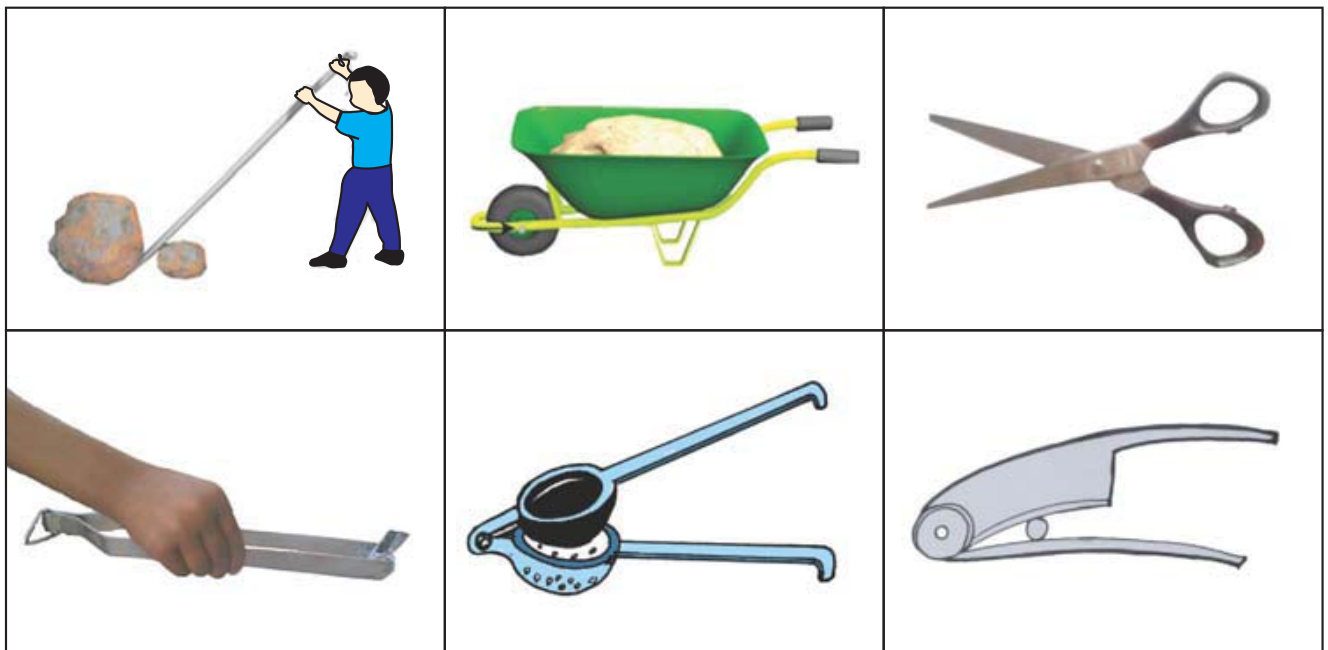
- Take nail-cutter and cut nails.
- Using nail-cutter we can cut nails easily.
- Can we open the bottle of cold-drink, shown in figure with hand ?



- Now open it by using opener.
- How the cold drink-bottle can be easily opened ?

The instrument used to lift up or to move heavy object or to cut hard object using less force is a lever type simple machine.

See the following picture of lever and know their uses :

