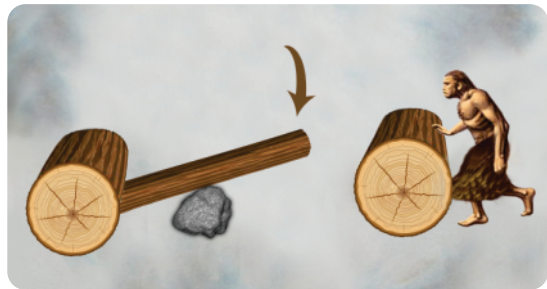
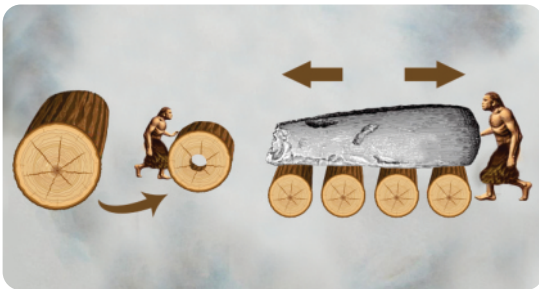




Tools and Machines

During every era, man has invented several things to meet his needs. Tools and machines are the most important inventions of human beings. Tools make work easy and comfortable. In the ancient times, people used pointed edged stones as tools. These were used in hunting. Moreover, the tools for basic needs were also made of stone.



We do many works with our hands. However, there are a few works which cannot be done with hands, therefore, we use tools or machines for doing such works. For example, we can climb up to a small height but we need a ladder to reach at greater height. Likewise, we can lift a less heavy stone but we would require a tool or machine like crane for lifting heavy stones.



We cut cloth or a paper with a pair of scissors. Similarly, other tools are used for different purposes.

We use different tools and machines at our home. A hammer is used to peg a nail and a saw is used to cut the wood. In the same way, pliers and axes are used according to their need. Can you tell the names of some tools used at your home?



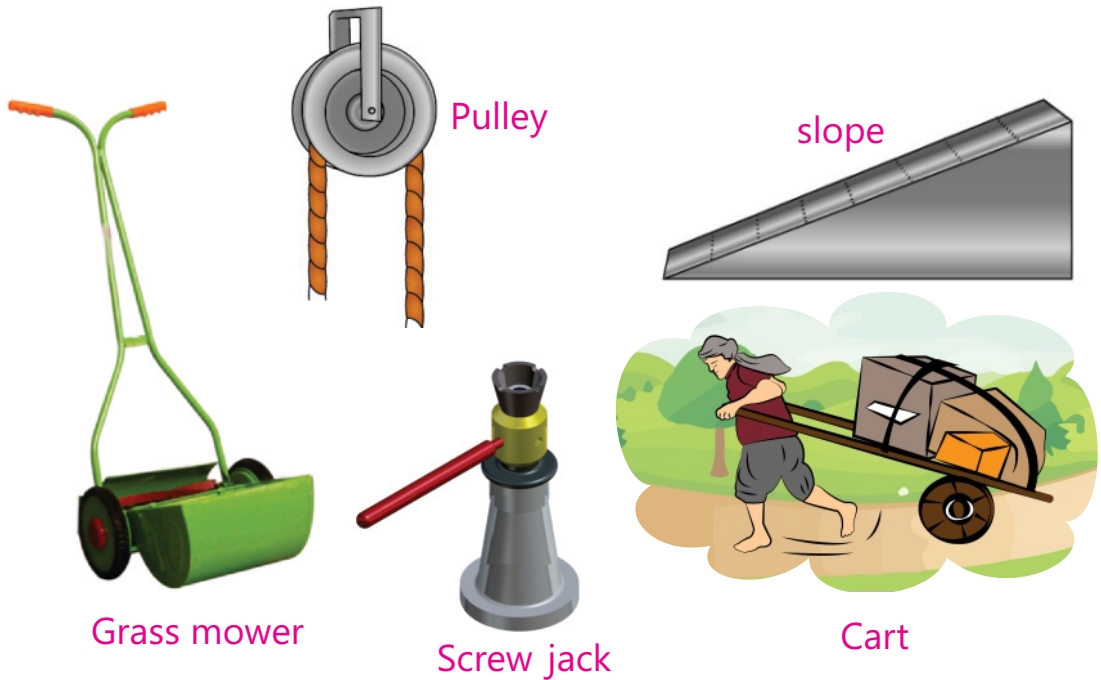
Activity 1

- (i) Try to push a heavy log with your hands. Can you do it easily?
- (ii) Take an iron rod and a small stone. Arrange them as shown in the figure below.
- (iii) Press the other end of the rod and try it again to push the log. Can you push the log now easily?
- (iv) Can the log be pushed easily without the small stone?



