SCIENCE 6

(NCERT TEXTBOOK SOLUTION)

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CHAPTER 1.
THE WONDERFUL WORLD OF SCIENCE

Let us Enhance Our Learning

1. What is Science?

Ans. Science is a way of thinking, observing and doing things to understand the world we live in and to uncover the secrets of the universe.

Science is everywhere from the depths of the ocean to the vastness of outer space, from what is cooking in the kitchen to what is happening on the playground.

2. What will we explore with the help of this book?

Ans. With the help of this book, we will explore our home, planet Earth and understand the beautiful world we live in.

We will learn that Earth is the only planet that supports life, and it has an environment that we must protect. As we discover more and more, we will realize all ideas are connected to each other.

3. How can we try to find answers to our questions on our own?

Ans. We can find answers on our own by asking questions and realising observations. Our scientific observations and experimentation allows us to find the answer. Also, learning science will develop our capabilities for finding solutions to bigger problems and solving more mysteries of the universe.

CHAPTER 2.
DIVERSITY IN THE LIVING WORLD

Let us Enhance Our Learning

1. Here are two types of seeds. What differences do you find among the roots and leaf venation of their plants?

(a) Wheat (b) Kidney beans

Ans. (a) Wheat (monocot)

(i) Root: Fibrous Root System

(ii) Leaf Venation: Parallel Venation

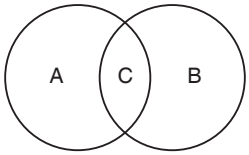
(b) Kidney beans (Dicot)

(i) Root: Taproot System

(ii) Leaf Venation: Reticulate Venation

2. Names of some animals are given below. Group them based on their habitats. Write the names of aquatic animals in the area marked 'A' and terrestrial animals in the area marked 'B'. Enter the names of animals living in both habitats in part 'C'.

Horse, Dolphin, Frog, Sheep, Crocodile, Squirrel, Whale, Earthworm, Pigeon, Tortoise



Ans. A: Aquatic animals – Dolphin, whale

B: Terrestrial animals – Horse, sheep, squirrel, pigeon, earthworm

C: Aquatic and terrestrial – Frog, crocodile, tortoise

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3. **Manu's mother maintains a kitchen garden. One day, she was digging out radish from the soil. She told Manu that radish is a kind of root. Examine a radish and write what type of root it is. What type of venation would you observe in the leaves of radish plant?**

Ans. Root type and leaf venation of radish is given below:

- **Type of root:** Taproot (thick, fleshy taproot)
- **Leaf venation:** Reticulate venation (because radish is a dicot plant)

4. **Look at the image of a mountain goat and a goat found in the plains. Point out the similarities and differences between them. What are the reasons for these differences?**

(a) Mountain goat

(b) Goat found in the plains

Ans. Similarities:

- Both are goats and belong to same family.
- Both have horns and hooves.
- Both are herbivores, feeding on plants and grasses.

Differences:

- Mountain goat has thick and long fur to protect from cold climate while goat found in plain area has thin fur.
- Mountain goat has shorter legs while plain goat has longer legs.
- Mountain goat has muscular body and specialised hooves to climb mountains while plain goat has lean body and flat hooves.

These differences are due to adaptations according to their habitats.

5. **Group the following animals into two groups based on any feature other than those discussed in the chapter—cow, cockroach, pigeon, bat, tortoise, whale, fish, grasshopper, lizard.**

Ans. Group 1: Animals which can fly

- Pigeon
- Bat
- Cockroach
- Grasshopper

Group 2: Animals which cannot fly

- Cow
- Tortoise
- Whale
- Fish
- Lizard

6. **As the population grows and people want more comfortable lives, forests are being cut down to meet various needs. How can this affect our surroundings? How do you think we can address this challenge?**

Ans. Effects of deforestation:

- Destroys natural habitat of various animals and plants
- Reduction in biodiversity
- Leads to irregular rainfall and climate change due to fewer trees absorbing less carbon dioxide
- Makes the soil less fertile and loose

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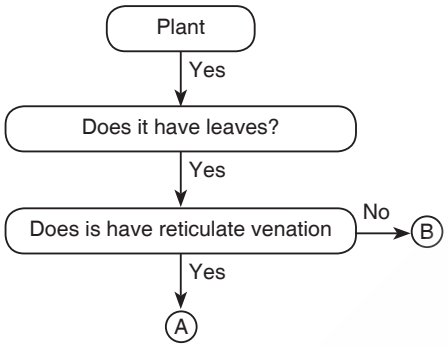
Addressing the challenge:

- Plant more trees (afforestation).
- Create protected areas for wildlife.
- Use resources wisely and reduce waste.
- Public awareness which means educating people about the importance of forests.

7. Analyse the flowchart. What can be examples of 'A' and 'B'?



Ans. A. Plants with reticulate venation: Examples include mango, rose, peepal, sunflower, cotton

B. Plants with parallel venation: Examples include grass, wheat, banana, bamboo, rice, maize, sugarcane

8. Raj argues with his friend Sanjay that "*Gudhal* (hibiscus) plant is a shrub". What questions can Sanjay ask for clarification?

Ans. Sanjay could ask following questions for clarification:

1. How tall does the *Gudhal* (hibiscus) plant grow?
2. Does it have a single main stem or multiple stems?
3. Are the stems of *Gudhal* plant woody or soft or trunky?
4. Do the branches start near the ground or higher?

9. Based on the information in the table, find out examples of these plants for each group.

Group	Type of seed	Type of root	Examples
A	Dicot	Taproot	
B	Monocot	Fibrous roots	

(a) What other similarity do plants of group A have?
(b) What other similarity do plants of group B have?

