

- Observe
- Explore
- Experiment
- Discover

★ APBSTF ★

AP BIOLOGICAL SCIENCE TEACHERS' FORUM



LAB MANUAL

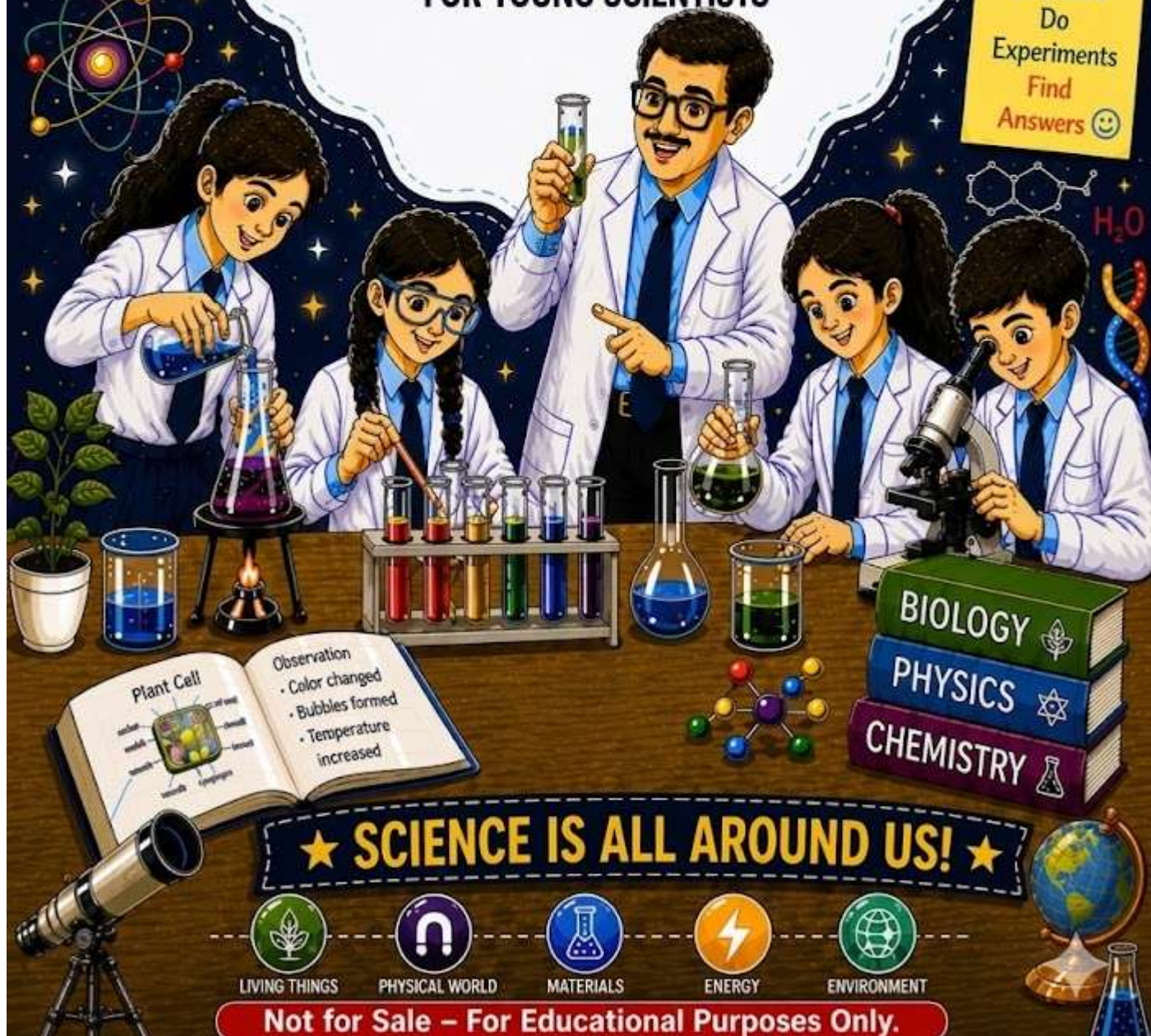
★ FOR VI CLASS ★

(BASED ON NCERT – CURIOSITY SERIES)

★ HANDS-ON ACTIVITIES
FOR YOUNG SCIENTISTS ★

Curiosity

Ask
Questions
Do
Experiments
Find
Answers 😊



★ SCIENCE IS ALL AROUND US! ★



LIVING THINGS



PHYSICAL WORLD



MATERIALS



ENERGY



ENVIRONMENT

Not for Sale – For Educational Purposes Only.



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★ **APBSTF** ★

ANDHRA PRADESH BIOLOGICAL SCIENCE TEACHERS' FORUM

LAB MANUAL

★ **FOR CLASS VI** ★

(Based on NCERT – CURIOSITY SERIES)

- Observe
- Explore
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S.No	Chapter No & Name	Activity No & Activity	Type of Activity
1	 1. The Wonderful World of Science	1.1 Thinking and writing	Thinking
2		1.2 Science in daily life	Writing
3		1.3 Asking questions	Inquiry
4	 2. Diversity in the Living World	2.1 Observe plants & animals	Observation
5		2.2 Draw living things	Drawing
6		2.3 Group living things	Classification
7		2.4 Group plants	Classification
8		2.5 Leaf venation	Observation
9		2.6 Types of roots	Observation
10		2.7 Roots & leaves relation	Analysis
11	 3. Mindful Eating – A Path to a Healthy Body	2.8 Types of seeds	Experiment
12		2.9 Animal movement	Observation
13		2.10 Habitat comparison	Analysis
14		3.1 Food record	Recording
15		3.2 Food habits survey	Survey
16		3.3 Cooking methods	Interaction
17		3.4 Deficiency diseases survey	Survey
18	 4. Exploring Magnets	3.5 Test for starch	Experiment
19		3.6 Test for fats	Experiment
20		3.7 Test for proteins	Experiment
21		3.8 Balanced diet study	Analysis
22		3.9 Compare food values	Analysis
23		4.1 Magnetic materials	Experiment
24		4.2 Magnet poles	Experiment
25	 5. Measurement of Length and Motion	4.3 Finding directions	Experiment
26		4.4 Simple compass	Model
27		4.5 Attraction & repulsion	Experiment
28		4.6 Magnet with compass	Observation
29		4.7 Fun magnet activities	Activity
30		5.1 Measuring length	Measurement
31		5.2 Motion & rest	Observation
32	 6. Materials Around Us	5.3 Falling object	Experiment
33		5.4 Circular motion	Experiment
34		5.5 Oscillatory motion	Experiment
35		5.6 Metal strip motion	Experiment
36		5.7 Types of motion	Classification
37		5.8 Measure curved lines (Additional)	Measurement
38		5.9 Simple pendulum (Additional)	Experiment
39	 7. Temperature and Its Measurement	5.10 Uniform motion (Additional)	Experiment
40		6.1 Identify materials	Observation
41		6.2 Group materials	Classification
42		6.3 Suitable materials	Thinking
43		6.4 Bouncing balls	Experiment
44		6.5 Hard & soft materials	Observation
45		6.6 Transparent materials	Observation
46	 8. Air Around Us	6.7 Soluble & insoluble	Experiment
47		6.8 Float & sink objects (Additional)	Experiment
48		7.1 Feeling hot and cold	Experiment
49		7.2 Measuring body temperature	Measurement
50		7.3 Thermometer reading	Observation
51		7.4 Hot & cold comparison (Additional)	Experiment
52		7.5 Expansion on heating (Additional)	Experiment
53	 9. Water	8.1 Air occupies space	Experiment
54		8.2 Air has weight	Experiment
55		8.3 Uses of air	Discussion
56		8.4 Evaporation in daily life (Additional)	Observation
57		9.1 Sources of water	Observation
58		9.2 Uses of water	Recording
59		9.3 Saving water	Awareness
60	 10. Energy Around Us	9.4 Cooling by evaporation (Additional)	Experiment
61		10.1 Sources of energy	Observation
62		10.2 Uses of energy	Recording
63		10.3 Renewable energy	Classification
64		10.4 Sunlight uses (Additional)	Observation
65		11.1 Breathing exercise	Activity
66		11.2 Making pinwheel	Model
67	 11. Nature's Treasures	11.3 Water wastage survey	Survey
68		11.4 Natural resources use	Observation
69		11.5 Fuels & vehicles	Recording
70		11.6 Forest products	Awareness
71	 12. Beyond the Earth	12.1 Drawing constellations	Drawing
72		12.2 Pole star location	Observation
73		12.3 Star patterns	Observation
74		12.4 Night sky observation	Field Activity

★ **SCIENCE IS ALL AROUND US!** ★

VI CLASS SCIENCE: CURIOSITY

CHAPTER 1. THE WONDERFUL WORLD OF SCIENCE

Activity 1.1: Let us think and write

Aim: To understand how we solve problems using a step-by-step method.

Materials Required: Notebook, Pen/Pencil.

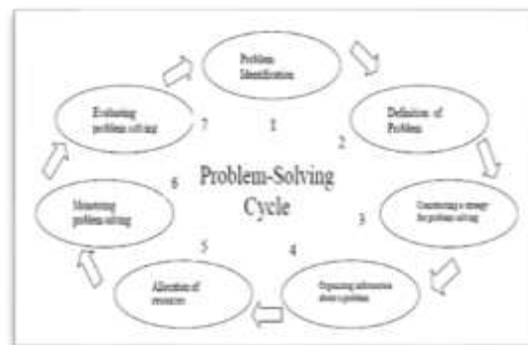
Procedure:

1. Think of a simple problem you faced in daily life.
2. Write what the problem was.
3. Write the steps you followed to solve it.
4. Check whether your solution worked or not.

Observation:

- The problem can be solved by observing, thinking, and testing.
- Different steps help in finding the correct solution.

Conclusion: Problems can be solved by following a scientific method like observing, guessing, and testing.



Activity 1.2: Let us think and write

Aim: To understand how scientific thinking is used in daily life.

Materials Required: Notebook, Pen/Pencil.

Procedure:

1. Observe a daily life situation (at home, school, or surroundings).
2. Identify a problem in that situation.
3. Think about how the problem was solved.
4. Write the steps followed to solve it.

Observation:

- People use observation and testing to solve problems.
- Many daily activities involve scientific thinking.

Conclusion: Scientific method is used in daily life situations to solve problems.



Activity 1.3: Let us think and write

Aim: To develop curiosity and questioning ability.

Materials Required: Notebook, Pen/Pencil.

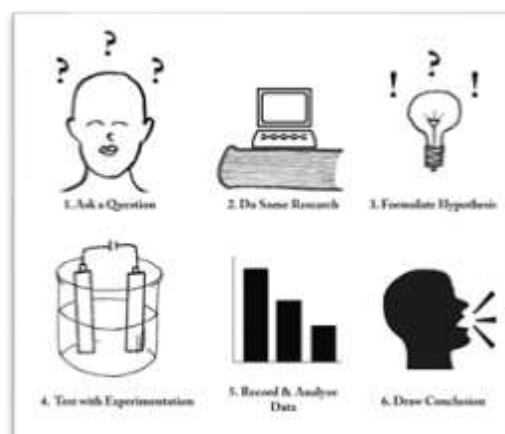
Procedure:

1. Think of a “Why” question about something around you.
2. Write the question clearly.
3. Think of possible answers.
4. Try to find the correct answer by observing, reading, or asking others.

Observation:

- Asking questions helps us learn new things.
- Answers can be found by observation and thinking.

Conclusion: Curiosity and questioning help us understand the world better.



CHAPTER 2. DIVERSITY IN THE LIVING WORLD

Activity 2.1: Let us explore and record

Aim: To observe different plants around us.

Materials Required: Notebook, pen.

Procedure:

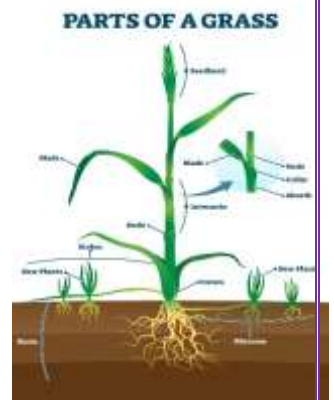
1. Go for a nature walk.
2. Observe different plants.
3. Note their stem, leaves and flowers.