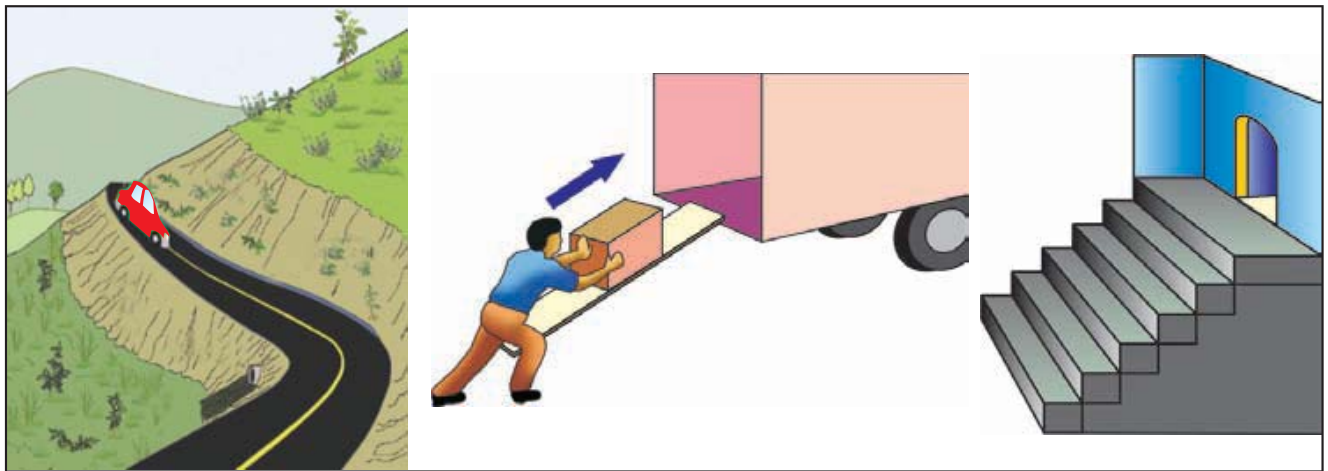


2. Slope :

- ☞ Place bicycle on the veranda by lifting it.
- ☞ Take help of your friend if necessary.
- ☞ Now place this bicycle on the veranda using ramp.



- In which method cycle can be easily placed on veranda, write.



Work can be done easily using slope.



What is required ?

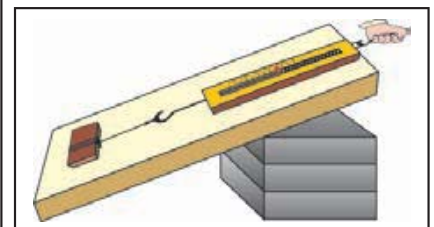
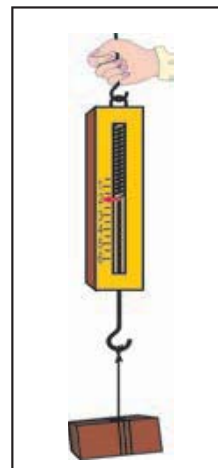
Brick, spring-balance and plank.

What to do ?

- ☞ Tie a brick with string.
- ☞ Measure its mass using spring-balance and note down.

- ☞ As shown in the figure make a slope with plank and move the brick up to top of the slope using balance and measure its Mass.

The force required to do work decrease due to slope.



3. Screw :

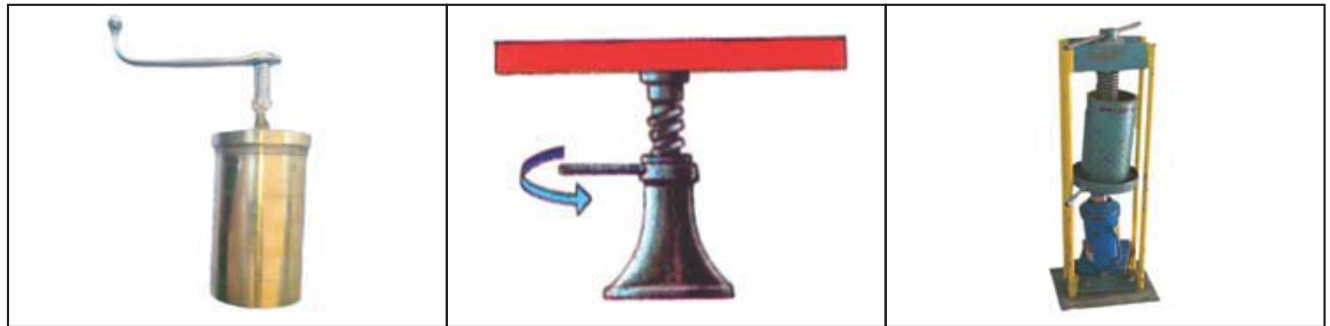
Make a list, where the screw is used in your class-room.



Why screw is used in all these objects ?

The object can be strongly joined and separated easily using screw.

In the following instruments the principal of screw is used :



Screw is one type of slope. Let's do one activity to know this.