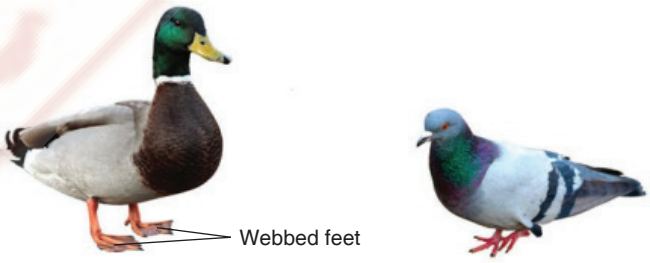
Ans. Examples of Group A: Mango, peepal, rose, sunflower, cotton

Examples of Group B: Bamboo, wheat, grass, rice, maize

(a) Plants in group A have reticulate venation in their leaves.

(b) Plants in group B have parallel venation in their leaves.

10. Observe the labelled part of a duck in the picture given below. What differences do you observe in the feet of the duck compared to the other birds? Which activity would the duck be able to perform using this part?



(a) Duck (b) Pigeon

Ans. **Difference:** The duck has webbed feet, while other birds like the pigeon have separate toes.

Activity: The webbed feet help the duck swim in water. They act like paddles, making it easier for the duck to move through water.

Chapter 3.
Mindful Eating: A Path to a Healthy Body

Page-47

Q. What are the food sources that provide water to our body? List a few of them.

Ans. Green leafy vegetables, fresh fruits and vegetables.

Page-55

Q. How would eating local food help reduce food miles?

Ans. Eating local food helps to reduce food miles as there is no need to transport the food from one place to other.

Let us Enhance Our Learning

1. Pick the odd one out and give reasons:
(i) *Jowar, Bajra,* Ragi, Chana
(ii) Kidney beans, Green gram, Soya bean, Rice

Ans. (i) Chana – It is a pulse while the others are millets.
(ii) Rice – It is a cereal while the others are pulses.

2. Discuss traditional versus modern culinary practices in India.

Ans. Traditional practices involved cooking on *chulhas* using firewood and grinding spices using *sil-batta* (stone grinder). Modern practices use gas stoves, electric grinders, processed foods and other kitchen appliances. The change is due to technological advancements, improved transportation, and convenience.

3. A teacher says that good food may act as medicine. Ravi is curious about this statement and has some questions for his teacher. List at least two questions that he can ask.

Ans. (i) How can food act as medicine for the body?
(ii) Can you give examples of foods that act as natural medicine?

4. Not all delicious foods are necessarily healthy, while not all nutritious foods are always enjoyable. Share your thoughts along with a few examples.

Ans. Delicious foods like candy bars and carbonated drinks are often high in sugar, fats, salts but low in nutrients which makes us unhealthy if consumed regularly. Nutritious foods like spinach and broccoli may not be as enjoyable but are essential for good health. Balancing taste and nutrition is key to a healthy diet.

5. Medu does not eat vegetables but enjoys biscuits, noodles and white bread. He often has stomach ache and constipation. What changes should he make in his diet to get rid of these problems? Explain your answer.

Ans. Medu should add more vegetables, fruits, and whole grains in his diet to increase fibre intake. This will help in digestion and prevent constipation. Reducing intake of processed foods like biscuits and noodles is also recommended which improves his overall digestion and health.

6. Reshma had trouble seeing things in dim light. The doctor tested her eyesight and prescribed a particular vitamin supplement. He also advised her to include a few food items in her diet.
(i) Which deficiency disease is she suffering from?
(ii) Which food component may be lacking in her diet?
(iii) Suggest some food items that she should include in her diet to overcome this problem (any four).

Ans. (i) She is suffering from night blindness.
(ii) Reshma is likely lacking Vitamin A in her diet.
(iii) Carrots, papaya, milk, etc.

7. You are provided the following:
(i) Canned fruit juice
(ii) Fresh fruit juice
(iii) Fresh fruit

Which one would you prefer and why?

Ans. Fresh fruit is preferred as it provides the most nutrients, fibres, and is free from added sugars and preservatives found in canned or processed juices.

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8. Gourav got a fracture in his leg. His doctor aligned the bones and put on a plaster. The doctor also gave him calcium tablets. On the second visit, the doctor gave him Vitamin D syrup along with calcium tablets. Refer to Fig. 3.5 and answer the following questions:

(i) Why did the doctor give calcium tablets to Gourav?

(ii) On the second visit, why did the doctor give Vitamin D syrup along with calcium tablets?

(iii) What question arises in your mind about the choices made by the doctor in giving the medicines?

Ans. (i) Calcium tablets help in bone healing and strengthening.

(ii) Vitamin D aids in the absorption of calcium in the body.

(iii) How does Vitamin D help in calcium absorption?

9. Sugar is an example of carbohydrates. Sugar is tested with iodine solution but it does not change to blue-black colour. What can be a possible reason?

Ans. The iodine test specifically detects starch, a type of carbohydrate, not simple sugars like glucose.

10. What do you think of Raman's statement, "All starches are carbohydrates but not all carbohydrates are starches." Describe the design of an activity to test your answer.

Ans. Raman's statement is correct. To test this, perform the iodine test on different carbohydrates like rice (starch) and sugar (nonstarch). Only rice will turn blue-black, confirming the presence of starch.

11. While using iodine in the laboratory, a few drops of iodine fell on Mishti's socks and a few fell on her teacher's saree. The drops of iodine on the saree turned blue-black while the colour on the socks did not change. What can be a possible reason?

Ans. The saree may contain starch or be made of natural fibres that react with iodine, while the socks may be synthetic and do not contain any starch product.

12. Why are millets considered a healthy choice of food? Can eating just millets suffice for the nutritional requirements of the body? Discuss.

Ans. Millets are rich in vitamins, minerals, and dietary fibres, making them a healthy choice. However, a balanced diet requires a variety of nutrients, so relying solely on millets may not meet all nutritional needs. Millets are known as nutri-cereals as they provide most of the nutrients required for the normal functioning of the body.