Observation Table:

S. No.	Local name of plant	Stem	Leaves (shape/ arrangement)	Flowers	Any other features
1.	Common grass	Soft and thin	Single leaves alternate	Green	Small size
2.	Tulsi	Hard and thin	Leaves in opposite pairs	Pinkish purple	Medicinal plant
3.	Hibiscus	Hard	Broad leaves with net-like veins	Red	Large flowers
4.	Neem	Hard and thick	Compound leaves with many leaflets	White	Leaves have smooth surface
5.	Mango	Hard and thick	Long narrow leaves	Yellowish	Big tree

Observation Table:

Name of animal	Place they live	Food they eat	Movement	Other features
Crow	Tree	Insects	Fly, walk	Carries twig
Ant	Soil / burrow	Leaves, seeds	Crawl	Six legs
Cow	Land	Grass	Walk	Gives milk
Fish	Water	Small plants/animals	Swim	Has fins
Dog	House/Street	Meat, food	Run	Faithful animal



Observation:

Different plants have different stems, leaves and flowers.

Conclusion: Plants and Animals show great diversity in their features.

Activity 2.2: Let us appreciate

Aim: To understand variety of plants and animals.

Materials Required: Blackboard, chalk, (IFP)

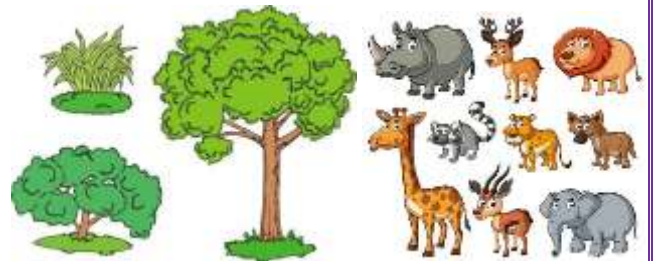
Procedure:

1. Close your eyes and think of one plant and one animal.
2. Draw them on the board.
3. Compare with others.

Observation:

Many different plants and animals are drawn.

Conclusion: There is a large variety of living organisms (biodiversity).



Activity 2.3: Let us group

Aim: To group plants and animals.

Materials Required: Pictures of plants and animals

Procedure:

1. Collect pictures.
2. Observe their features.
3. Group them based on similarities.

Observation:

Different groups are formed based on features.

Conclusion:

Grouping helps in easy study and understanding.

Activity 2.4: Let us group

Aim: To group plants based on height and stem.

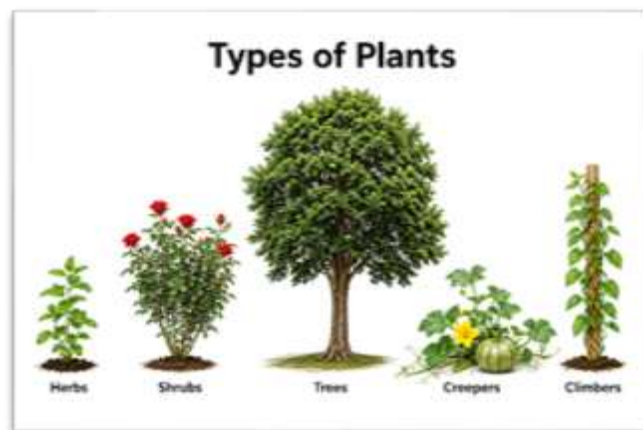
Materials Required: Notebook, pen.

Procedure:

1. Observe plants.
2. Note their height and stem type.

Observation Table:

S. No.	Name of the plant	Height of the plant	Colour of the stem	Nature of the stem (soft/hard)	Thickness of the stem	Branches arise (near the ground / higher up)	Group (Herb/Shrub/Tree)
1.	Mango	Tall	Brown	Hard	Thick	Higher up	Tree
2.	Neem	Tall	Brown	Hard	Thick	Higher up	Tree
3.	Rose	Medium	Green/Brown	Hard	Thin	Near the ground	Shrub
4.	Hibiscus	Medium	Green	Hard	Medium	Near the ground	Shrub
5.	Tulsi	Short	Green	Soft	Thin	Near the ground	Herb
6.	Tomato	Short	Green	Soft	Thin	Near the ground	Herb

**Observation:**

Plants differ in height and stem nature.

Conclusion: Plants are grouped as herbs, shrubs and trees.

Activity 2.5: Let us compare

Aim: To observe leaf venation.

Materials Required: Different leaves.

Procedure:

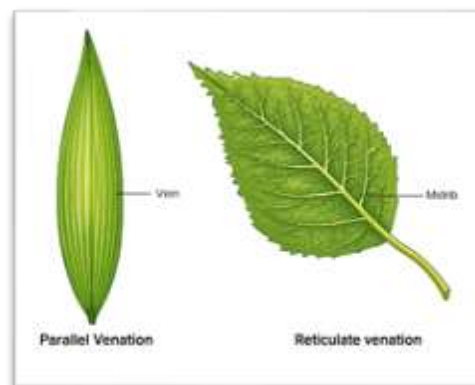
1. Collect leaves.
2. Observe vein patterns.

Observation:

Two types of venation are seen:

- Reticulate (net-like)
- Parallel

Conclusion: Leaves differ in venation patterns.

**Activity 2.6: Let us find out**

Aim: To study types of roots.

Materials Required: Small plants, water

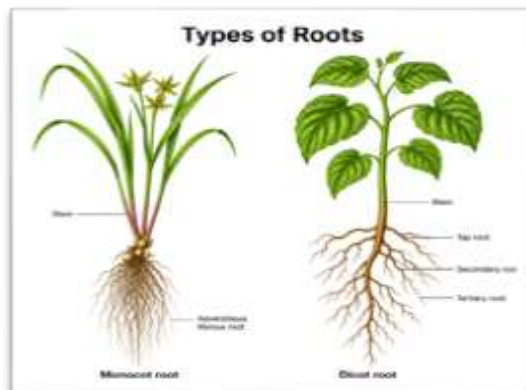
Procedure:

1. Dig out small plants.
2. Wash roots.
3. Observe them.

Observation:

Two types of roots are seen:

- Taproot
- Fibrous root



Conclusion: Plants have different root systems.

Activity 2.7: Relation between roots and leaves

Aim: To find relation between venation and roots.

Materials Required: Different plants.

Procedure:

1. Observe leaves and roots.
2. Record observations.

Observation Table:

S. No.	Name of the plant	Type of venation (Parallel / Reticulate)	Type of root (Taproot / Fibrous root)
1.	Lemongrass	Parallel	Fibrous root
2.	Wheat	Parallel	Fibrous root
3.	Hibiscus	Reticulate	Taproot
4.	Mustard	Reticulate	Taproot
5.	Mango	Reticulate	Taproot

Observation:

Parallel venation → Fibrous root

Reticulate venation → Taproot

Conclusion: Leaf venation and root type are related.

Activity 2.8: Let us compare

Aim: To compare types of seeds.

Materials Required: Chickpea, maize seeds.

Procedure:

1. Soak seeds.
2. Observe inside structure.

Observation:

- Chickpea → Two cotyledons
- Maize → One cotyledon

Conclusion: Seeds are of two types: dicot and monocot.

Activity 2.9: Let us find out

Aim: To study movement in animals.

Materials Required: Notebook, pen.

Procedure:

1. Observe animals.
2. Note their movement and body parts.

Observation Table:

S. No.	Name of the animal	Type of movement	Body parts used for movement
1.	Ant	Crawl	Legs
2.	Goat	Walk, run	Legs
3.	Pigeon	Fly	Wings
4.	Housefly	Walk, fly	Legs, wings
5.	Fish	Swim	Fins
6.	Snake	Crawl	Whole body
7.	Frog	Jump, swim	Hind legs
8.	Dog	Walk, run	Legs

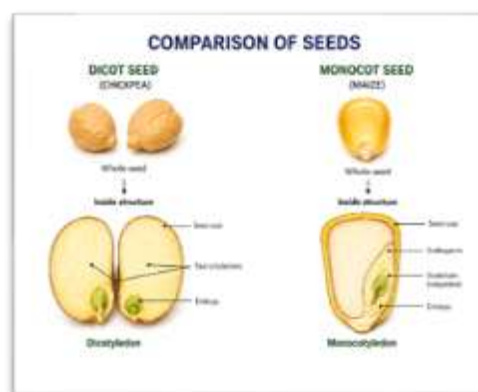
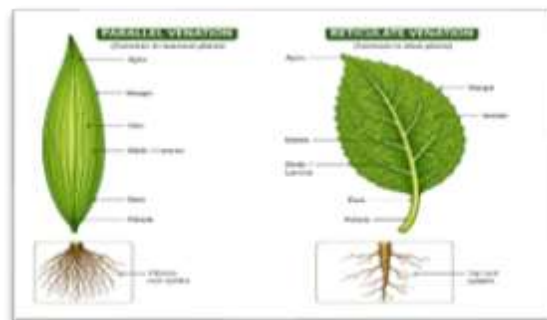
Observation:

Animals move in different ways.

Conclusion: Different animals use different body parts for movement.

Activity 2.10: Let us compare and analyse

Aim: To study plants and animals in different regions.



Movement in Animals

S. No.	Name of the animal	Type of movement	Body parts used for movement
1.	Ant	Crawl	Legs
2.	Goat	Walk, run	Legs
3.	Pigeon	Fly	Wings
4.	Housefly	Walk, fly	Legs, wings
5.	Fish	Swim	Fins
6.	Snake	Crawl	Whole body
7.	Frog	Jump, swim	Hind legs
8.	Dog	Walk, run	Legs

Materials Required: Notebook, pen

Procedure:

1. List plants and animals in different regions.
2. Record observations.

Observation Table:

S. No.	In the desert	On mountains	In the ocean	In the forest	Any other
1.	Camel	Deodar tree	Fish	Lion	Crow
2.	Cactus	Pine tree	Whale	Tiger	Dog
3.	Lizard	Yak	Shark	Elephant	Cat
4.	Snake	Snow leopard	Octopus	Deer	Goat
5.	Scorpion	Mountain goat	Crab	Monkey	Pigeon
6.	Desert fox	Rhododendron	Dolphin	Bear	Cow
7.	Thorny bush	Fir/Pine tree	Starfish	Peacock	Hen
8.	Date palm	Moss	Seaweed	Rabbit	Ant

Plants and Animals in Different Regions

S. No.	In the Desert	On Mountains	In the Ocean	In the Forest	Any Other
1.	Camel	Deodar tree	Fish	Lion	Crow
2.	Cactus	Pine tree	Whale	Tiger	Dog
3.	Lizard	Yak	Shark	Elephant	Cat
4.	Snake	Snow leopard	Octopus	Deer	Goat
5.	Scorpion	Mountain goat	Crab	Monkey	Pigeon
6.	Desert fox	Rhododendron	Dolphin	Bear	Cow
7.	Thorny bush	Fir / Pine tree	Starfish	Peacock	Hen
8.	Date palm	Moss	Seaweed	Rabbit	Ant

Observation:

Different regions have different plants and animals.

Conclusion: Living organisms adapt to their surroundings.

CHAPTER 3. MINDFUL EATING: A PATH TO A HEALTHY BODY

Activity 3.1: Let us record

Aim: To record the food we eat in a week.

Materials Required: Notebook, pen.

Procedure:

1. Observe the food you eat every day.
2. Write the food items for each day.
3. Continue for one week.
4. Fill the table neatly.

Observation Table 3.1: Food items consumed over a week:

Day	Food items
Monday	Rice, dal, vegetables
Tuesday	Chapati, curry, milk
Wednesday	Idli, sambar, fruit
Thursday	Rice, curry, salad
Friday	Chapati, dal, curd
Saturday	Dosa, chutney, juice
Sunday	Biryani, egg, sweets

Observation:

Food varies every day.

Conclusion: We eat a variety of food.

Activity 3.2: Let us explore

Aim: To study food in different regions.