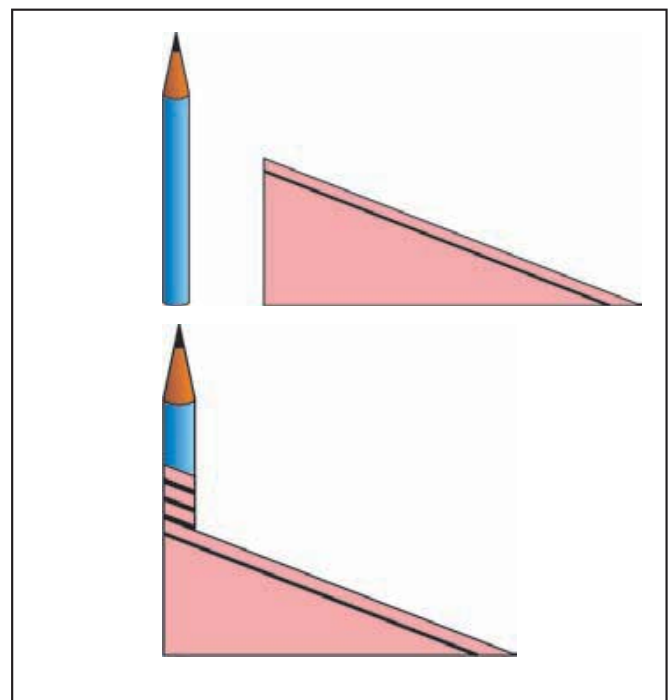


What is required ?

Paper, pencil, scissor, scale

What to do ?

- ☞ Cut a right angle triangle from the paper.
- ☞ Draw a line on the hypotenuse of the triangle.
- ☞ Wrap the paper on the pencil so that the part of paper with line should remain outside as shown in the figure and observe it.



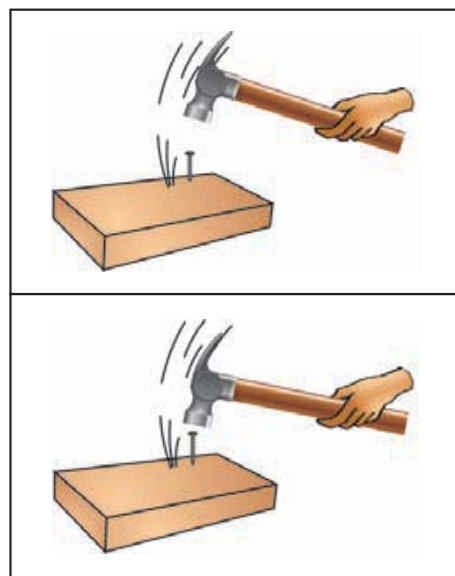
- ☞ The hypotenuse in right angled triangle is slope. When it is wrapped on the pencil its look like a screw.

4. Wedge :

- Take one potato and cut it with blunt side of knife.
- Now cut it with sharpen side.
- With which method potato can cut easily ? Why ?



- Take a blunt nail.
- Try to fix it in plank of wood using hammer.
- Take a sharp nail.
- Fix it in the wooden plank using hammer.
- Which nail can be fixed in the wooden plank easily ? Why ?



In the following picture different uses of wedge are shown :



Note other illustrations, in which wedge is used.