13. You are given a sample of a solution. How would you check the possibility of it being an iodine solution?

Ans. Add the solution to a starch-containing food item like potato. If it turns blue-black, the solution is likely iodine.

CHAPTER 4.
EXPLORING MAGNETS

Page-62

Q. Do magnets stick to objects made of certain materials only?

Ans. Yes, magnets stick to those objects only which are made up of iron, nickel or cobalt.

Page-64

Q. Do all parts of a magnet attract magnetic materials equally?

Ans. No. The poles of magnet attract magnetic materials strongly while the middle part attracts magnetic materials very poorly.

Page-65

Q. Can we find a magnet with a single pole?

Ans. No, we cannot find a magnet with a single pole because magnetic poles always exist in pairs.

Page-70

Q. Suppose we place a piece of wood between the compass needle and the magnet. Will this affect the deflection of the compass needle?

Ans. There is no appreciable change in the deflection of the needle when a wood is placed between compass needle and the magnet.

Let us Enhance Our Learning

1. Fill in the blanks.

(i) Unlike poles of two magnets _____ each other, whereas like poles _____ each other.

(ii) The materials that are attracted towards a magnet are called _____.

(iii) The needle of a magnetic compass rests along the _____ direction.

(iv) A magnet always has _____ poles.

Ans. (i) attract, repel

(ii) magnetic materials

(iii) North-South

(iv) two

2. State whether the following statements are True (T) or False (F).

(i) A magnet can be broken into pieces to obtain a single pole. [ ]

(ii) Similar poles of a magnet repel each other. [ ]

(iii) Iron filings mostly stick in the middle of a bar magnet when it is brought near them. [ ]

(iv) A freely suspended bar magnet always aligns with the north-south direction. [ ]

Ans. (i) False (ii) True (iii) False (iv) True

3. Column I shows different positions in which one pole of a magnet is placed near that of the other. Column II indicates the resulting interaction between them for different situations. Fill in the blanks.

Column I	Column II
N – N	_____
N – _____	Attraction
S – N	_____
_____ – S	Repulsion

Ans. Repulsion, S, Attraction, S

4. Atharv performed an experiment in which he took a bar magnet and rolled it over a heap of steel U-clips (Fig. 4.15).

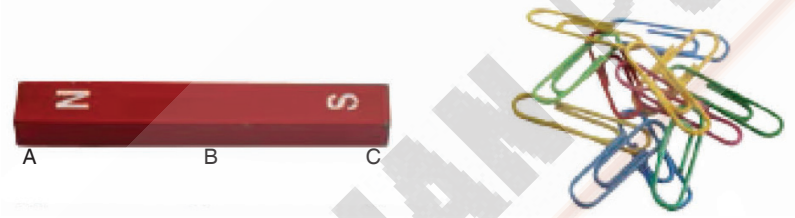

Fig. 4.15 Bar magnet and heap of steel U-clips

According to you, which of the options given in Table 4.3 is likely to be his observation?

Table 4.3 Number of pins attracted by the magnet at its various positions

	Position A	Position B	Position C
(i)	10	2	10
(ii)	10	10	2
(iii)	2	10	10
(iv)	10	10	10

Ans. Option (i) is likely to be his observation. It is because the strength of a magnet is the strongest at the poles and weakest at the centre, thereby attracting more pins at positions A and C.

5. Reshma bought three identical metal bars from the market. Out of these bars, two were magnets and one was just a piece of iron. How will she identify which two amongst the three could be magnets (without using any other material)?

Ans. Reshma could bring one metal bar close to the other two bars one by one. If it repels either of the two, then it is a magnet and the bar that it repels is also a magnet. The one which does not repel but only attracts is the piece of iron.

6. You are given a magnet which does not have the poles marked. How can you find its poles with the help of another magnet which has its poles marked?

Ans. Bring the North pole of marked magnet close to one end of the unmarked magnet. If there is repulsion, then that end of the unmarked magnet is also North pole, and if there is attraction, that end of the unmarked magnet is South pole.

7. A bar magnet has no markings to indicate its poles. How would you find out near which end its North pole is located without using another magnet?

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Ans. (i) Tie a thread around the centre of the bar magnet and suspend it from a wooden stand so that it can rotate freely in the horizontal direction.
(ii) Allow the magnet to come to rest. The end pointing towards the north direction is the north pole of the magnet.

8. If the earth is itself a magnet, can you guess the poles of earth's magnet by looking at the direction of the magnetic compass?

Ans. Yes, the end of the compass needle that points towards the North direction is the North-seeking pole, which means the geographic North pole of the Earth is actually the magnetic South pole, and the geographic South pole of the Earth is the magnetic North pole.

9. While a mechanic was repairing a gadget using a screw driver, the steel screws kept falling down. Suggest a way to solve the problem of the mechanic on the basis of what you have learnt in this chapter.

Ans. The mechanic can magnetize the screwdriver by stroking one end of the bar magnet along its length several times in the same direction. This will make the screwdriver attract the steel screws, preventing them from falling down.

10. Two ring magnets X and Y are arranged as shown in Fig. 4.16. It is observed that the magnet X does not move down further. What could be the possible reason? Suggest a way to bring the magnet X in contact with magnet Y, without pushing either of the magnets.

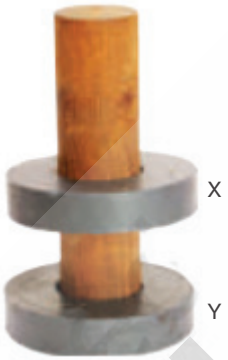

Fig. 4.16 Two ring magnets

Ans. The possible reason is that like poles of the magnets X and Y are facing each other, causing repulsion. To bring magnet X in contact with magnet Y, flip magnet X so that unlike poles face each other, resulting in attraction.