Materials Required: Notebook, pen.

Procedure:

1. Collect information about different states.
2. Note crops grown.
3. Write traditional food items.
4. Fill the table.

Observation Table 3.2: Some traditional food items in various states of India:



South Indian Meals



North Indian Meals

State	Locally grown crops	Traditional food items eaten	Beverages
Punjab	Maize, wheat, chickpea, pulses	Makki di roti, sarson da saag, chhole bhature	Lassi, milk
Karnataka	Rice, ragi, urad, coconut	Idli, dosa, sambar, rice	Buttermilk, coffee
Manipur	Rice, bamboo, soya bean	Rice, eromba, singju	Black tea
Andhra Pradesh	Rice, chilli	Rice, curry, pickle	Buttermilk
Tamil Nadu	Rice	Idli, dosa, sambar	Coffee
Maharashtra	Jowar, bajra, wheat	Bhakri, pithla, vada pav, puran poli	Buttermilk, tea
Gujarat	Wheat, rice, pulses	Dhokla, thepla, khichdi, kadhi	Buttermilk, tea
Rajasthan	Bajra, wheat	Dal bati churma, gatte ki sabzi	Buttermilk
West Bengal	Rice, fish	Fish curry, rice, sweets (rasgulla)	Tea
Kerala	Rice, coconut, spices	Appam, puttu, avial, fish curry	Coconut water, tea
Uttar Pradesh	Wheat, rice, pulses	Chapati, dal, kachori, sabzi	Lassi, tea
Bihar	Rice, wheat	Litti chokha, dal, rice	Buttermilk
Assam	Rice, tea	Rice, fish curry, bamboo shoot dishes	Tea
Himachal Pradesh	Wheat, maize	Siddu, dham, madra	Tea
Telangana	Rice, millet	Rice, curry, biryani	Buttermilk, tea

Observation:

Food differs in each region.

Conclusion: Food depends on crops and region.

Activity 3.3: Let us interact and find out

Aim: To study changes in cooking practices.

Materials Required: Notebook, pen.

Procedure:

1. Prepare questions about cooking methods.
2. Ask elders about old practices.
3. Compare old and modern methods.
4. Record your findings.

Observation:

Earlier: Chulha, sil-batta

Now: Gas stove, mixer

Conclusion:

Cooking methods have changed over time.



Activity 3.4: Let us conduct a survey

Aim: To study deficiency diseases.

Materials Required: Notebook, chart.

Procedure:

1. Observe people in your area.
2. Note symptoms of illness.
3. Ask about their diet.
4. Record observations.

Observation:

Poor diet causes health problems.

Conclusion: Balanced diet keeps us healthy.



Activity 3.5: Test for Starch

Aim: To test the presence of starch.

Materials Required: Potato, rice, bread, iodine solution.

Procedure:

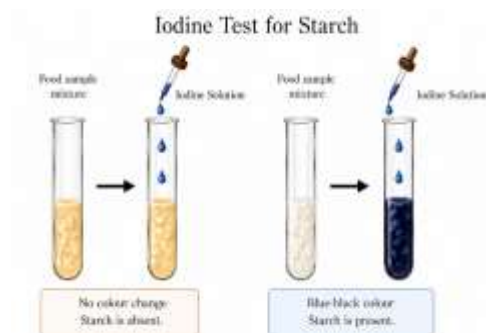
1. Take small pieces of food items.
2. Place them on a plate.
3. Add iodine drops.
4. Observe colour change.

Observation:

Blue-black colour appears – Starch is present.

No colour change – Starch is absent.

Conclusion: Starch is present.



zActivity 3.6: Test for Fats

Aim: To test the presence of fats.

Materials Required: Food items, paper.

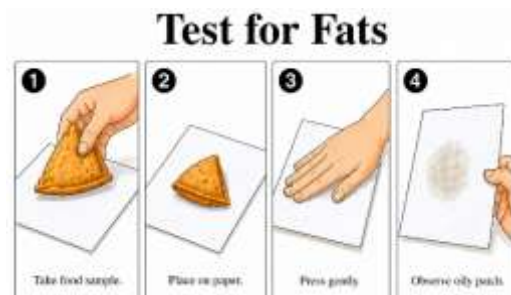
Procedure:

1. Take food sample.
2. Place on paper.
3. Press gently.
4. Observe oily patch.

Observation:

Oily patch appears.

Conclusion: Fat is present.



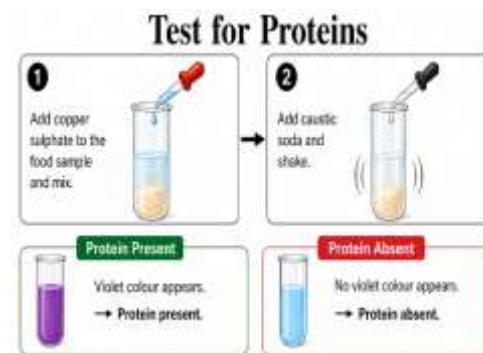
Activity 3.7: Test for Proteins

Aim: To test the presence of proteins.

Materials Required: Food sample, copper sulphate, caustic soda.

Procedure:

1. Make paste of food.
2. Add water and mix.
3. Add copper sulphate.
4. Add caustic soda and shake.



Observation Table 3.3: Exploring nutrients present in various food items:

Name of the food item	Colour of the food item for starch test		Oily patch for fat test		Colour of the food item for protein test		Starch present (Yes/No)	Fat present (Yes/No)	Protein present (Yes/No)
	Before iodine test	After iodine test	Prediction (Yes/No)	Observation (Yes/No)	Before protein test	After protein test			
Potato	White	Blue-black	No	No	White	No change	Yes	No	No
Cucumber	Light green	No change	No	No	Light green	No change	No	No	No
Boiled rice	White	Blue-black	No	No	White	No change	Yes	No	No
Boiled gram	Brown	No change	No	No	Brown	Violet	No	No	Yes
Peanuts	Brown	No change	Yes	Yes	Brown	Violet	No	Yes	Yes
Bread/Chapati	White	Blue-black	No	No	White	No change	Yes	No	No
Butter	Yellow	No change	Yes	Yes	Yellow	No change	No	Yes	No
Coconut	White	No change	Yes	Yes	White	No change	No	Yes	No
Any other (Milk)	White	No change	No	No	White	Violet	No	No	Yes

Conclusion: Protein is present.

Activity 3.8: Let us find out

Aim: To check balanced diet.

Materials Required: Notebook.

Procedure:

1. Check your weekly food list.
2. Identify nutrients present.
3. Find missing nutrients.
4. Suggest changes.

Observation:

Some nutrients may be missing.

Conclusion: Balanced diet is necessary.



Activity 3.9: Let us compare

Aim: To compare food values.

Materials Required: Food packets.

Procedure:

1. Take two food items.
2. Read nutrition labels.
3. Compare nutrients.
4. Record results.

Observation:

Junk food has more fats and less nutrients.

Conclusion: Healthy food is better.



CHAPTER 4. EXPLORING MAGNETS

Activity 4.1: Magnetic and Non-Magnetic Materials

Aim: To find which objects are attracted by a magnet.

Materials Required: Magnet, pencil, eraser, steel spoon, coin, plastic scale, glass piece, paper clip.

Procedure:

1. Take different objects.
2. Bring a magnet near each object.
3. See whether it sticks or not.

Observation:

1. Steel spoon and paper clip stick to the magnet.
2. Pencil, eraser, plastic, and glass do not stick.

Conclusion:

Objects made of iron or steel are magnetic. Others are non-magnetic.



Activity 4.2: Poles of a Magnet

Aim: To find the poles of a magnet.

Materials Required:

Magnet, iron filings, paper

Procedure:

1. Spread iron filings on paper.
2. Place the magnet on it.
3. Tap gently and observe.

Observation:

1. More filings stick at the ends.
2. Very few stick in the middle.

Conclusion: The ends of a magnet are called poles, and they are the strongest parts.

Activity 4.3: Finding Directions

Aim: To show that a magnet points North–South.

Materials Required: Magnet, thread, stand

Procedure:

1. Tie a thread to the magnet.
2. Hang it freely.
3. Let it come to rest.

Observation:

The magnet always points in the same direction.

Conclusion: A freely hanging magnet shows the North–South direction.

Activity 4.4: Simple Compass

Aim: To make a simple compass.

Materials Required: Needle, magnet, cork, water bowl

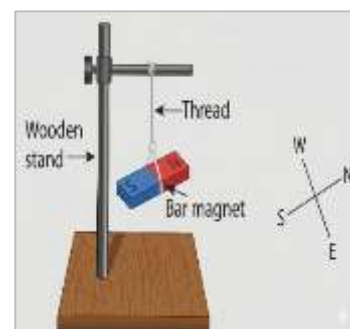
Procedure:

1. Rub the needle with a magnet.
2. Fix it in a cork.
3. Float it on water.

Observation:

The needle turns and stops in one direction.

Conclusion: A magnetised needle works like a compass.



Activity 4.5: Attraction and Repulsion

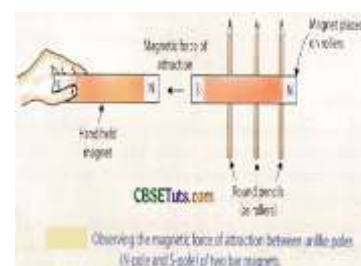
Aim: To study attraction and repulsion of magnets.

Materials Required: Two magnets, pencils.

Procedure:

1. Place one magnet on pencils.
2. Bring another magnet close.
3. Try different pole combinations.

Observation:



1. Same poles move away.
2. Different poles come closer.

Conclusion: Like poles repel and unlike poles attract.

Activity 4.6: Magnet and Compass

Aim: To see how a magnet affects a compass.

Materials Required: Compass, magnet.

Procedure:

1. Place the compass on a table.
2. Bring a magnet near it.

Observation:

1. The compass needle moves.
2. It shows attraction or repulsion.

Conclusion: A compass needle is also a magnet.

Fun with Magnets – Classroom Activities

Title: Exploring fun applications of magnets (garland, maze, cars, clips)

Aim: To explore how magnets work, how they can move things from a distance, and how they push or pull each other.

Materials Required: Bar magnets or ring magnets, Steel paper clips and small steel balls, A cardboard tray (for the maze) and two empty matchboxes, A small bowl of water, Glue or tape.

Procedure:

1. The Magnetic Garland: Try to connect your magnets in a long line. If they stick together, you've made a "garland"!

2. The Secret Maze: Put a steel ball in your cardboard maze. Hold your magnet under the tray and move it around. Watch the ball follow your magnet like it's being chased!

3. Fishing Without a Hook: Drop a paper clip into a bowl of water. Hold your magnet just above the water (don't get it wet!). Watch the paper clip "jump" out of the water to meet the magnet.

4. Magnet Cars: Tape a magnet inside two match boxes as cars

1. Point the same colours (like poles) toward each other and try to make them touch.
2. Point different colours (unlike poles) toward each other.

Observation:

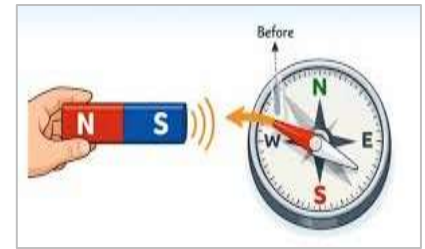
1. The magnets formed a chain easily when flipped the right way.
2. The steel ball moved through the maze even though the cardboard was in the way.
3. The paper clip climbed out of the water to reach the magnet.
4. The cars either zoomed together or zoomed away from each other!

Result:

1. Magnets exert force even at a distance.
2. Magnetic force can pass through things like cardboard and water.
3. Different poles (N and S) pull together, Same poles (N and N) push away.

Inference:

1. Magnets can be used in creative ways for games and demonstrations.
2. These activities show the invisible magnetic force acting through space and materials.
3. Repulsion and attraction are fundamental properties of magnets.



Magnetic Garland



The Secret Maze



Fishing Without a Hook



Magnet Cars



CHAPTER 5. MEASUREMENT OF LENGTH & MOTION

Activity 1: Measuring Length Using a Ruler

Aim: To measure the length of objects using a ruler.