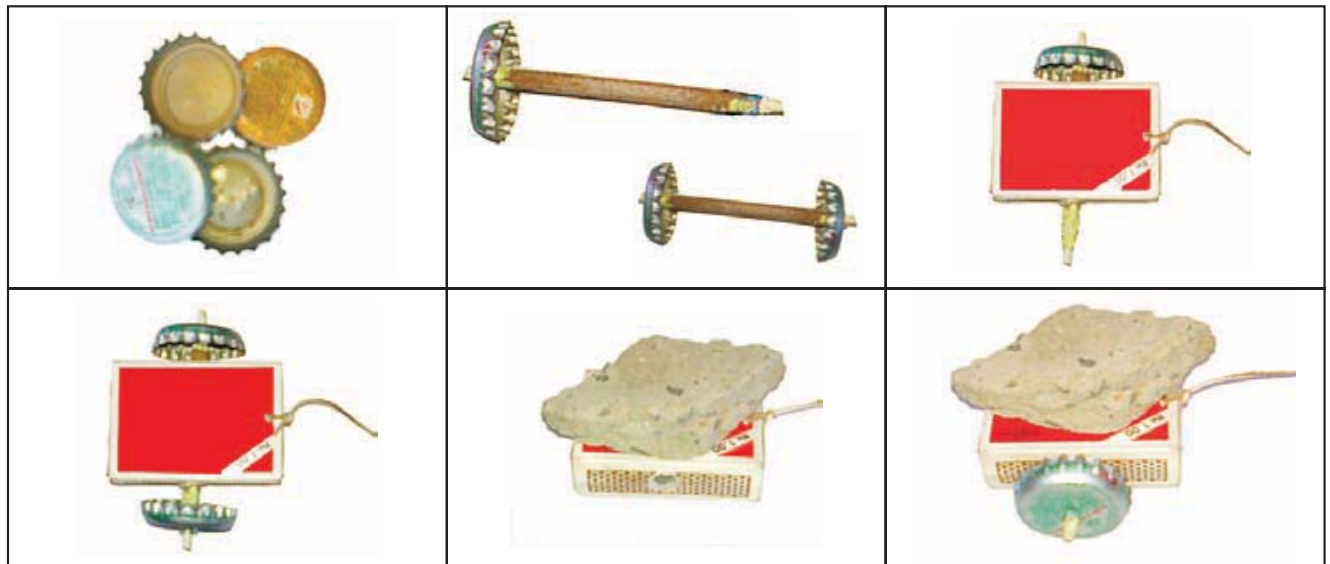
5. Wheel and Axle :

Wheel is very important invention of mankind. To be aware about simplicity of work using wheel, do one activity.



What is required ?

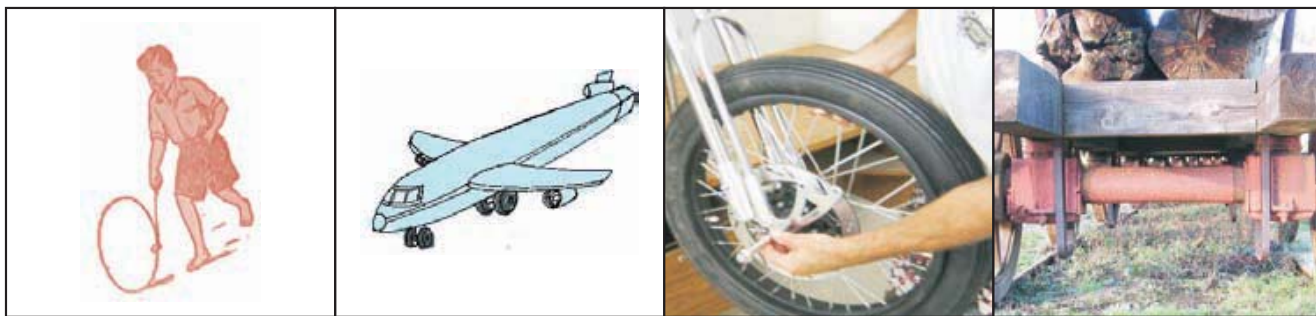
To equal match-box, wooden stick as per width of box, two lid of cold-drink bottle, nail and hammer



What to do ?

- ☞ Take a match-box and pass wooden stick from it as shown in figure.
- ☞ Attach lids with holes at both the ends of stick as shown in the figure.
- ☞ Stick will be called axis and lid will be called wheel.
- ☞ Take another empty match-box.
- ☞ Pull both the boxes by placing equal mass on them.
- ☞ Which box can be pulled easily ?

Following are the pictures of the axis and wheel :



