

FORCE AND PRESSURE

Introduction

- To make the children aware about the practical applications of Force and Pressure in day-today life.
- To help in understanding the topic with the help of examples and practical applications.

Previous Knowledge Testing

- The following questions can be asked from the students.
- 1. What is area?
- 2. Difference between Area and Volume.
- 3. What are the units of Area and Volume ?

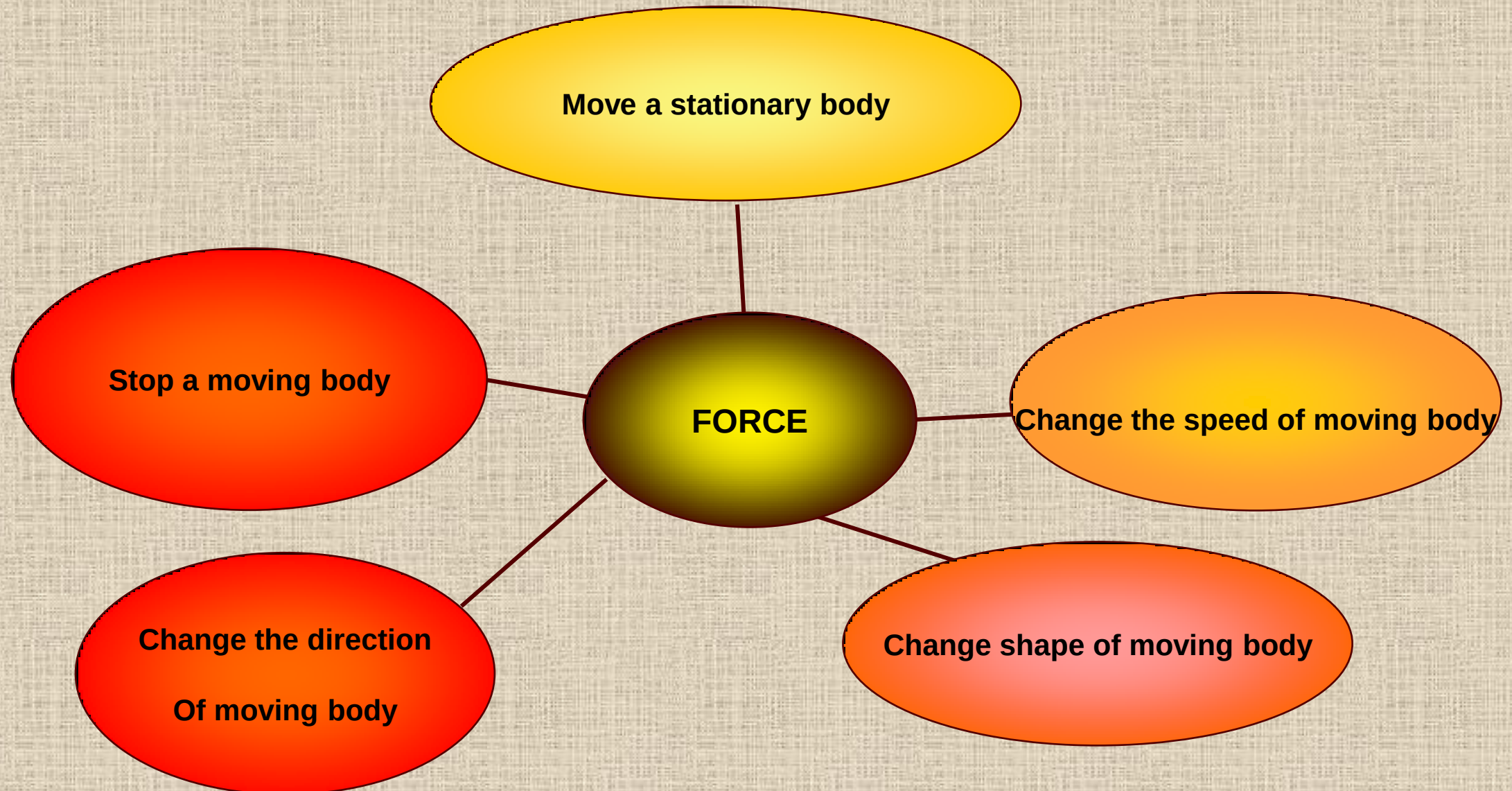
FORCE

- A PUSH OR A PULL IS CALLED FORCE



- PUSH : A FORCE TO MOVE THE OBJECT AWAY FROM YOUR BODY
- PULL : A FORCE TO MOVE AN OBJECT TOWARDS YOUR BODY

A FORCE CANNOT BE SEEN BUT WE CAN FEEL AND OBSERVE THE EFFECTS OF FORCE



PRESSURE

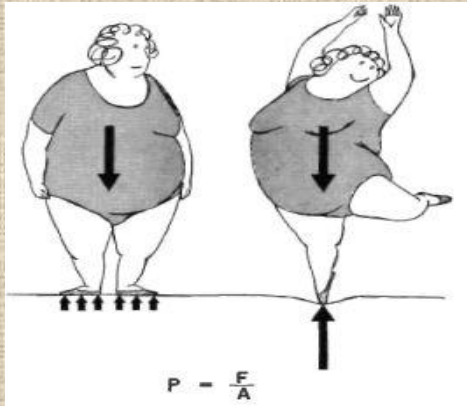
- Pressure is the force acting per unit area
- Formula for pressure :-

$$\text{Pressure} = \frac{\text{Force}}{\text{Area}}$$

- SI unit of pressure is :- N/m^2 or Pascal
- Newton(N) for Force and m^2 for Area