Materials Required: Ruler, pencil, eraser, small stick, notebook.

Procedure:

1. Place the object on a flat surface.
2. Keep one end of the object at the **zero mark** of the ruler.
3. Look at the number where the object ends.
4. Write the length in **cm and mm**.
5. Measure other objects and record them.

Observation:

1. A ruler shows **centimeters (cm)** and **millimeters (mm)**.
2. Small lines on the ruler show **1 mm**.
3. We can measure length in both cm and mm.

Result: We can measure straight objects using a ruler.

Inference:

1. Start from the **zero mark** for correct measurement.
2. Length can be written in cm or mm.
3. This method is good for straight objects only.

Precautions:

1. Do not start from the edge of the ruler.
2. Keep the ruler straight.
3. Read the scale from directly above.



Object	Length (cm)	Length (mm)
Pencil	12 cm	120 mm
Eraser	4 cm	40 mm
Stick	15 cm	150 mm



Activity 5.2: Let us explore

Aim: To identify objects in motion and at rest.

Materials Required: Surroundings.

Procedure:

1. Observe objects around you.
2. Identify moving and non-moving objects.
3. List them.
4. Give reasons.

Observation Table (Table 5.3: Observing things around you):

Objects in motion	Justification	Objects at rest	Justification
Cow grazing in field	Changing position slowly	Tree	Does not change position
Moving car	Moving from one place to another	Table	Fixed at one place
Flying bird	Changes position in air	Building	Fixed position
Running boy	Changes position with time	Chair	Does not move
Rotating fan	Blades are moving continuously	Book	Remains at same place

Observation:

Some objects move, while others do not.

Result: Moving objects are in motion; others are at rest.

Inference: Motion depends on change in position with time.

Activity 5.3: Let us explore

Aim: To observe motion of a falling object.

Materials Required: Eraser.

Procedure:

1. Take an eraser.
2. Hold it at a height.
3. Drop it.
4. Observe the movement.

Observation:

The eraser falls straight down.

Result: The eraser shows straight-line motion.



Inference: This is linear motion.

Activity 5.4: Let us investigate

Aim: To observe circular motion.

Materials Required: Thread, eraser.

Procedure:

1. Tie eraser to a thread.
2. Hold the thread.
3. Rotate the eraser.
4. Observe its motion.

Observation:

The eraser moves in a circle.

Result: It shows circular motion.

Inference: Objects moving in a circular path show circular motion.



Activity 5.5: Let us investigate

Aim: To observe oscillatory motion.

Materials Required: Thread, eraser.

Procedure:

1. Tie eraser to thread.
2. Hold it freely.
3. Pull to one side.
4. Release it.

Observation:

The eraser moves to and fro.

Result: The motion repeats.

Inference: This is oscillatory motion.



Activity 5.6: Let us investigate

Aim: To observe oscillatory motion using a metal strip.

Materials Required: Metal strip, books.

Procedure:

1. Fix one end of strip under books.
2. Press the free end.
3. Release it.
4. Observe the motion.

Observation:

The strip moves up and down repeatedly.

Result: The motion is repeated.

Inference: This is oscillatory motion.

Activity 5.7: Let us identify

Aim: To classify types of motion.

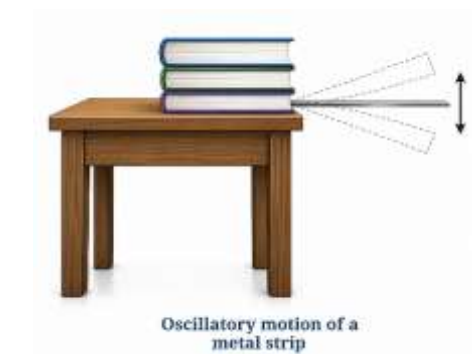
Materials Required: Park observation.

Procedure:

1. Observe motions in a park.
2. Identify moving objects.
3. Classify motion types.
4. Record in table.

Observation Table (Table 5.4: Types of Motion):

Object	Linear motion	Circular motion	Oscillatory motion
Swing			Moving to and fro
Merry-go-round		Rotating	
Sliding child	Moving down		
See-saw			Up and down
Rolling ball	Moving straight		



Observation:

Different objects show different motions.

Result: Motion can be classified into types.

Inference: Motion is linear, circular or oscillatory.

Additional Activities:

Activity 1: Measuring Curved Lines Using a Thread

Aim: To measure curved lines using a thread.

Materials Required: Thread, ruler, pencil, notebook.

Procedure:

1. Place the thread along the curved line.
2. Mark the start and end points on the thread.
3. Straighten the thread.
4. Place it on the ruler.
5. Note the length in cm and mm.

Observation:

1. Thread can bend and follow curves.
2. When straightened, it shows the correct length.

Result:

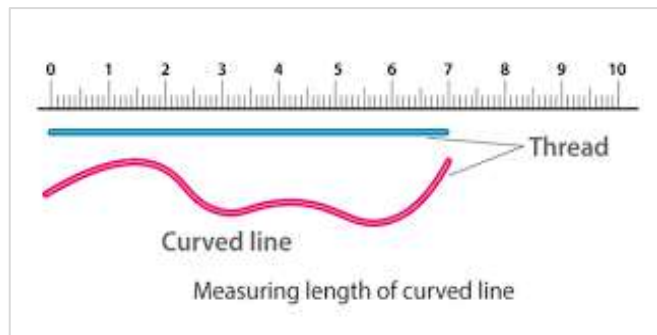
Curved lines can be measured using a thread and ruler.

Inference:

1. A ruler cannot measure curves directly.
2. Thread helps to measure curved shapes.

Precautions:

1. Do not stretch the thread.
2. Straighten it properly before measuring.
3. Read the ruler from above.



Activity 2: Simple Pendulum

Aim: To observe how a pendulum moves.

Materials Required:

Thread, small stone or metal bob, stand, stopwatch, ruler.

Procedure:

1. Tie a stone or bob to a thread.
2. Hang it from a support.
3. Measure the length of the thread.
4. Pull the bob slightly and leave it.
5. Count the time for 10 swings.
6. Find time for 1 swing by dividing by 10.

Observation Table:

Length of Pendulum	Time for 10 Oscillations	Time for 1 Oscillation
20 cm	15 s	1.5 s
30 cm	18 s	1.8 s
40 cm	20 s	2.0 s

Observation:

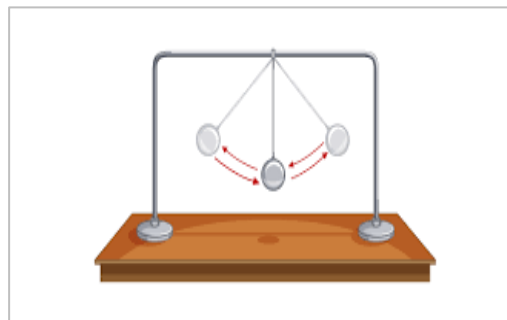
1. The pendulum moves to and fro.
2. It moves in a regular way.
3. Longer thread → more time for one swing.

Result:

A pendulum shows periodic motion (repeated motion).

Inference:

1. Pendulum motion is called oscillatory motion.
2. Time depends on the length of the thread.



Activity 3: Uniform and Non-Uniform Motion

Aim: To understand different types of motion.

Materials Required: Toy car or ball, chalk/tape, stopwatch.

Procedure:

1. Mark equal distances on the floor.
2. Roll the toy car slowly.
3. Note time for each distance.
4. Push it again with different force.
5. Compare the times.

Observation Table:

Distance Interval	Time Taken (Uniform Motion)	Time Taken (Non-Uniform Motion)
0–1 m	2 s	1 s
1–2 m	2 s	3 s
2–3 m	2 s	4 s

Observation:

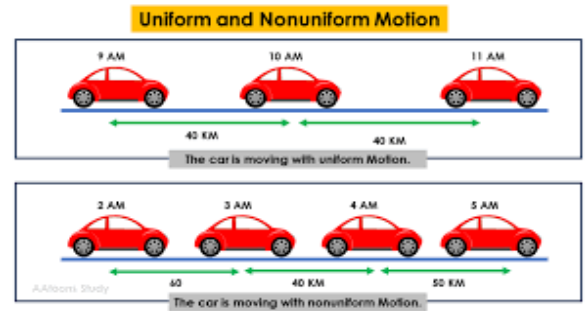
1. Same time for equal distances → uniform motion.
2. Different time for equal distances → non-uniform motion.

Result:

1. Equal distance + equal time = uniform motion.
2. Unequal time or distance = non-uniform motion.

Inference:

1. Uniform motion is steady and regular.
2. Non-uniform motion is irregular.



CHAPTER 6. MATERIALS AROUND US

Activity 6.1: Let us identify

Aim: To identify objects and the materials they are made of.

Materials Required: Objects around you (book, pen, table, bottle, etc.)

Procedure:

1. Observe objects around you.
2. Identify each object.
3. Find out the material used.
4. Record in table.

Observation Table (Table 6.1: Identify materials):

I observe	Materials they are made up of
Book	Paper
Pen	Plastic, metal
Table	Wood
Water bottle	Plastic
Glass tumbler	Glass

Observation:

Different objects are made of different materials.

Result: Objects are made from one or more materials.

Inference: Materials are used to make objects based on need.

Activity 6.2: Let us group

Aim: To group objects based on their properties.

Materials Required: Wood, plastic, steel spoon, glass, rubber band, chalk, salt, sugar, sand, paper, water.

Procedure:

1. Take different materials.
2. Observe if they are shiny or dull.
3. Check if they are hard or soft.
4. Put them in water to see if they float or sink.
5. Mix salt/sugar in water to check dissolving.

Observation:

1. **Shiny:** steel, glass
2. **Dull:** wood, chalk
3. **Hard:** steel, wood
4. **Soft:** rubber, paper
5. **Float:** wood, paper
6. **Sink:** steel, stone
7. **Dissolve:** salt, sugar
8. **Do not dissolve:** sand, chalk

Result: Grouping helps to classify objects.

Inference: Classification is based on common properties.

Activity 6.3: Let us think

Aim: To identify suitable materials for making a tumbler.

Materials Required: Picture/idea of tumbler.

Procedure:

1. Think about a tumbler.
2. List possible materials.
3. Check if they can hold water.
4. Write suitable materials.



GLASS



PAPER PLASTIC STAINLESS STEEL SILVER SILVER GOLD

Observation:

Plastic, glass, steel can hold water.

Result: Only certain materials are suitable.

Inference: Material is chosen based on its properties.

Activity 6.4: Let us explore

Aim: To observe bouncing of balls.

Materials Required: Tennis ball, cricket ball, rubber ball.

Procedure:

1. Take different balls.
2. Drop from same height.
3. Observe bounce.
4. Record results.

Observation Table (Table 6.2: Bouncing level of balls):

Ball	Bounces (high, medium or low)
Tennis ball	High
Cricket ball	Low
Hand exercise ball	Medium
Rubber ball	High



Tennis ball



Cricket ball



Hand exercise ball

Observation:

Different balls bounce differently.

Result: Bounce depends on material.

Inference: Materials affect properties like bouncing.

Activity 6.5: Let us observe

Aim: To identify hard and soft materials.

Materials Required: Objects like brick, pillow, bottle.

Procedure:

1. Take different objects.
2. Press them with hand.
3. Check hardness or softness.
4. Record observations.

Observation Table (Table 6.3):

Object	Hard/Soft	Material(s)
Brick	Hard	Baked clay
Water bottle	Hard	Plastic
Pillow	Soft	Cotton, cloth
Tumbler	Hard	Glass/steel
Table	Hard	Wood
Sweater	Soft	Wool



Hard Material
Brick (Baked clay)



Hard Material
Water bottle (Plastic)



Soft Material
Pillow (Cotton, cloth)



Hard Material
Tumbler (Glass/steel)



Hard Material
Table (Wood)



Soft Material
Sweater (Wool)

Observation:

Some materials are hard, some are soft.

Result: Hardness depends on material.

Inference: Materials have different physical properties.