6. Pulley :

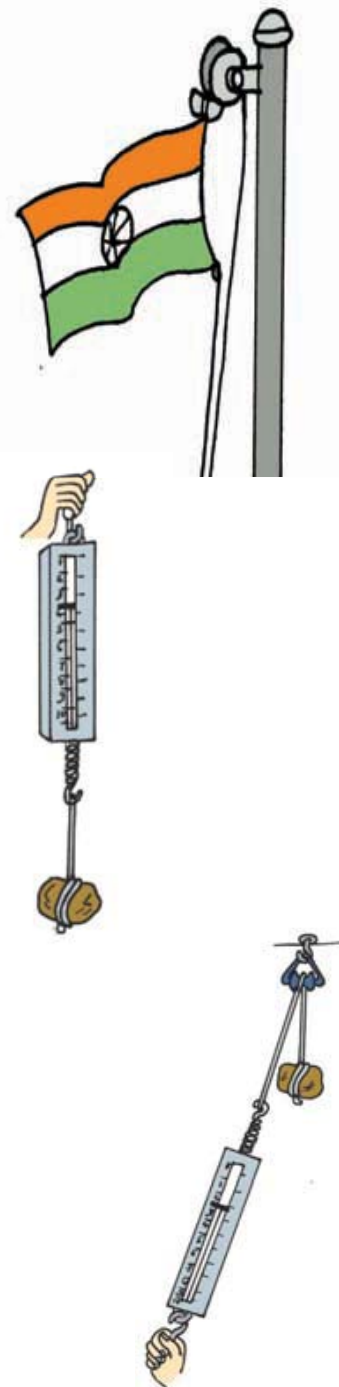
You have to see the use of pulley to hoist national flag.
Use of pulley make work easy.

Is the change in force takes place due to use of pulley ?

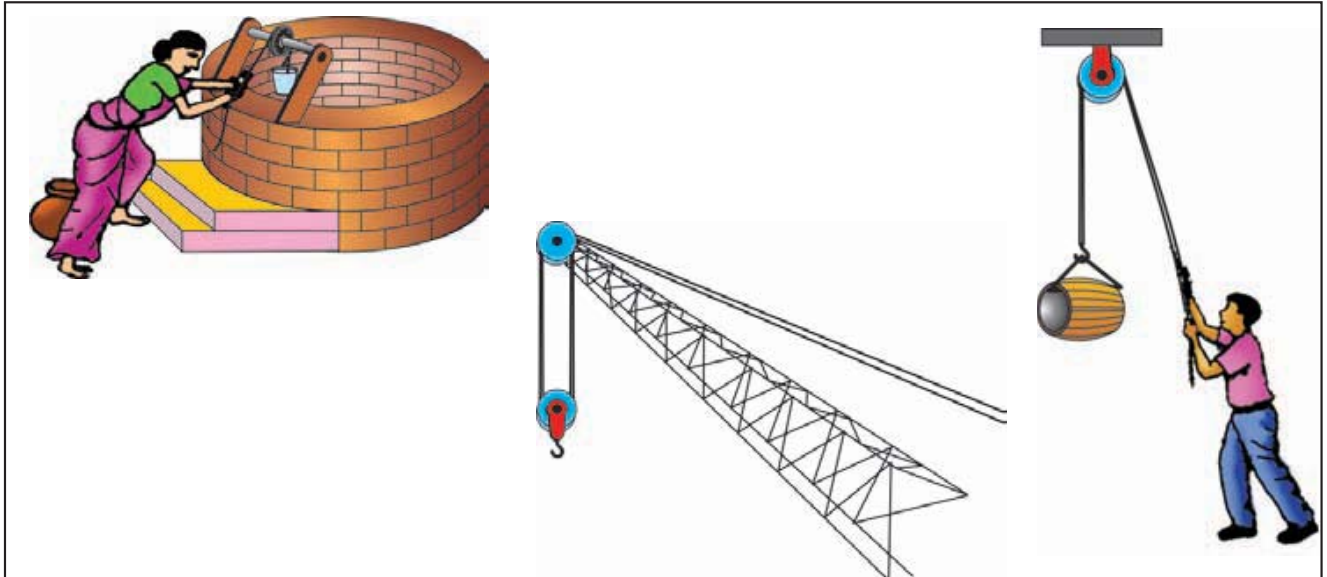


With the help of bobbin used in sewing machine, make pulley as shown in the figure. Now tie a stone tightly with the thread. Measure mass of it with the help of spring-balance.

Tie other end of the thread with spring-balance. Now pull the stone using pulley as shown in figure. Note down the mass measured by spring-balance when it is pulled using pulley.



Use of pulley does not decrease the force required but it changes the direction of force.