11. Three magnets are arranged on a table in the form of the shape shown in Fig. 4.17. What is the polarity, N or S, at the ends 1, 2, 3, 4 and 6 of the magnets? Polarity of one end (5) is given for you.

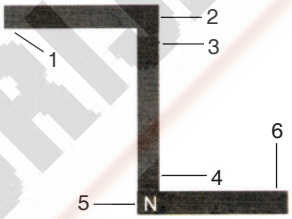

Fig. 4.17 Three bar magnets

Ans. End 1: North (N)
End 2: South (S)
End 3: North (N)
End 4: South (S)
End 6: South (S)

Chapter 5.
Measurement of Length and Motion

Page-83

Q. Would it be convenient to use the unit metre to measure larger lengths, such as the length of a railway track between two cities, or to measure smaller lengths, such as the thickness of a page of a book?

Ans. No, it wouldn't be convenient to use the unit metre to measure larger lengths. For example, to measure the larger distances like to measure distance between two cities, it is more appropriate to use kilometre (km). Likewise to measure

the thickness of a page of the book, we will use the unit millimetre (mm) or centimetre (cm). Different units are chosen based on the length of the object being measured.

Page-89

Q. What do such kilometre stones indicate? How could Padma conclude that she was getting closer to her destination?

Ans. These kilometre stones indicate distance of a place marked on it. In Padma's case, the kilometre stones told her how far she was from Delhi. As she noticed the distance decreasing with each kilometre stone (from 70 km to 60 km, etc.) so, she could conclude that she was getting closer to her destination.

Q. Does this mean that the position of Padma, with respect to the reference point, is changing with time? When does the position of an object change with respect to a reference point? Does it change when an object is moving?

Ans. Yes, the position of Padma is changing with respect to the reference point (Delhi) as time passes. When the object is moving, the position of object changes with respect to the reference point. Hence, when an object is stationary, its position remains the same as relative to reference point. But when an object moves, its position changes with respect to the reference point.

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1. Some lengths are given in Column I of Table 5.5. Some units are given in Column II. Match the lengths with the units suitable for measuring those lengths.

Table 5.5

Column I	Column II
Distance between Delhi and Lucknow	**centimetre**
Thickness of a coin	**kilometre**
Length of an eraser	**metre**
Length of school ground	**millimetre**

Ans.

Column I	Column II
Distance between Delhi and Lucknow	kilometre
Thickness of a coin	millimetre
Length of an eraser	centimetre
Length of school ground	metre

2. Read the following statements and mark True (T) or False (F) against each.

(i) The motion of a car moving on a straight road is an example of linear motion. [ ]

(ii) Any object which is changing its position with respect to a reference point with time is said to be in motion. [ ]

(iii) 1 km = 100 cm [ ]

Ans. (i) True (ii) True (iii) False

3. Which of the following is not a standard unit of measuring length?

(i) millimetre (ii) centimetre (iii) kilometre (iv) handspan

Ans. (iv) Handspan

4. Search for the different scales or measuring tapes at your home and school. Find out the smallest value that can be measured using each of these scales. Record your observations in a tabular form.

Ans.

Scale/Measuring Tape	Smallest Value Measured
Ruler	1 mm
Measuring Tape	1 mm
Tailor's Tape	1 mm
Vernier caliper	0.1 mm

5. Suppose the distance between your school and home is 1.5 km. Express it in metres.

Ans. We know that 1 km = 1000 m

$\because$ 1 km = 1000 metres

$\therefore$ 1.5 km = 1.5 × 1000

= 1500 metres

The distance between my school and home is 1500 m.

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6. Take a tumbler or a bottle. Measure the length of the curved part of the base of glass or bottle and record it.

Ans. Measure the curved part of the base by using a flexible measuring tape or a thread. Place the tape/thread around the base and note down its length in your notebook.

7. Measure the height of your friend and express it in (i) metres (ii) centimetres and (iii) millimetres.

Ans. We know that,

1 m = 100 cm and,

1 cm = 10 mm

So, if the height of the friend is 1.45 metres, then in

(i) Metres = 1.45 m

(ii) Centimetres = 145 cm

(iii) Millimetres = 1450 mm

8. You are given a coin. Estimate how many coins are required to be placed one after the other lengthwise, without leaving any gap between them, to cover the whole length of the chosen side of a notebook. Verify your estimate by measuring the same side of the notebook and the size of the coin using a 15-cm scale.

Ans. **Estimate:** Suppose if the side of the notebook is 30 cm and the diameter of coin is 2 cm, you need approximately 15 coins.

Verification: Measure the actual length of the side of the notebook and the diameter of one coin. Divide the length of the side of the notebook by the diameter of the coin to find the exact number of coins needed.

9. Give two examples each for linear, circular and oscillatory motion.

Ans. **Linear Motion:** A car moving on a straight road, an object dropped from a height.

Circular Motion: The motion of a fan's blades, the motion of a satellite around the earth.

Oscillatory Motion: The swinging of a pendulum, vibrating strings of a guitar.

10. Observe different objects around you. It is easier to express the lengths of some objects in mm, some in cm and some in m. Make a list of three objects in each category and enter them in the Table 5.6.

Table 5.6: Sizes of objects around us

Size	Objects
mm	
cm	
m	

Ans.

Size	Objects
mm	Thickness of a coin, nail, button cell
cm	Length of a pencil, eraser, notebook width
m	Height of a door, width of a room, length of a car

11. A rollercoaster track is made in the shape shown in Fig. 5.19. A ball starts from point A and escapes through point F. Identify the types of motion of the ball on the rollercoaster and corresponding portions of the track.

