

8.1 Force — A Push or a Pull

- Force: A push or a pull on an object.
- Force is needed to:
 - Move an object.
 - Stop a moving object.
 - Change direction/speed.
 - Change the shape of an object.

Examples:

- Pushing a car = Push.



- Pulling a rope = Pull.



Activity 8.1 — Identifying Push or Pull

Task:

Observe daily actions (e.g., shutting door, drawing bucket) and classify as Push/Pull/Both.

-  Force = Push or Pull.

8.2 Forces are due to an Interaction

- Force comes into play only when two objects interact.
- Example:
 - A man pushes a car → car moves.
 - Tug-of-war → teams pull rope in opposite directions.

-  No interaction → No force.



8.3 Exploring Forces

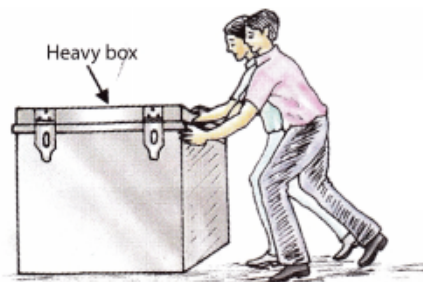
- Forces add up if applied in the same direction.
- Forces subtract if applied in opposite directions.
- Net force decides the final motion.

✓ Stronger force wins in tug-of-war!

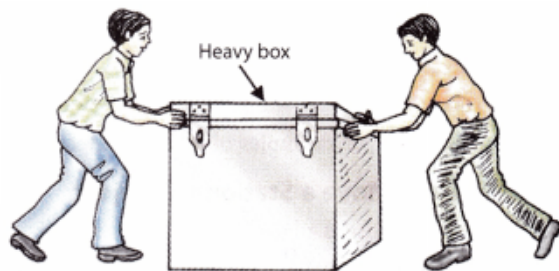
★ Activity 8.2 – Pushing Heavy Object

Task:

- Push a table alone and with a friend.



Two men pushing a heavy box in the same direction and making it move easily.



Two men pushing the heavy box in opposite directions. The box will move in that direction in which stronger push is applied.

- Notice easier movement when pushing together (forces add).



8.4 Force Can Change the State of Motion

- Force can:
 - Start motion.
 - Stop motion.
 - Increase or decrease speed.
 - Change direction.

✓ Example:

Kicking a football changes its speed and direction.

★ Activity 8.3 – Rolling a Ball

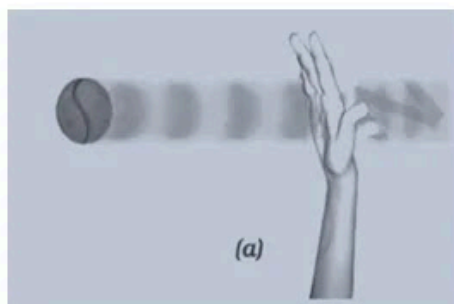
Task:

- Push a ball and observe its speed.
- Place hand in front → ball slows or stops.

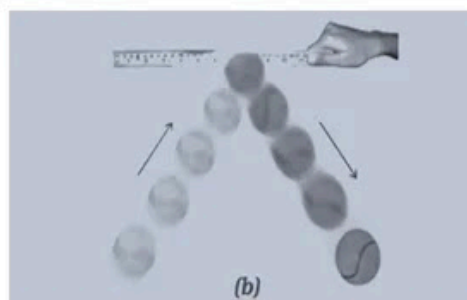
★ Activity 8.4 – Changing Direction

Task:

- Roll a ball and obstruct it with a ruler.
- Notice ball changes direction after hitting the ruler.



Push to the ball



Place a ruler in front of the moving ball

✓ Force changes speed or direction → or both.

🎈 8.5 Force Can Change the Shape of an Object

✓ Example:

- Pressing a balloon or dough changes its shape.

🌟 Activity 8.5 — Applying Force

Task:

- Press rubber bands, springs, dough, scale between bricks.
- Observe changes in shape and/or motion.

✓ Force can:

- Move objects.
- Change speed.
- Change direction.
- Change shape.

👋 8.6 Contact Forces

Type	Example
Muscular Force	Pushing/pulling objects using muscles.
Frictional Force	Slowing down of objects on contact (e.g., rolling ball).

✔ Contact required for muscular and frictional forces.

🔥 8.7 Non-Contact Forces

Force	Example
Magnetic Force	Attraction/repulsion between magnets.
Electrostatic Force	Rubbing balloon with hair sticks it to wall.
Gravitational Force	Falling apple, water flowing downward.

✔ No contact needed.