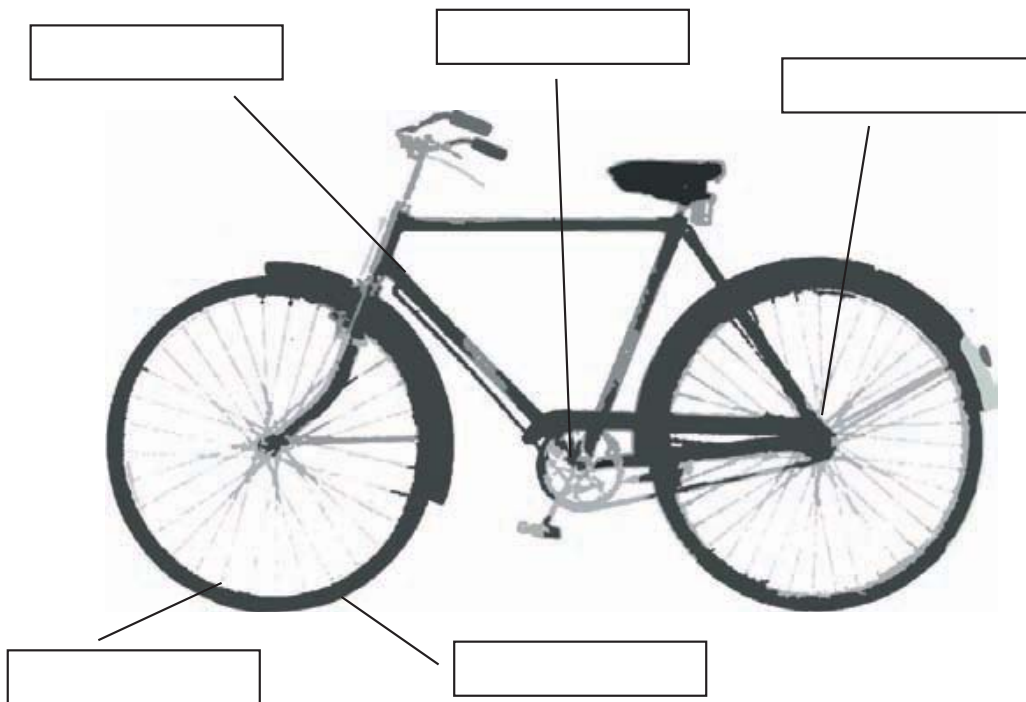


For simplicity and speed of work, we use such instrument in which two or more than two simple machines are used.

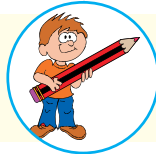
Bring the bicycle in your classroom and observe its different parts.

Which types of simple machines are the following parts of bicycle, write it

(In box).



The machine made with the help of two or more than two simple machine is called complex machine. Prepare list of such complex machine.



Q.1 Give answer in short :

- (1) Give name of five simple machines used in kitchen.
- (2) Write name of five simple machines, which you use in you routine life.

Q.2 Give reasons :

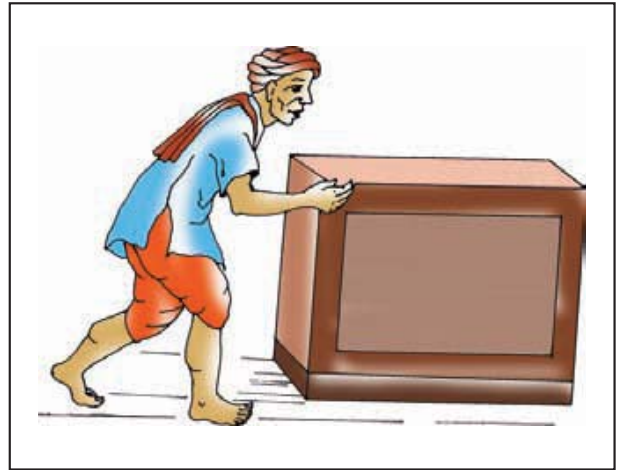
- (1) Wheel is very important simple machine.
- (2) To load the truck a plank is used.

Q.3 List the type of simple machine used in the different part of sewing machine shown in the figure :

No.	Type of simple machine	Name of part of sewing-machine



Q.4 What is your suggestion to simplify the work of person shown in the picture ?



Q.5 Do as directed :

1. As shown in the picture prepare a card using large box.



2. As shown in the figure prepare a cart using old slipper.