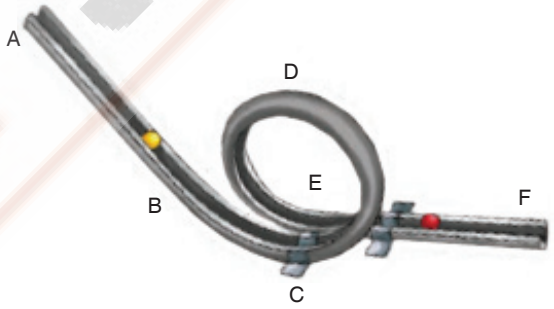

Fig. 5.19 Rollercoaster track

Ans. **From A to B:** Linear Motion

From B to C: Circular Motion

From C to D: Circular Motion

From D to E: Circular Motion

From E to F: Linear Motion

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12. Tasneem wants to make a metre scale by herself. She considers the following materials for it—plywood, paper, cloth, stretchable rubber and steel. Which of these should she not use and why?

Ans. Tasneem shouldn't use the following materials:

1. **Stretchable rubber:** It can be stretched easily and cannot give precise measurements.
2. **Cloth:** It can be stretched and wrinkled which make it unfit for measurement.
3. **Paper:** It is very fragile and can get deformed and torn easily.

Plywood and steel are more suitable as they maintain consistent lengths.

13. Think, design and develop a card game on conversion of units of length to play with your friends.

Ans. Make cards with different lengths and corresponding units (mm, cm, m, km). Each card can have a length in one unit and players must match it to its equivalent in another unit.

For example, a card with "10 mm" would match with "1 cm".

CHAPTER 6.
MATERIALS AROUND US

Page-104

Q. Would it be a good idea to use paper-like materials for making cooking utensils?

Ans. No, it would not be a good idea to use paper-like materials for making cooking utensils as it is not heat-resistant and burns easily.

Page-110

Q. Is water transparent? Can it be made opaque?

Ans. Yes, water is transparent, meaning you can see through it clearly. However, water can be made opaque by mixing it with the substances like mud or chalk powder, which does not dissolve.

Page-111

Q. Does everything you put in water disappear?

Ans. No, not everything put in water disappears. Some materials like sugar, salt, etc., dissolve in water while others like sawdust, chalk, sand, etc., do not dissolve and remain visible even after stirring.

Page-115

Q. Are there any properties which can be shown by all materials? If yes, what are those?

Ans. Yes, all materials show two common properties such as mass and volume. These two properties are present in all materials and are used to define matter.

Page-118

Let us Play

1. Find the companion: Link the following words by putting arrows between words that have a connection.

Ans.
- Transparent → Glass, Bottle
- Lustrous → Iron, Copper, Bottle
- Solid → Iron, Plastic, Wood, Bottle, Copper
- Opaque → Iron, Copper, Plastic, Wood, Bottle

2. Do yourself.

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Let us Enhance Our Learning

1. Visit your kitchen and observe how your parents have organised various edibles. Can you suggest a better sorting method? Write it in your notebook.

Ans. Some suggestions for organising kitchen edibles in a better way are:

(i) Categorise items by different type to make it easier to find similar items together.

(ii) Keep frequently used items like salt, sugar, oil, within reach or on easily accessible shelves.

(iii) Keep less used items on higher shelves or towards the back.

(iv) Use labelled containers to easily identify contents.

2. Unscramble the letters (Column I) and match with their properties (Column II).

Column I	Column II
(i) T R E M A T	**(a) Objects can be seen clearly through it**
(ii) U L S B E L O	**(b) Occupies space and has mass**
(iii) T N E R P A S N A R T	**(c) Shiny surface**
(vi) E R U S T L	**(d) Mixes completely in water**

Ans.

Column I	Column II
(i) MATTER	(b) Occupies space and has mass
(ii) SOLUBLE	(d) Mixes completely in water
(iii) TRANSPARENT	(a) Objects can be seen clearly through it
(vi) LUSTRE	(c) Shiny surface

3. The containers which are used to store materials in shops and at home are usually transparent. Give your reasons for this.

Ans. Containers used to store materials in shops and at home are often transparent to make it easy to identify the contents inside the containers.

4. State whether the statements given below are True [T] or False [F]. Correct the False statement(s).

(i) Wood is translucent while glass is opaque. **[ ]**

(ii) Aluminium foil has lustre while an eraser does not. **[ ]**

(iii) Sugar dissolves in water whereas sawdust does not. **[ ]**

(iv) An apple is a matter because it occupies no space and has mass. **[ ]**

Ans. (i) False; Wood is opaque while glass is transparent (ii) True (iii) True (iv) False; An apple is a matter because it occupies space and has mass.

5. We see chairs made up of various materials, such as wood, iron, plastic, bamboo, cement and stones. Following are some desirable properties of materials which can be used to make chairs. Which materials used to make chairs fulfil these properties the most?

(i) Hardness (does not bend or shake on sitting even after long use).

(ii) Lightweight (easy to lift or to take from one place to another).

(iii) Does not feel very cold when sitting during winters.

(iv) Can be cleaned regularly and made to look new even after long use.

Ans. (i) Wood, iron, cement, stones

(ii) Plastic and bamboo

(iii) Wood and bamboo

(iv) Plastic, iron and stones

6. You need to have containers for collection of (i) food waste, (ii) broken glass and (iii) wastepaper. Which materials will you choose for containers of these types of waste? What properties of materials do you need to think of?

Ans. (i) **Food waste:** Plastic or metal containers are good for storing food waste because they are resistant to corrosion, durable and easy to clean.

(ii) **Broken glass:** Metal or hard plastic containers should be used for collecting broken glass due to their durability and toughness.

(iii) **Wastepaper:** Light weight plastic or cardboard containers have good capacity to collect wastepaper.