Activity 6.6: Let us classify

Aim: To classify materials as transparent, translucent or opaque.

Materials Required: Glass, butter paper, eraser, wooden block, torch.

Procedure:

1. Shine light through glass.
2. Try with butter paper.
3. Try with wood.

4. Classify them.

Observation Table (Table 6.4):

Transparent	Translucent	Opaque
Glass tumbler	Butter paper	Wooden board
Window glass	Frosted glass	Eraser

Observation:

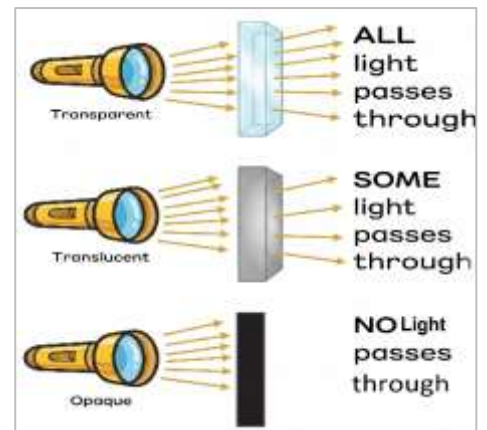
Some materials allow light to pass fully, partially or not at all.

1. **Glass** → **clear view**
2. **Butter paper** → **blurred view**
3. **Wood** → **no view**

Result: Materials are classified based on light passing.

1. Transparent → lets light pass (glass)
2. Translucent → partial light (butter paper)
3. Opaque → no light (wood)

Inference: Transparency depends on material.



Activity 6.7: Let us explore

Aim: To identify soluble and insoluble materials.

Materials Required: Sugar, salt, sand, chalk powder, sawdust, water.

Procedure:

1. Take water in tumblers.
2. Add different materials.
3. Stir them.
4. Observe changes.

Observation Table (Table 6.5):

Material	Prediction	Observation
Sugar	Will disappear in water	Disappears in water
Salt	Will disappear in water	Disappears in water
Chalk powder	Will not disappear	Does not disappear
Sand	Will not disappear	Does not disappear
Sawdust	Will not disappear	Does not disappear (floats)



Observation:

Some materials dissolve, others do not.

1. **Salt, sugar** → **dissolve**
2. **Sand, chalk** → **settle**
3. **Oil** → **floats**

Result: Materials can be soluble or insoluble.

1. **Soluble:** salt, sugar
2. **Insoluble:** sand, chalk, oil

Inference: Solubility is an important property of materials.

Additional Activities:

Activity 1: Measuring Temperature

Aim: To see which materials float or sink.

Materials: Water, wood, plastic, steel spoon, stone, coin.

Procedure:

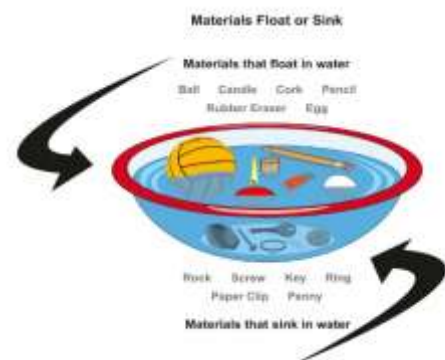
1. Drop items into water.
2. Observe what happens.

Observation:

1. Float: wood, plastic, paper
2. Sink: stone, steel, coin

Conclusion:

Light materials float, heavy materials sink.



Activity 2: Measuring Temperature

Aim: To measure temperature using a thermometer.

Materials: Thermometer, cold water, warm water.

Procedure:

1. Put thermometer in cold water.
2. Note reading.
3. Repeat with warm water.

Observation:

1. Cold water → low temperature
2. Warm water → high temperature

Conclusion:

Thermometer measures hotness and coldness.



Activity 3: Hot & Cold Objects

Aim: To compare hot and cold objects.

Materials: Cold water, warm water, metal spoon, wooden spoon.

Procedure:

1. Touch objects carefully.
2. Measure temperature with thermometer.

Observation:

1. Cold water feels cool
2. Warm water feels hot
3. Metal feels hotter than wood

Conclusion:

Thermometer is more accurate than touch.



Activity 4: Expansion on Heating

Aim: To see how materials expand when heated.

Materials: Metal ball & ring, water, bottle with balloon.

Procedure:

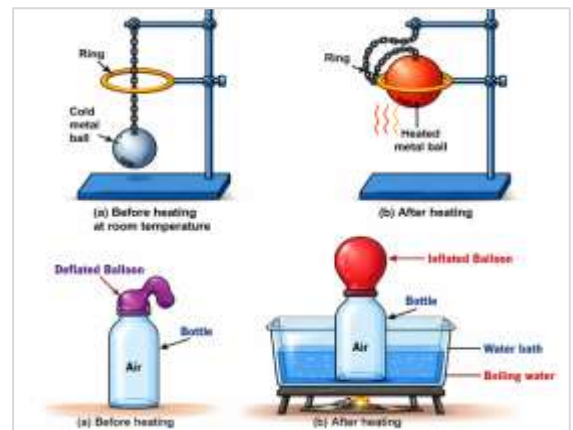
1. Heat metal ball → try passing through ring.
2. Heat water → observe level.
3. Place bottle in hot water → watch balloon.

Observation:

1. Metal expands → doesn't fit
2. Water level rises
3. Balloon inflates

Conclusion:

All materials expand when heated.



CHAPTER 7. TEMPERATURE AND ITS MEASUREMENT

Activity 7.1: Feeling Hot and Cold

Aim: To understand that our sense of touch can be confusing.

Materials Required:

1. 3 Containers
2. Warm water
3. Normal water
4. Ice-cold water

Procedure:

1. Fill container A with warm water.
2. Fill container B with normal water.
3. Fill container C with cold water.
4. Put your right hand in A and left hand in C for 1–2 minutes.
5. Now put both hands in container B.

Observation:

1. Right hand feels cool.
2. Left hand feels warm.

Conclusion:

Our sense of touch is not always correct for judging temperature.



Activity 7.2: Measuring Body Temperature

Aim: To measure body temperature using a thermometer.

Materials Required: Digital thermometer, Notebook.

Procedure:

1. Clean the thermometer.
2. Place it under the tongue.
3. Wait for the beep sound.
4. Note the temperature.

Observation Table:

S. No.	Name	Temperature (°C)
1	Asha	36.8
2	Murali	37.0
3	Sita	36.9
4	Mohan	37.1
5	Raju	36.7
6	Meena	37.2
7	Kiran	36.8
8	Latha	37.0
9	Arun	36.9
10	Neha	37.1

Observation:

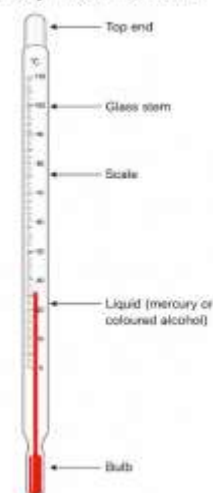
Body temperature is around 37°C (may vary slightly).

Conclusion:

A thermometer gives correct measurement of temperature.



Laboratory Thermometer



Activity 7.3: Range of Thermometer

Aim: To find the range of a laboratory thermometer.

Materials Required: Laboratory thermometer.

Procedure:

1. Observe the thermometer carefully.
2. Note the lowest and highest values.

Observation:

Example: Range is from -10°C to 110°C .

Conclusion:

Each thermometer works only within a fixed range.

Activity 7.4: Let us observe and calculate

Aim: To find the smallest value a laboratory thermometer can measure.

Materials Required: Laboratory thermometer.

Procedure:

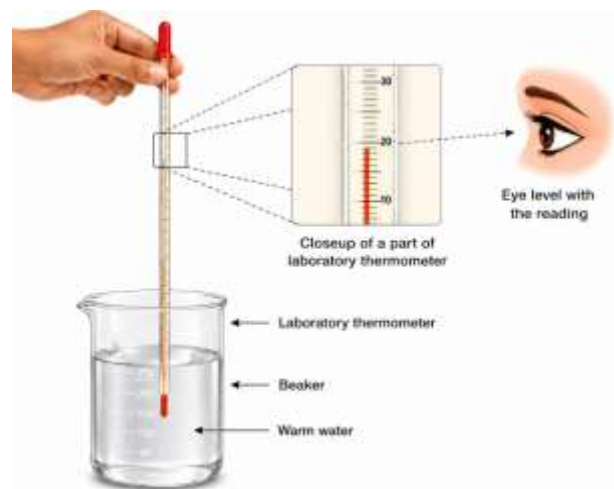
1. Take a laboratory thermometer.
2. Observe the markings carefully.
3. Count divisions between two big marks.
4. Calculate value of one small division.

Observation:

1. Difference between two big marks = 10°C
2. Number of small divisions = 10
3. Value of one division = 1°C

Conclusion:

The smallest value of this thermometer is 1°C .



Activity 7.5: Measuring Water Temperature

Aim: To measure temperature of warm water.

Materials Required: Beaker, Warm water, Laboratory thermometer.

Procedure:

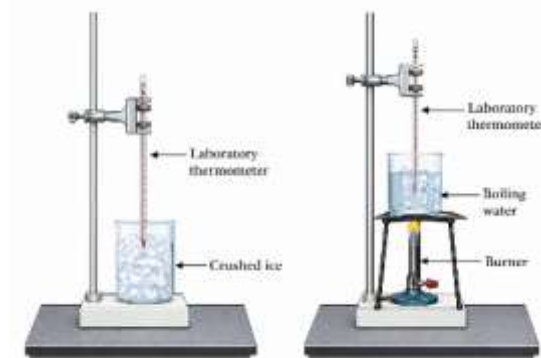
1. Pour warm water into a beaker.
2. Dip the thermometer in water.
3. Wait until the reading becomes steady.
4. Note the temperature.

Observation:

Temperature can be measured accurately when thermometer is inside water.

Conclusion:

Temperature should be read while the thermometer is in the liquid.



Activity 7.6: Let us compare

Aim: To compare temperature readings of boiling water.

Materials Required:

Laboratory thermometer, boiling water setup.

Procedure:

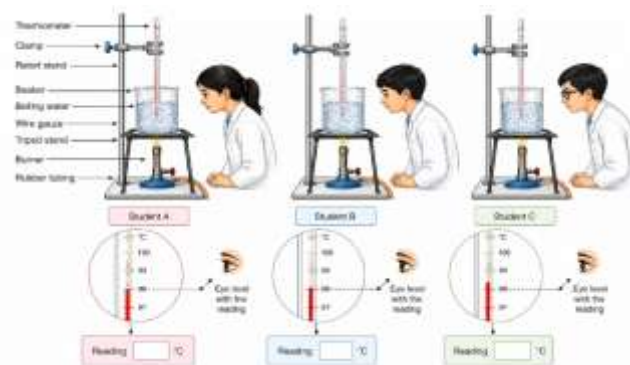
1. Observe temperature of boiling water.
2. Record readings shown by thermometer.
3. Compare readings of different students.
4. Discuss differences.

Observation:

Different students recorded slightly different temperatures (97.8°C to 98.1°C).

Conclusion:

Temperature readings may vary due to improper reading or handling of thermometer.



Activity 7.7: Weather Temperature Record

Aim: To study daily temperature changes.

Materials Required: Notebook, Weather report (TV/newspaper).

Procedure:

1. Record maximum and minimum temperature for 10 days.
2. Write them in a table.
3. Compare the values.

Observation: Temperature changes every day.

Conclusion: Weather temperature is not constant and keeps changing.

Date	Maximum Temperature (in $^{\circ}\text{C}$)	Minimum Temperature (in $^{\circ}\text{C}$)
28.02.2025	29	16
01.03.2025	30	15
02.03.2025	31	17
03.03.2025	32	18
04.03.2025	30	17
05.03.2025	28	14
06.03.2025	29	15

CHAPTER 8. A JOURNEY THROUGH STAGES OF WATER

Activity: 8.1 Melting of Ice

Aim: To see how ice changes into water.