Pressure depends on two factors

- **1.force** -more force more pressure (directly proportional)
- **2.area** -more area less pressure (Inversely proportional)



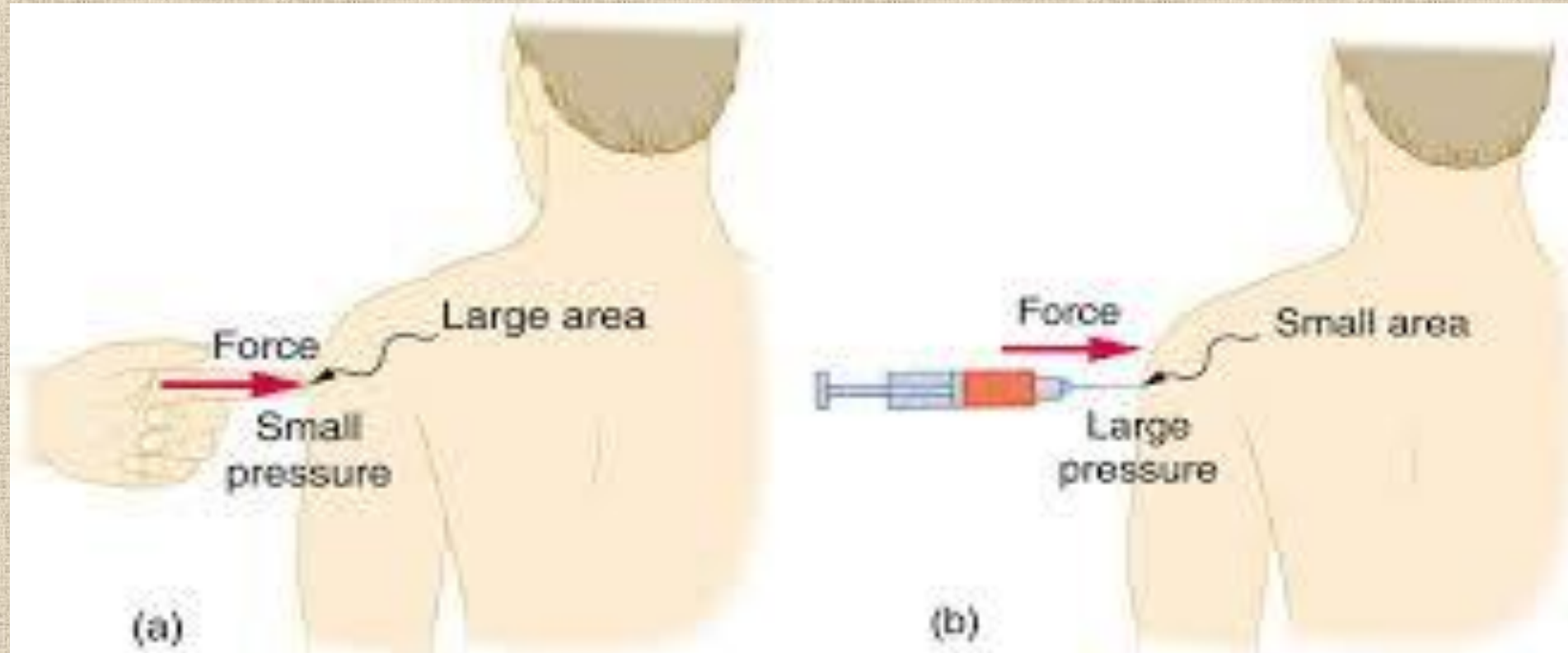
- *The same force produces less pressure if it acts on a large area but can produce more pressure if acts on a small area.”*

Activity –2

- Force exerted by weight of a person = 600 N .Find Pressure

Position	Area in contact	Force	Pressure= Force/Area
Standing	0.05m ²	600 N	
Sitting	0.1m ²	600 N	
Lying Down	0.4m ²	600 N	

- Person poked with finger (case a) Pressure in form of pain due to force will be less
- Person poked with a sharp end of needle (case b) Pressure in form of pain will be more



DIFFERENCE BETWEEN FORCE AND PRESSURE

Force	Pressure
It is a pull or push on an object	Ratio between force and area on which it acts
It has a direction	It does not have any direction

Every day observation

School bags have wide straps so the weight of bag may fall over a large area of the shoulder of the student producing less pressure on shoulder.



Sharp knife cuts better than a blunt knife so the force of our hand falls over a very small area of object produces large pressure.



The tractor have broad tyres so there is less pressure on ground and do not sinking to comparatively soft field.



It is easier to walk on soft sand if we have flat shoes rather than shoes with sharp heels.



The foundations of buildings and dams are laid on a larger area to produce less pressure



The wooden or concrete sleepers are kept below the railway line.



A wide belt is provided over the wheels of an army tank.



Recapitulation

- Force is a push or pull applied on any object which can change its size, shape and direction of motion.
- The effects of Force can be seen while playing, walking and other day-to-day activities.
- Pressure is Force applied per unit Area.
- The unit of Pressure is N/m^2 or Pascal
- The effects of pressure can be observed in the activities around us. The examples can be reviewed.

• **THANK YOU.**