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7. Air is all around us but does not hinder us from seeing each other. Whereas, if a wooden door comes in between, we cannot see each other. It is because air is _____ and the wooden door is _____. Choose the most appropriate option:

(i) transparent, opaque
(ii) translucent, transparent
(iii) opaque, translucent
(iv) transparent, translucent

Ans. (i) transparent, opaque

8. Imagine you have two mysterious materials, X and Y. When you try to press material X, it feels rigid and does not change its shape easily. On the other hand, material Y easily changes its shape when you press it. Now, when you mix both materials in water, only material X dissolves completely, while material Y remains unchanged. What can materials X and Y be? Can you identify whether material X is hard or soft? What about material Y? Justify your answer.

Ans. Material X: Likely a hard soluble solid, e.g., salt, sugar.

Material Y: Likely a soft insoluble material, e.g., sponge, rubber.

Material X is hard because it retains its shape under pressure and is likely a solid that dissolves in water.

Material Y is soft because it changes its shape very easily while pressing and it does not dissolve in water.

9. (i) Who am I? Identify me on the basis of the given properties.

(a) I have lustre. _____
(b) I can be easily compressed. _____
(c) I am hard and soluble in water. _____
(d) You cannot see clearly through me. _____
(e) I have mass and volume but you cannot see me. _____

(ii) Make your own 'Who am I?'

Ans. (i) (a) Metal
(b) Gas/sponge
(c) Salt/sugar
(d) Translucent object
(e) Air/gas

(ii) I am hard and have a shiny surface – Metal

10. You are provided with the following materials—vinegar, honey, mustard oil, water, glucose and wheat flour. Make any two pairs of materials where one material is soluble in the other. Now, make two pairs of materials where one material remains insoluble in the other material.

Ans. Two pairs of materials where one material is soluble in the other:

(i) Vinegar and water
(ii) Glucose and water

Two pairs of materials where one material remains insoluble in the other material:

(i) Mustard oil and water
(ii) Honey and wheat flour

CHAPTER 7.
TEMPERATURE AND ITS MEASUREMENT

Page-123

Q. Can it always be correctly judged, that a person has fever, only by touching the person?

Ans. No. It is because the person might have been in direct sunlight for some time or be in front of or near fire for some time, due to which he/she might feel hotter than normal.

Page-128

Q. Do small children generally have slightly higher body temperatures as compared to adults?

Ans. Yes, small children usually have slightly higher body temperatures as compared to adults because their bodies are working hard to grow quickly, which produces more heat.

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For kids, a normal body temperature is usually between 37.0°C and 37.5°C. For adults, it's a bit lower, usually between 36.1°C and 37.2°C.

Q. Do old people, even when healthy, generally have lower body temperatures than young adults?

Ans. Yes, even healthy, older people generally have lower body temperatures than young adults. This is due to slower metabolism and less efficient regulation of body temperature in older age. For older people, normal body temperature is often around 36.2°C to 36.8°C, which is slightly lower than the typical range for younger adults.

Page-129

Q. Can a clinical thermometer be used for measuring the temperature of boiling water? Or for measuring the temperature of ice?

Ans. A clinical thermometer has a range of 35°C to 42°C. The temperature of boiling water is 100°C and is beyond the range of a clinical thermometer. The temperature of ice is 0°C or below, and is beyond the range of clinical thermometer. Therefore, a clinical thermometer cannot be used for measuring the temperatures of boiling water and ice.

Let us Enhance Our Learning

1. The normal temperature of a healthy human being is close to _____.
- **(i) 98.6°C**
- **(ii) 37.0°C**
- **(iii) 32.0°C**
- **(iv) 27.0°C**

Ans. (ii)

2. 37°C is the same temperature as _____.
- **(i) 97.4°F**
- **(ii) 97.6°F**
- **(iii) 98.4°F**
- **(iv) 98.6°F**

Ans. (iv)

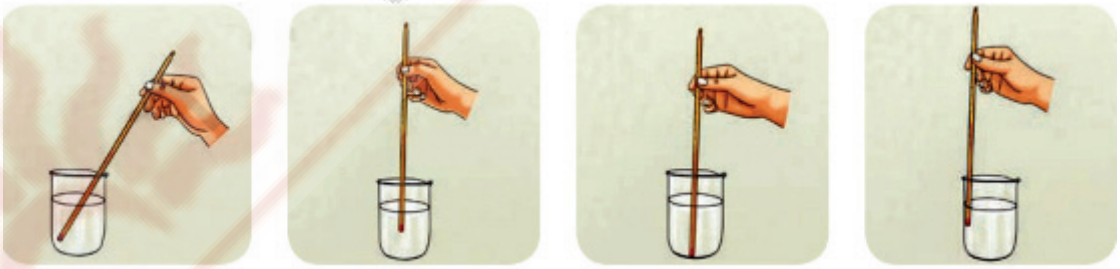
3. Fill in the blanks:
- **(i) The hotness or coldness of a system is determined by its _____.**
- **(ii) The temperature of ice-cold water cannot be measured by a _____ thermometer.**
- **(iii) The unit of temperature is degree _____.**

Ans. (i) temperature (ii) clinical (iii) Celsius/Fahrenheit

4. The range of a laboratory thermometer is usually _____.
- **(i) 10°C to 100°C**
- **(ii) –10°C to 110°C**
- **(iii) 32°C to 45°C**
- **(iv) 35°C to 42°C**

Ans. (ii)

5. Four students used a laboratory thermometer to measure the temperature of water as shown in Fig. 7.6:



Student 1 Student 2 Student 3 Student 4

Who do you think followed the correct way for measuring temperature?
- **(i) Student 1**
- **(ii) Student 2**
- **(iii) Student 3**
- **(iv) Student 4**

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Ans. (ii) The correct way to measure the temperature of water is followed by Student 2, as the thermometer was placed in an upright position without touching the sides or the bottom of the beaker.