Materials: Ice cubes, bowl, thermometer (optional)

Procedure:

1. Put ice cubes in a bowl.
2. Keep it at room temperature.
3. Observe what happens after some time.

Observation:

1. Ice is hard and cold at first.
2. Water starts forming around it.
3. Ice slowly melts into water.

Conclusion: Ice changes into water when it gets heat.

Activity 8.2: Let us investigate

Aim: To find where water goes when it disappears.

Materials Required: Steel plate, water.

Procedure:

1. Take a tablespoon of water on a steel plate.
2. Check whether water seeps through the plate.
3. Observe at regular intervals.
4. Continue until water disappears.

Observation:

1. Water does not seep through the plate.
2. Water slowly disappears.

Conclusion: Water changes into vapour. This is called **evaporation**.

Activity 8.3: Let us experiment

Aim: To observe formation of water droplets.

Materials Required: Glass tumbler, cold water, ice cubes.

Procedure:

1. Take cold water in a glass tumbler.
2. Add a few ice cubes.
3. Leave it undisturbed for 5 minutes.
4. Record observations in Table 8.1.

Observation Table 8.1:

I observe	I wonder
Water droplets appear on outer surface	Where do droplets come from?
Droplets combine and become bigger	Why do droplets increase?

Observation: Tiny droplets appear on the outer surface.

Conclusion: Water vapour condenses into water droplets (**condensation**).

Activity 8.4: Let us measure

Aim: To find change in mass due to condensation.

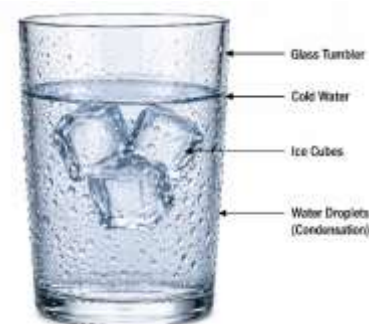
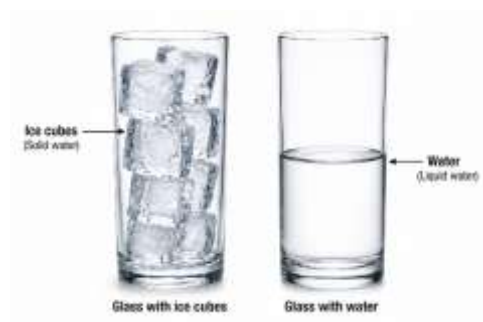
Materials Required: Glass tumbler, water, ice cubes, steel plate, weighing balance.

Procedure:

1. Take a glass with water and ice cubes.
2. Cover it with a steel plate.
3. Weigh it on a digital balance.
4. Record weight every 5 minutes for 30 minutes.

Observation Table 8.2:

Time	Mass of water
0 min	200 g
5 min	202 g
10 min	204 g
15 min	206 g



Time	Mass of water
20 min	208 g
25 min	210 g
30 min	212 g

Observation:

- Water droplets form outside the glass.
- Mass increases gradually.

Conclusion: Water from air condenses on the surface.

Activity 8.5: Let us identify

Aim: To compare properties of different states of water.

Materials Required: Ice, water, containers.

Procedure:

- Transfer ice into different containers.
- Pour water into different containers.
- Pour water on a surface.
- Observe spreading and flow.

Observation Table 8.3:

Property	Ice (Solid)	Water (Liquid)	Water vapour (Gas)
Shape	Fixed	Takes shape of container	No fixed shape
Ability to flow	No	Yes	Yes
Ability to spread	No	Yes	Spreads everywhere

Observation:

- Ice keeps its shape.
- Water flows and spreads.
- Vapour spreads in all directions.

Conclusion: Water exists in three states with different properties.

Activity 8.6: Let us complete the diagram

Aim: To understand changes of states of water.

Materials Required: Notebook, pencil.

Procedure:

- Draw the diagram of states of water.
- Fill blanks using given words.
- Show processes like melting and freezing.
- Complete the diagram.

Observation: Solid → Liquid → Gas changes occur.

Conclusion: Heating and cooling change the state of water.

Activity 8.7: Let us investigate

Aim: To study effect of surface area on evaporation.

Materials Required: Bottle cap, plate, water

Procedure:

- Take water in a bottle cap.
- Take same amount in a plate.
- Keep both near each other.
- Record time taken to evaporate.

Observation Table 8.4

Exposed area of water	Time taken for complete evaporation
Less (bottle cap)	30 minutes
More (plate)	15 minutes

Observation:

Water in plate evaporates faster.

STATES OF WATER AND THEIR PROPERTIES			
Property	Ice (Solid)	Water (Liquid)	Water Vapour (Gas)
Shape	Fixed 	Takes shape of container 	No fixed shape 
Ability to flow	No 	Yes 	Yes 
Ability to spread	No 	Yes 	Spreads everywhere 



Conclusion: Larger surface area increases evaporation.

Activity 8.8: Let us explore

Aim: To study effect of sunlight and air.

Materials Required: Bottle caps, water.

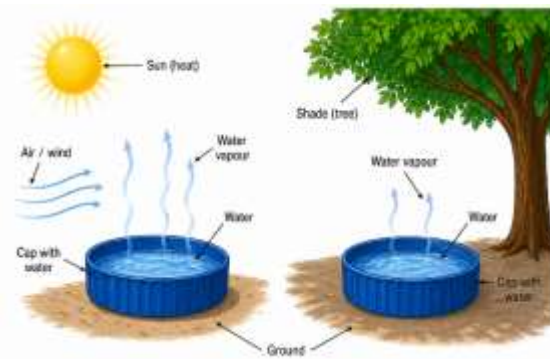
Procedure:

1. Take equal water in two caps.
2. Keep one in sunlight and one in shade.
3. Observe at intervals.
4. Record evaporation time.

Observation:

1. Water evaporates faster in sunlight.
2. Evaporation is faster on windy days.

Conclusion: Heat and air movement increase evaporation.



Activity 8.9: Let us make a model

Aim: To observe cooling effect.

Materials Required: Two earthen pots, sand, water.

Procedure:

1. Place small pot inside large pot.
2. Fill space with sand.
3. Pour water into sand.
4. Cover with lid or cloth.

Observation: Inside becomes cool after some time.

Conclusion: Evaporation causes cooling.



Activity 8.10: Let us engage in a group activity

Aim: To show role of dust particles in cloud formation.

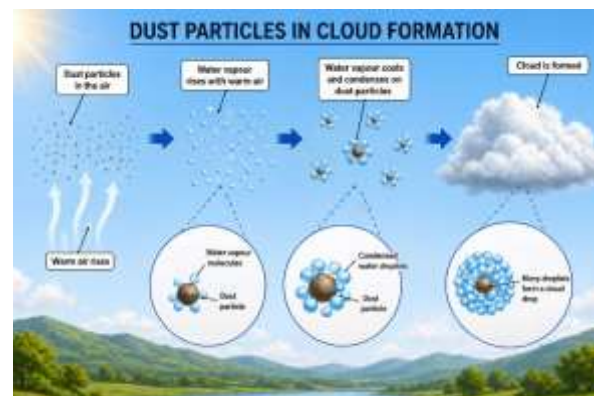
Materials Required: Plastic bottle, water, burnt paper.

Procedure:

1. Take bottle with water.
2. Close lid and squeeze repeatedly.
3. Observe inside space.
4. Repeat with burnt paper.

Observation: Cloud-like haziness appears.

Conclusion: Dust particles help in cloud formation.



Activity 8.11: Let us understand the process

Aim: To understand water cycle.

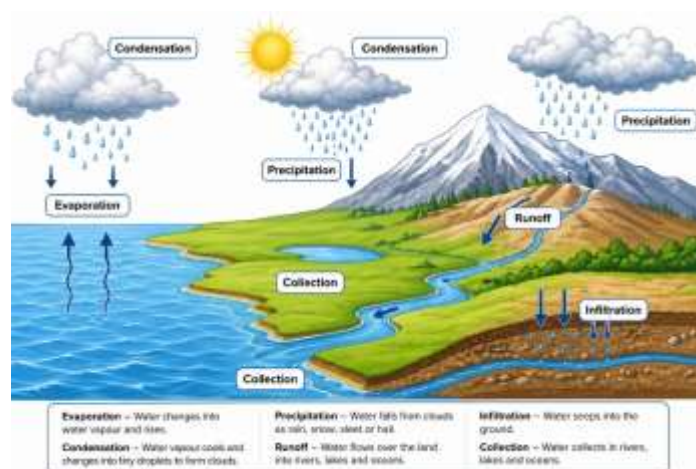
Materials Required: Diagram, pencil.

Procedure:

1. Draw water cycle diagram.
2. Label parts like cloud, river, ocean.
3. Show evaporation and condensation.
4. Complete the diagram.

Observation: Water moves continuously in a cycle.

Conclusion: This continuous movement is called the **water cycle**.



Additional Activities:

Activity 1: Boiling of Water

Aim: To see how water changes into steam.

Materials: Water, beaker, thermometer, heat source.

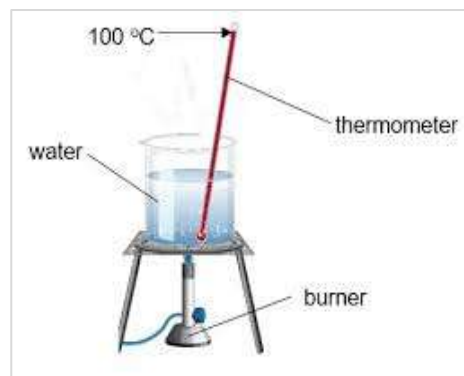
Procedure:

1. Take water in a beaker.
2. Heat it slowly.
3. Watch for bubbles and steam.

Observation:

1. Water becomes hot slowly.
2. Bubbles appear.
3. At about 100 °C, water boils and steam forms.

Conclusion: Water changes into steam when heated.



Activity 2: Condensation (Steam to Water)

Aim:

To see how steam changes back into water.

Materials:

Hot water, metal plate, ice (optional)

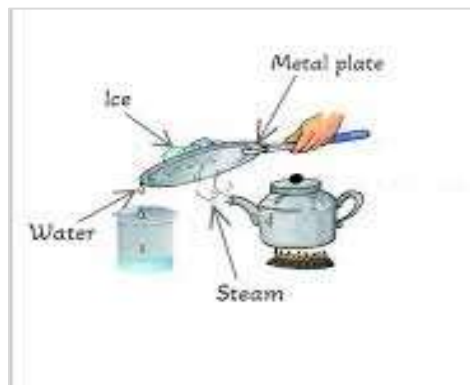
Procedure:

1. Heat water to make steam.
2. Hold a cool plate above it.
3. Observe the plate.

Observation:

1. Steam rises up.
2. Water droplets form on the plate.

Conclusion: Steam changes back into water when cooled.



Activity 3: Freezing of Water

Aim: To see how water changes into ice.

Materials: Water, bowl, freezer.

Procedure:

1. Pour water into a bowl.
2. Keep it in the freezer.
3. Take it out after some time.

Observation:

1. Water becomes very cold.
2. It turns into solid ice.

Conclusion:

Water changes into ice when cooled.

Demonstration: Sublimation

Aim: To see how some solids change directly into gas.

Materials: Camphor or naphthalene balls, heat source.

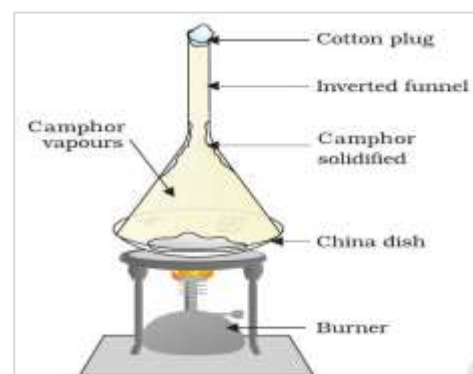
Procedure:

1. Take camphor or naphthalene.
2. Heat it gently.
3. Observe carefully.

Observation:

1. Solid slowly disappears.
2. Vapour (gas) is formed.
3. No liquid is seen.

Conclusion: Some solids change directly into gas. This is called sublimation.