Is the small stone necessary as a support to use the rod?

We use different kinds of machines to do work in our daily life. The pictures of some machines are given below:



Force is a pull or push. Force of pull or push is required to move things or to stop moving things. We use force to change the state of a thing. For example, force of pull or push is required to open or close a door.

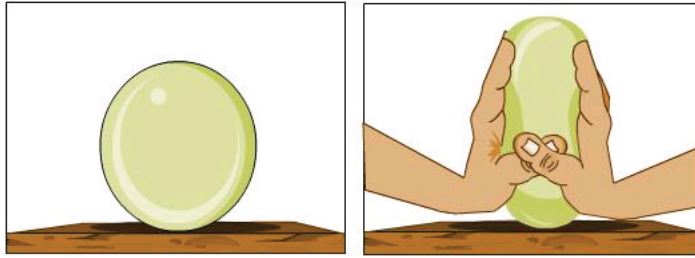


Pulling the door



Pushing the door

Force can change the shape of things too.

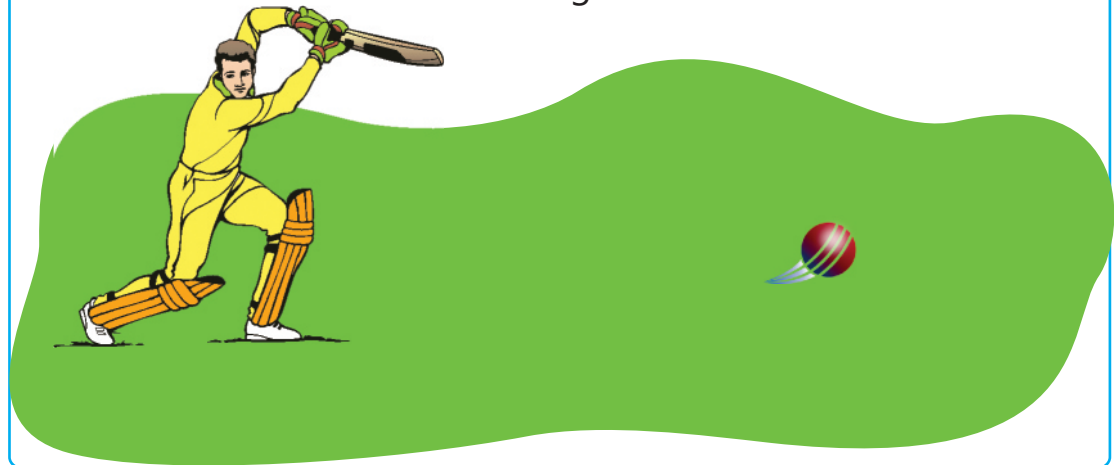


Activity 2

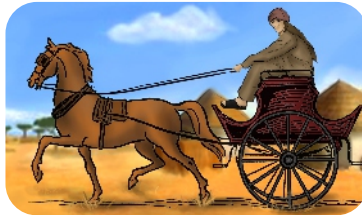
A boy kicks the football. When the football reaches the other boy, he kicks it back. Does the direction of football change or remain the same? Will the direction of football remain the same or change, if the second boy does not kick it back? Force is required to change the direction of motion of an object.



While playing cricket, a batsman hits the ball coming towards him. Does the direction of the ball change?



Cart, wheel-barrow, bicycle and tonga are all machines. Carts and tongas are driven by animal force. Wheel-barrow and the bicycle are driven by human's force.



Things driven by humans and animals force

A few years ago, the works, which were performed by humans or animals, are now done with the force of the engines fitted in machines.



Things moving with the force of engine

EXERCISES

1. Give short answers:

- (i) What do we do for lifting heavy things?
- (ii) How do tools and machines help us?
- (iii) What is the use of a pair of scissors?
- (iv) What materials were used to make tools in ancient times?
- (v) What happens when a thing is pulled or pushed?
- (vi) What force pulls a tonga?
- (vii) Do we require less or more force to do work with a machine instead of our hands?

2. Match Column 'A' with Column 'B'.

Column 'A'	Column 'B'
To lift a very heavy stone	make work easier
To draw water from the well	movement
Pull or push causes	direction and shape cannot be changed
Machines and tools	pulley
In ancient times tools were made	a machine is required
Without using force	of stone and wood