6. Colour to show the red column on the drawings of thermometers (Fig. 7.7) as per the temperatures written below:

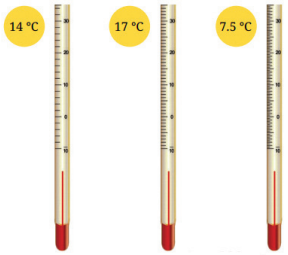
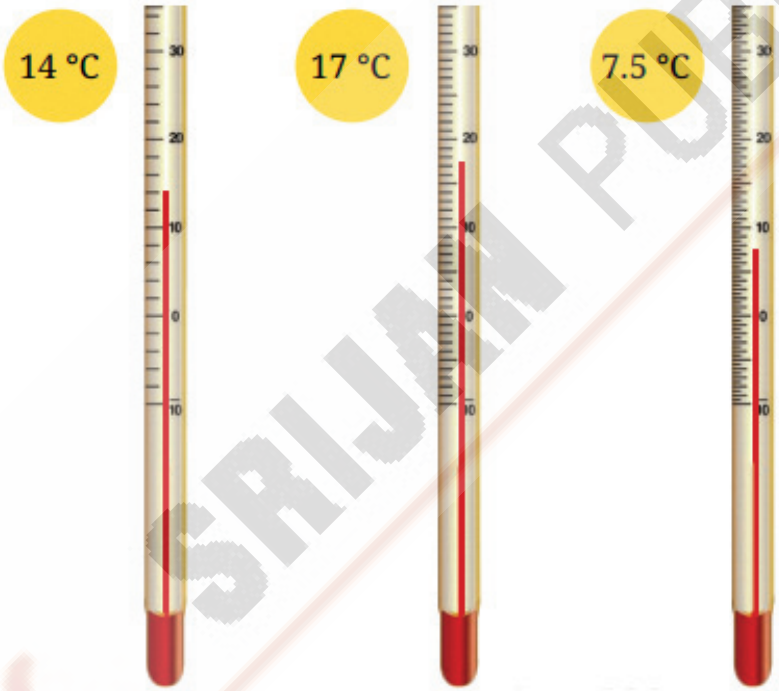


Fig. 7.7

Ans.
- In the first thermometer for 14°C, colour up to two small lines above mark 10 (each small line indicates 2 degrees Celsius).
- In the second thermometer for 17°C, colour up to seven small lines above mark 10 (each small line indicates 1 degree Celsius).
- In the third thermometer for 7.5°C, colour up to fifteen small lines above mark 0 (each small line indicates 0.5 degree Celsius).



Red lines are marked on the respective thermometers to show the temperature.

7. Observe the part of thermometer shown in Fig. 7.8 and answer the following questions:

Fig. 7.8

(i) What type of thermometer is it?
(ii) What is the reading of the thermometer?
(iii) What is the smallest value that this thermometer can measure?

Ans. (i) The given thermometer has a minimum temperature marking of –10 degrees. Since laboratory thermometers typically have a temperature range from –10°C to 110°C, this indicates that it is a laboratory thermometer.

(ii) The reading of the thermometer is 26°C.

(iii) The smallest value that this thermometer can measure is 1°C.

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8. A laboratory thermometer is not used to measure our body temperature. Give a reason.

Ans. (i) It has a wide temperature range, from –10°C to 110°C, and the smallest temperature it can measure is 1°C, which makes it unsuitable for detecting small temperature changes in the human body.

(ii) The temperature on a laboratory thermometer must be read while it is in contact with the heat source because, as soon as you remove it, the temperature will begin to decrease rapidly, making it unsuitable for measuring body temperature.

9. Vaishnavi has not gone to school as she is ill. Her mother has kept a record of her body temperature for three days as shown in Table 7.4.

Table 7.4: Body temperature record of Vaishnavi

	Temperature at					
DAY	**7 am**	**10 am**	**1 pm**	**4 pm**	**7 pm**	**10 pm**
One	**38.0°C**	**37.8°C**	**38.0°C**	**38.0°C**	**40.0°C**	**39.0°C**
Two	**38.6°C**	**38.8°C**	**39.0°C**	**39.0°C**	**39.0°C**	**38.0°C**
Three	**37.6°C**	**37.4°C**	**37.2°C**	**37.0°C**	**36.8°C**	**36.6°C**

(i) What was Vaishnavi's highest recorded temperature?

(ii) On which day and at what time was Vaishnavi's highest temperature recorded?

(iii) On which day did Vaishnavi's temperature return to normal?

Ans. (i) 40°C.

(ii) Vaishnavi's highest temperature was recorded at 7 pm on the day One.

(iii) Day three.

10. If you have to measure the temperature 22.5°C, which of the following three thermometers will you use (Fig. 7.9)? Explain.

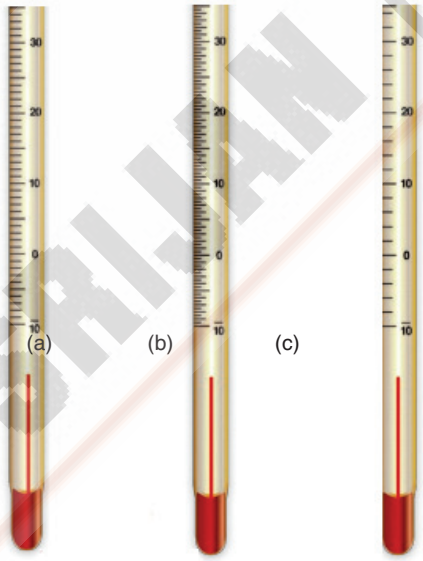

Fig. 7.9 Three thermometers

Ans. Thermometer (b) would be the best choice, as it has markings that allow for reading half-degree, making it possible to accurately measure a temperature of 22.5°C.