CHAPTER 9. METHODS OF SEPARATION IN EVERYDAY LIFE

Activity 9.1: Let us explore (Winnowing)

Aim: To observe separation by blowing air.

Materials Required: Roasted peanuts.

Procedure:

1. Take roasted peanuts.
2. Rub them between your palms.
3. Blow gently on them.
4. Observe separation.

Observation:

1. Peanut skins separate easily.
2. Light skins fly away, peanuts remain.

Conclusion: Lighter particles are separated by air. This is called **winnowing**.



Activity 9.2: Let us observe and create (Evaporation)

Aim: To observe separation of salt from solution.

Materials Required: Water, salt, bowl, black paper

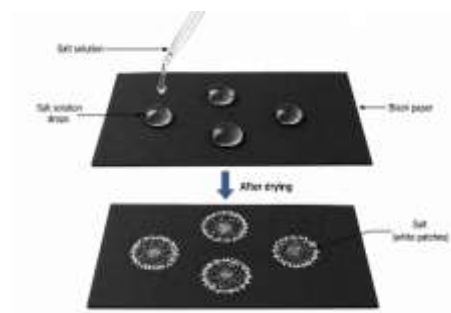
Procedure:

1. Take water in a bowl.
2. Add salt and mix well.
3. Put drops on black paper.
4. Let it dry and observe.

Observation:

1. White patches appear after drying.
2. Salt remains on paper.

Conclusion: Water evaporates leaving salt behind.



Activity 9.3: Let us investigate (Heating & Evaporation)

Aim: To get salt from salt solution by heating.

Materials Required: Salt solution, china dish, heat source.

Procedure:

1. Take salt solution in a dish.
2. Heat the solution.
3. Let water boil away.
4. Allow to cool and observe.

Observation:

1. Water evaporates on heating.
2. Salt remains in the dish.

Conclusion: Heating helps separate salt from water.



Activity 9.4: Let us experiment (Filtration)

Aim: To separate insoluble substances from water.

Materials Required: Filter paper, funnel, muddy water, flask.

Procedure:

1. Fold filter paper into a cone.
2. Place it in a funnel.
3. Pour muddy water into it.
4. Collect filtrate below.

Observation:

1. Mud stays on filter paper.
2. Clear water passes through.

Conclusion: Filtration separates insoluble solids from liquids.



Activity 9.5: Let us design and create (Water Filter Model)

Aim: To design a simple water filter.

Materials Required: Bottle, sand, gravel, cloth, dirty water.

Procedure:

1. Take a bottle and cut it.
2. Arrange cloth, sand, gravel layers.
3. Pour dirty water.
4. Collect filtered water.

Observation:

1. Dirt is trapped in layers.
2. Water becomes clearer.

Conclusion: Different layers help filter impurities.



Activity 9.6: Let us play (Separation Methods Game)

Aim: To identify correct separation methods.

Materials Required: Slips of paper with examples.

Procedure:

1. Write examples on slips.
2. Divide into two groups.
3. Match method with example.
4. Check correct answers.

Observation:

1. Different methods suit different mixtures.
2. Students identify correct methods.

Conclusion: Different mixtures need different separation methods.

Separation Methods Game	
METHODS	EXAMPLES
Handpicking	Stones from Grains
Winnowing	Salt from Salt Water
Sieving	Sand from Water
Magnetic Separation	Flour from Wheat
Filtration	Iron Filings from Sand
Evaporation	Husk from Grains

Additional Activities:

Activity 1: Condensation

Aim: To change steam into water.

Materials: Water, heat source, metal plate.

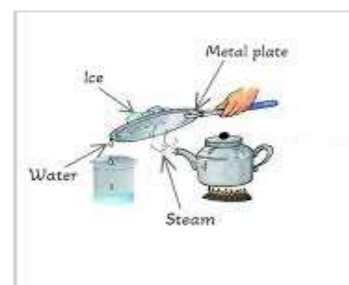
Procedure:

1. Heat water to make steam.
2. Hold a cool plate above it.

Observation:

1. Steam rises.
2. Water drops form on plate.

Conclusion: Steam changes into water on cooling.



Activity 2: Magnetic Separation

Aim: To separate magnetic materials.

Materials: Iron filings, sand, magnet

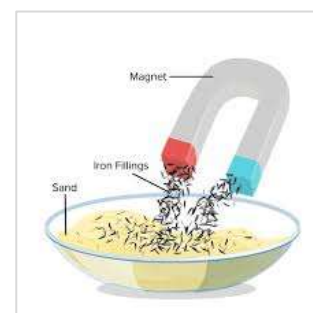
Procedure:

1. Spread the mixture.
2. Bring a magnet close.

Observation:

1. Iron sticks to magnet.
2. Sand remains behind.

Conclusion: Magnet separates magnetic and non-magnetic materials.



CHAPTER 10. LIVING CREATURES: EXPLORING THEIR CHARACTERISTICS

Activity 10.1: Living and Non-living Things

Aim: To identify living and non-living things around us.

Materials Required: Pencil, Book, Objects around you.

Procedure:

1. Look around your classroom or home.
2. List different objects.
3. Write whether they are living or non-living.
4. Give reasons for your answer.



Observation Table: Living beings and non-living things in our surroundings

Name	My guess (Living/Non-living)	Reason/Remarks	Correct answer	Reason/Remarks for the correct answer
Pencil	Non-living	Does not move or grow	Non-living	No life processes
Book	Non-living	Cannot breathe or grow	Non-living	No life processes
Pigeon	Living	Moves and eats food	Living	Shows all life processes
Car	Non-living	Moves but needs fuel	Non-living	Cannot grow or reproduce
Plant	Living	Grows and needs water	Living	Shows growth and respiration
Any other (Dog)	Living	Eats and moves	Living	Shows all life processes

Observation:

1. Living things: grow, breathe, move (example: plant, bird).
2. Non-living things: do not grow or breathe (example: pencil, chair).

Conclusion:

Living things have life processes, while non-living things do not.

Activity 10.2: Seed Germination

Aim: To study conditions needed for seed germination.

Materials Required: 4 pots, Soil, Seeds, Water.

Procedure:

1. Put seeds in 4 pots.
2. Keep pots in different conditions (no water, excess water, dark, sunlight).
3. Observe for 10–15 days.

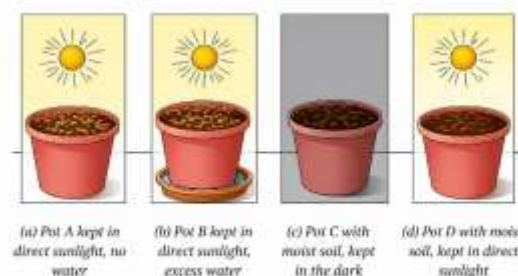


Fig 10.1: Bean seeds exposed to different conditions

Observation Table: Effect of certain conditions on seed germination

Pot with bean seeds	Air	Sunlight	Water	Prediction	Observation	Possible reason
A: Direct sunlight and without water	Yes	Yes	No	No germination	Seeds do not germinate	Water is needed
B: Direct sunlight and excess water	No	Yes	Yes	No germination	Seeds do not germinate/rot	Air is not available
C: Complete dark and moist soil	Yes	No	Yes	Germination occurs	Seeds germinate	Air and water are available
D: Direct sunlight and moist soil	Yes	Yes	Yes	Germination occurs	Seeds germinate well	Air and water are available

Observation:

1. Seeds grow only when they get proper water and air.

2. Too much or no water stops growth.

Conclusion: Seeds need **water and air** to germinate.

Activity 10.3: Growth of Plant

Aim: To observe direction of plant growth.

Materials Required: Germinated seeds, Beakers, Water.

Procedure:

1. Place seedlings in different positions.
2. Keep some in sunlight and some in different directions.
3. Observe for a few days.

Observation Table: Growth of root and shoot under different conditions

Beaker	Direction of sunlight	Direction of plant	Shoot/Root	Prediction	Observation
A	All directions	Upright	Shoot	Upward	Grows upward
A	All directions	Upright	Root	Downward	Grows downward
B	All directions	Inverted	Shoot	Bends upward	Bends and grows upward
B	All directions	Inverted	Root	Bends downward	Bends and grows downward
C	Only from one direction	Upright	Shoot	Towards light	Grows towards light
C	Only from one direction	Upright	Root	Downward	Grows downward

Observation:

1. Roots grow downward.
2. Shoots grow upward and towards light.

Conclusion: Plants grow in specific directions—roots down, shoots up.

Activity 10.4: Life Cycle of a Plant

Aim: To observe the life cycle of a plant.

Materials Required: Seed, Soil, Water.

Procedure:

1. Plant a seed in soil.
2. Water it regularly.
3. Observe changes for many days.

Observation Table: Changes observed during the growth of the plant

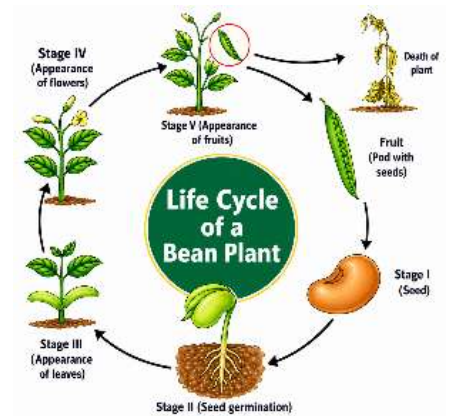
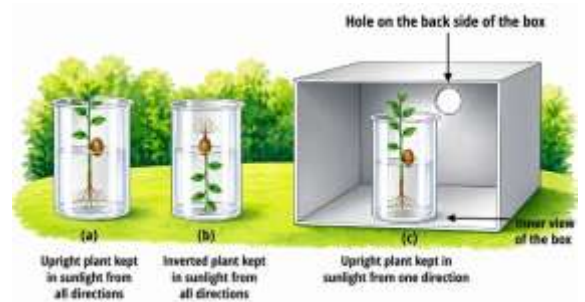
Date	Observations	Sketches
Day 1	Seeds are sown	Seed
Day 5	Seed germinates	Small root and shoot
Day 10	Leaves appear	Seedling
Day 30	Plant grows bigger	Young plant
Day 45	Flowers appear	Flowering plant
Day 60	Fruits/pods appear	Pod with seeds
Day 90	Plant becomes dry	Dry plant

Observation:

Seed → Plant → Flower → Fruit → Seeds

Conclusion: Plants grow and produce new plants through seeds.

Activity 10.5: Life Cycle of Mosquito



Aim: To observe stages of mosquito life.

Materials Required:

1. Water container
2. Magnifying glass (optional)

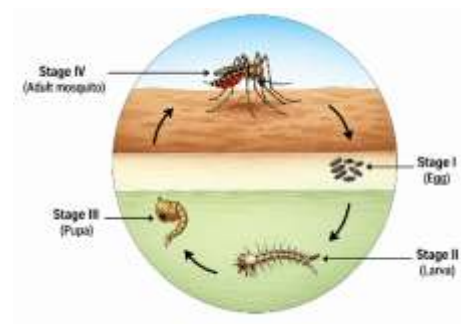
Procedure:

1. Observe stagnant water.
2. Look for small moving organisms.
3. Note changes over days.

Observation:

Egg → Larva → Pupa → Adult Mosquito

Conclusion: Mosquitoes grow in stages and need water to develop.



Activity 10.6: Life Cycle of a Frog

Aim: To observe the life cycle of a frog.

Materials Required: Pond (or pictures of frog), notebook.

Procedure:

1. Look at a pond or frog pictures.
2. Find eggs, tadpoles and frogs.
3. Observe their shapes carefully.
4. Arrange them in correct order.



Observation Table: Changes in different life stages of a frog

A	B	C	D	E	F
Spawn/eggs	Froglet	Tadpole with tail	Tadpole with legs	Adult frog	Embryo
Jelly-like eggs in water	Small frog with tail	Has tail, no legs	Similar to C but has two legs	Fully grown frog	Young stage inside egg

Observation:

1. Eggs look like jelly in water.
2. Tadpoles slowly change into frogs.

Conclusion: A frog grows through different stages.