🔥 Activity 8.6 — Magnet Experiment

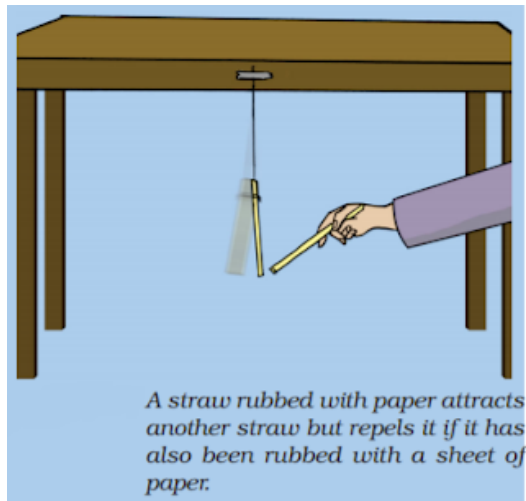
Task:

- Bring magnets close without touching → observe attraction/repulsion.



Observing attraction and repulsion between two magnets

🔥 Activity 8.7 — Electrostatic Experiment



🔧 Materials Needed:

- Two plastic straws
- Piece of paper
- Thread

🔧 Steps:

1. Rub both straws separately with a piece of paper.
2. Hang one straw freely with a thread.
3. Bring the second rubbed straw close to the hanging straw without touching it.

🔍 Observation:

- The two straws move away (repel) from each other.

🌟 Conclusion:

- Like charges repel each other.
- Electrostatic force acts without contact.

✅ Ab simple aur clear form me ready hai —
jaise tumko chahiye tha, bina unnecessary explanation ke! 🚀

📏 8.8 Pressure



Pushing a nail into a wooden plank

- Pressure = Force ÷ Area
- Smaller area → Greater pressure.

✓ Example:

- Nail enters wood easier from pointed end.
- Sharp knives cut better than blunt ones.

8.9 Pressure by Liquids and Gases

- Liquids and gases exert pressure on:
 - Bottom
 - Walls of container
 - In all directions

✓ Examples:

- Water leaks from holes at bottom.
- Air inflates balloon and exerts pressure inside.

Activity 8.8 – Water Pressure at the Bottom

Materials Needed:

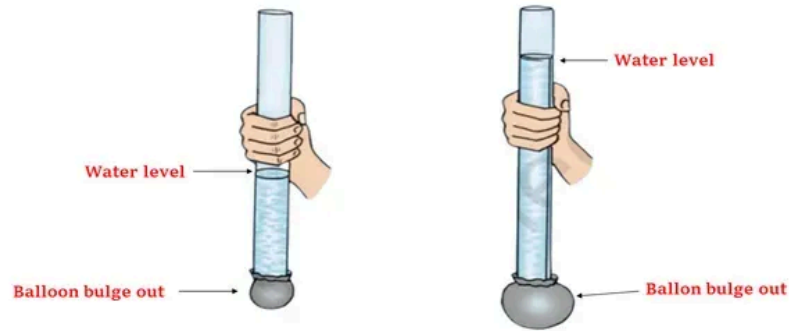
- Plastic bottle
- Water
- Nail

Steps:

1. Take an empty plastic bottle.
2. Make a small hole near the bottom using a nail.
3. Fill the bottle with water.

Observation:

- Water starts coming out from the hole with force.



☀ Conclusion:

- Liquids exert pressure at the bottom of the container.

☀ Activity 8.9 – Water Pressure at Different Heights

🔧 Materials Needed:

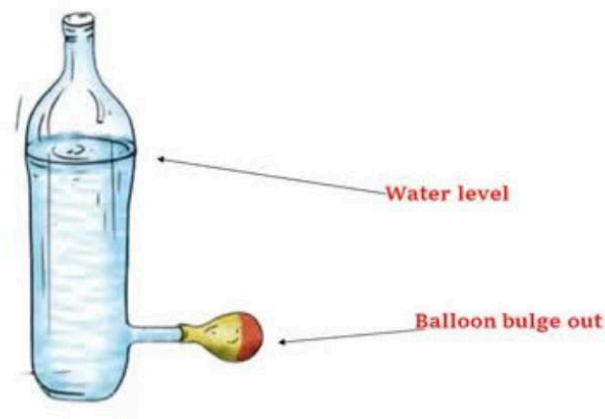
- Plastic bottle
- Water
- Nail

🧪 Steps:

1. Make three holes vertically on the side of a plastic bottle (top, middle, bottom).
2. Fill the bottle with water.

🔍 Observation:

- Water from the bottom hole gushes out farther than the middle and top holes.



☀ Conclusion:

- Water pressure increases with depth.

Activity 8.10 – Atmospheric Pressure with Glass and Water

Materials Needed:

- Glass tumbler
- Cardboard
- Water

Steps:


1. Fill the glass tumbler completely with water.
2. Place a stiff piece of cardboard over the mouth.
3. Hold the cardboard and invert the glass carefully.

Observation:

- The cardboard stays stuck, and water does not fall.

Conclusion:

- Atmospheric pressure supports the cardboard and holds the water inside.

 More water = More pressure.

8.10 Atmospheric Pressure

- Air exerts pressure → called Atmospheric Pressure.
- Example:
 - Sucker sticks to wall due to atmospheric pressure.
 - Inflated balloon bursts when punctured → air rushes out.

 Atmospheric pressure ≈ Weight of 225 kg on 15 cm × 15 cm area!