CHAPTER 11. NATURE'S TREASURES

Activity 11.1 – Breathing Exercise

Aim: To understand the importance of air (oxygen) for our body.

Materials Required: No materials required (only a comfortable place).

Procedure:

1. Sit comfortably in a quiet place.
2. Take a deep breath in and slowly breathe out.
3. Take another deep breath and hold it for as long as possible.
4. Then slowly breathe out.
5. Note how long you could hold your breath and how you felt.

Observation:

1. It is difficult to hold breath for a long time.
2. You may feel uncomfortable after a few seconds.

Conclusion: Air (oxygen) is essential for survival, and we cannot live without it even for a few minutes.



Activity 11.2: Making a Firki (Pinwheel)

Aim: To show that moving air (wind) can do work.

Materials Required: Square paper (15 cm × 15 cm), Scissors, Pin, Stick.

Procedure:

1. Take a square paper and cut along the diagonals (not fully).
2. Fold alternate corners to the center.



3. Fix them with a pin to a stick.
4. Hold the firki and run or blow air on it.

Observation:

The firki rotates when air moves.

Conclusion: Moving air (wind) has energy and can make objects move.

Activity 11.3: Finding Water Wastage

Aim: To identify how water is wasted and learn ways to save it.

Materials Required: Notebook, Pencil.

Procedure:

1. List daily activities like brushing, washing, bathing, etc.
2. Observe how water is wasted in each activity.
3. Write ways to reduce wastage (e.g., turning off taps).

Observation Table: Wastage of water in your daily activities

Activity	How is water wasted?	Suggest ways to reduce wastage of water
Hand washing	Tap left open	Close tap when not in use
Washing clothes	Using too much water	Use bucket instead of running water
Washing utensils	Keeping tap running	Use water in a tub and reuse
Taking shower	Long showers	Use bucket and mug
Cooking	Excess water used	Use only required amount
Gardening	Overwatering plants	Use watering can / drip method
Brushing teeth	Tap left open	Turn off tap while brushing

Observation: Water is often wasted by leaving taps open or using excess water.

Conclusion: Water is precious and must be used carefully. Small actions can save a lot of water.



Activity 11.4: Observing Soil

Aim: To study different types of soil.

Materials Required: Soil samples from different places, Magnifying glass (optional)

Procedure:

1. Collect soil from different places (garden, roadside, etc.).
2. Observe each sample with your eyes.
3. Note colour and texture (soft, rough, etc.).
4. If possible, observe using a magnifying glass.

Observation Table: Soil Samples

Location from which soil sample was collected	What I guessed about the soil?	Observation with naked eye (colour & texture)	Observation with magnifying lens
Soil from farm after ploughing	Soft and fertile	Brown, loose, moist	Small particles, roots, insects
Soil near roadside	Hard and dry	Light brown, rough	Stones and sand particles
Soil from garden	Soft and wet	Dark brown, smooth	Small worms and organic matter

Observation:

1. Soil samples differ in colour and texture.
2. Some contain small stones, insects, or roots.

Conclusion: Soil varies from place to place and contains many materials that help plants grow.



Activity 11.5: Uses of Sunlight

(Based on section "Energy from the Sun")

Aim: To understand the uses of sunlight in daily life.

Materials Required: Drawing sheet, Pencil/colours.

Procedure:

1. Observe how sunlight is used in daily life.
2. Draw pictures showing uses (drying clothes, plants growing, etc.).
3. Write names under each drawing.

Observation Table: Types of vehicles and fuels used

Type of vehicle	Type of fuel used
Scooter/Bike	Petrol
Car	Petrol/Diesel
Bus	Diesel
Auto rickshaw	CNG/Petrol
Truck	Diesel

Observation:

Sunlight is used for drying, lighting, and plant growth.

Conclusion: The Sun is the main source of energy for life on Earth.



Activity 11.6: Forest Products List

(Based on section "Forests")

Aim: To learn about useful products obtained from forests.

Materials Required: Notebook, Pencil.

Procedure:

1. Discuss with friends or family about forest products.
2. Write at least five items (wood, fruits, honey, etc.).
3. Share your list in class.

Observation Table: Natural resources used

Activity	Natural resource
Washing clothes	Water
Making clay toys	Soil
Collecting firewood	Forest (wood)
Making kites	Paper (from trees), air
Having breakfast	Plants and animals

Observation:

Forests provide many useful products.

Conclusion: Forests are very important and must be protected for future use.



CHAPTER 12. BEYOND THE EARTH

Activity 12.1: Drawing patterns of stars (constellations)

Aim: To draw patterns of stars.

Materials Required: Picture of stars, pencil, notebook.

Procedure:

1. Look at the stars picture carefully.
2. Join stars with lines.
3. Make any shape or pattern.
4. Give a name to your pattern.

Observation:

1. Stars form different shapes.
2. Each person gets different patterns.

Conclusion: Stars form patterns called constellations.



Activity 12.2: Locating Big Dipper and Pole Star

Aim: To find Big Dipper and Pole Star.

Materials Required: Clear night sky, open place.

Procedure:

1. Go outside at night.
2. Look towards the north sky.
3. Find Big Dipper pattern.
4. Follow stars to find Pole Star.

Observation:

1. Big Dipper is easy to see.
2. Pole Star is less bright and fixed.

Conclusion: Pole Star helps to find direction.



Activity 12.3: Identifying Orion and Sirius

Aim: To identify Orion and Sirius.

Materials Required: Clear night sky.

Procedure:

1. Look at the sky after sunset.
2. Find three stars in a straight line.
3. Identify Orion shape.
4. Follow the line to find Sirius.

Observation:

1. Orion has three stars in a line.
2. Sirius is very bright.

Conclusion: Constellations help us find stars easily.



Activity 12.4: Identifying the planet Venus

Aim: To identify the planet Venus.

Materials Required: Clear sky at dawn or dusk.

Procedure:

1. Look at the sky in early morning or evening.
2. Look near east (morning) or west (evening).
3. Find a very bright object.
4. Observe it for some time.

Observation:

1. Venus shines very brightly.
2. It does not twinkle like stars.

Conclusion: Venus is a bright planet seen in the sky.



Additional Activities:

Activity 1: Model of Solar System

Aim: To make a model of the solar system.

Materials:

Balls, sticks, cardboard, colors, glue

Procedure:

1. Place a big yellow ball as the Sun.
2. Make small balls for planets.
3. Fix them around the Sun using sticks.
4. Arrange in order.

Observation:

1. Sun is at the center.
2. Planets are around the Sun.
3. Inner planets are smaller.

Conclusion: The solar system has the Sun at the center and planets move around it.



Activity 2: Moon Phases

Aim: To observe changes in the Moon.

Materials: Notebook, pencil.

Procedure:

1. Look at the Moon every night.
2. Draw its shape.
3. Repeat for many days.

Observation:

1. Moon changes shape daily.
2. Shapes: New Moon, Half Moon, Full Moon

Conclusion: The Moon shows different phases every month.



Activity 3: Demonstration: Shadow & Eclipse

Aim: To understand shadows and eclipses.

Materials: Torch, globe, small ball.

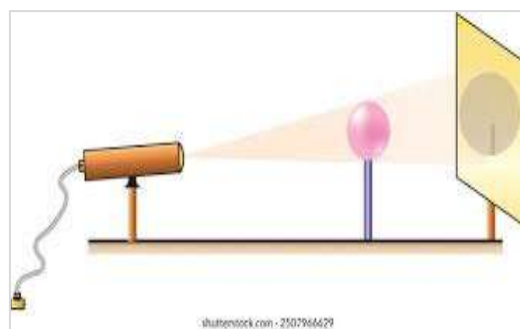
Procedure:

1. Shine torch on an object to see shadow.
2. Place Moon between Sun and Earth → solar eclipse.
3. Place Earth between Sun and Moon → lunar eclipse.

Observation:

1. Shadow forms when light is blocked.
2. Solar eclipse → Moon blocks sunlight.
3. Lunar eclipse → Earth blocks sunlight.

Conclusion: Eclipses happen when Sun, Earth, and Moon come in a straight line.



Activity 4: Rotation & Revolution of Earth

Aim: To understand day/night and seasons.

Materials: Globe, lamp.

Procedure:

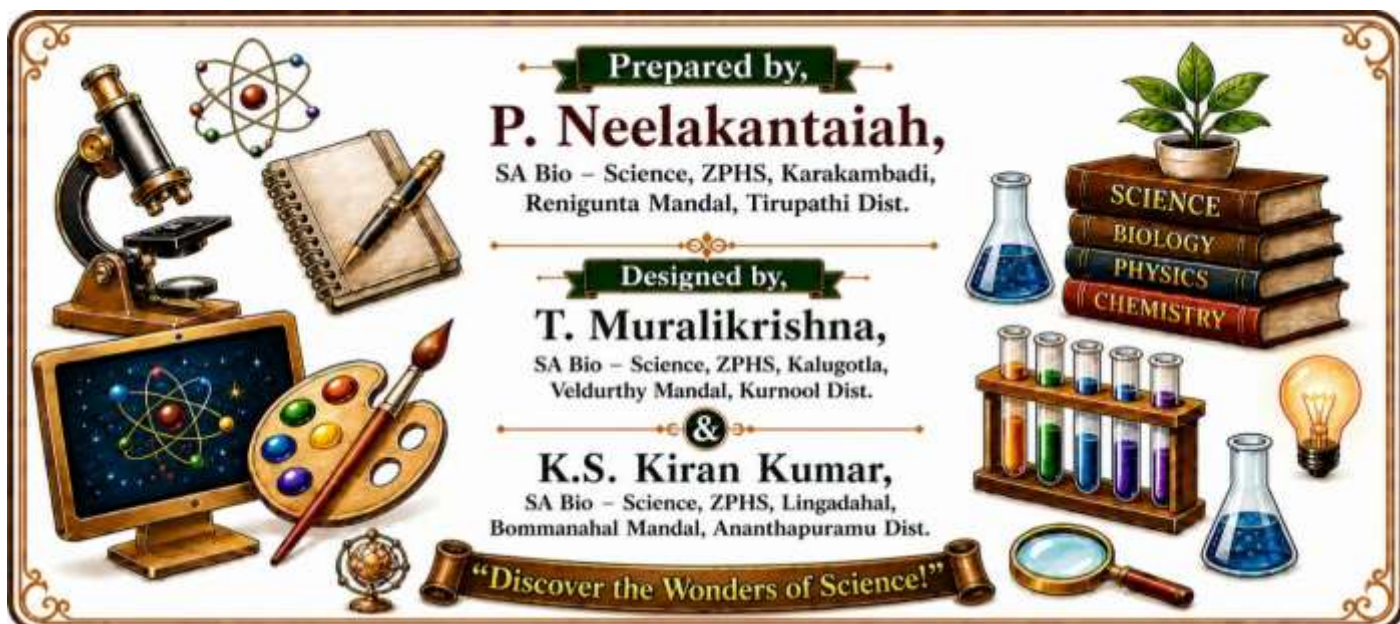
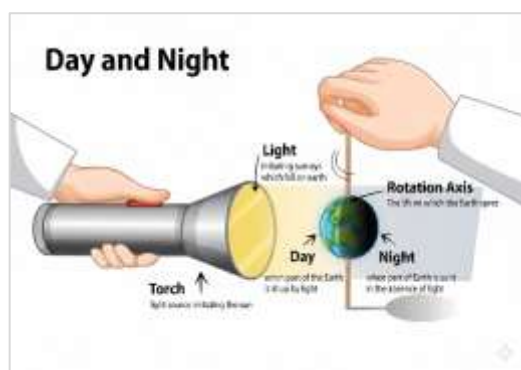
1. Rotate the globe → observe light and dark.
2. Move globe around lamp → observe changes.

Observation:

1. One side is bright (day), other is dark (night).
2. Light changes during movement.

Conclusion:

1. Rotation causes day and night.
2. Revolution causes seasons.



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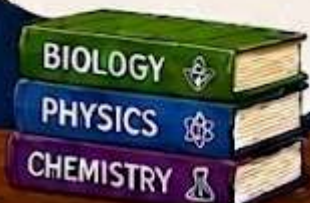
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