11. The temperature shown by the thermometer in Fig. 7.10 is

(i) 28.0°C

(ii) 27.5°C

(iii) 26.5°C

(iv) 25.3°C

Fig. 7.10

Ans. (ii)

12. A laboratory thermometer has 50 divisions between 0°C and 100°C. What does each division of this thermometer measure?

Ans. 50 divisions of the thermometer = 100°C

$$1 \text{ division of the thermometer} = \frac{100°C}{50}$$

$$= 2°C$$

13. Draw the scale of a thermometer in which the smallest division reads 0.5°C. You may draw only the portion between 10°C and 20°C.

Ans. 

14. Someone tells you that she has a fever of 101 degrees. Does she mean it on the Celsius scale or Fahrenheit scale?

Ans. A fever of 101 degrees means it is referring to Fahrenheit scale. As the normal human temperature is 37 degree Celsius, so if you consider 101 in Celsius, then it would be intolerable.

CHAPTER 8.
A JOURNEY THROUGH STATES OF WATER

Page 154

Q. Reflect on what you did really well in this activity.

Ans. We investigated the conditions required for evaporation.

Page 159

Q. What did I do well? Was I able to label all the parts of the water cycle? Which parts of the water cycle were unclear to me?

Ans. Do yourself.

Let us Enhance Our Learning

1. Which of the following best describes condensation?
- **(i) The conversion of water into its vapour state.**
- **(ii) The process of water changing from a liquid into gaseous state.**
- **(iii) The formation of clouds from tiny water droplets.**
- **(iv) The conversion of water vapour into its liquid state.**

Ans. (iv)

2. Identify in which of the given processes, evaporation is very important—
- **(i) Colouring with**
  (a) crayons (b) water colours (c) acrylic colours (d) pencil colours
- **(ii) Writing on paper with**
  (a) pencil (b) ink pen (c) ball point pen

Ans. (i) (b) water colours
(ii) (b) ink pen

3. We see green coloured plastic grass at many places these days. Space around natural grass feels cooler than space around the plastic grass. Can you find out why?

Ans. Space around natural grass feels cooler because it absorbs moisture from soil. Natural grass produces a cooling effect through the processes of evaporation and transpiration.

4. Give examples of liquids other than water, which evaporate.

Ans. Milk, eye drops, perfume, petrol, alhohol, senitiser, etc.

5. Fans move air around, creating a cooling sensation. It might seem strange to use a fan to dry wet clothes since fans usually make things cooler, not warmer. Normally, when water evaporates, it requires heat, not cold air. What do you think about this?

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Ans. Fans move the air faster around clothes and help these to dry faster because water evaporates faster. Fans increase the air movement faster around the wet clothes which helps to remove water vapour from there.

6. Usually, when sludge is removed from drains, it is left in heaps next to the drain for 3–4 days. Afterward, it is transported to a garden or a field where it can be used as manure. This approach reduces transportation cost of the sludge and enhances the safety of individuals handling it. Reflect upon it and explain how.

Ans. Water (moisture) from the sludge evaporates with time making it dry and hence, handling and transportation become easier.

7. Observe the activities in your house for a day. Identify the activities that involve evaporation. How does understanding the process of evaporation help us in our daily activities?

Ans. We perform various activities where process of evaporation helps us. Some of these activities are as follows:

(i) We dry our wet clothes in a sunny and windy environment.

(ii) We can smell the food being cooked even without entering the kitchen.

(iii) Moping the floor involves the process of evaporation.

Water evaporates faster in sunlight and with increased air movement.

8. How is water present in the solid state in nature?

Ans. Water is present in the solid state in nature as follows:

(a) **Ice:** Found in glaciers and icebergs.

(b) **Snow:** Found in mountainous region and during winters in hilly areas.

(c) **Hail:** Solid precipitation in the form of balls or lumps of ice.

(d) **Frost:** Thin layer of ice that forms on the surfaces when temperature drops below freezing point of water.

9. Reflect on the statement "Water is our responsibility before it is our right." Share your thoughts.

Ans. This statement focuses on the importance of conserving and responsibly managing water resources. Water is essential for life, and ensuring its availability and quality for future generations is a collective responsibility. Mismanagement and wastage can lead to its scarcity and environmental degradation.

10. The seat of a two-wheeler parked on a sunny day has become very hot. How can you cool it down?

Ans. To cool down a hot seat, we can pour water over it and allow the water to evaporate, which will absorb heat and cool the seat. Alternatively, covering or moping the seat with a wet cloth or moving the vehicle to a shaded area can also help.

CHAPTER 9.
METHODS OF SEPARATION IN EVERYDAY LIFE

Page-165

Q. A small amount of puffed rice is mixed with chana dal. Can you think of separating the mixture by any method other than handpicking?

Ans. The mixture of rice with chana dal can be separated by using a soop (bamboo tray) or by winnowing other than handpicking.

Page-166

Q. Valli is unable to separate husk from rice in a closed room. How can you help her?

Ans. Separation of husk from rice in a closed room is not possible because separation of heavier and lighter components of mixture is done by wind or by blowing air. This process is called winnowing.

Page-167

Q. Have you ever observed sieves being used at construction sites to separate pebbles and stones from the sand?

Ans. Yes, I have observed large sieves being used to separate pebbles and stones from the sand.

Page-168

Q. Have you ever observed white patches on the dark coloured clothes you wear during hot summers? How are these patches formed?

Ans. The white patches on the dark coloured clothes during summer are formed due to evaporation of sweat which leaves behind salts on the clothes.

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Page-169

Q. Observe the figure. Does it answer the question? Can you name the process involved?

Ans. Yes, it answers the question to get back both salt and water. The process involved in the above picture is condensation.

Page-170

Q. In the chapter 'Materials Around Us', you have studied that oil does not mix with water and forms a separate layer when left undisturbed for some time. Which method of separation would you use to separate oil and water?

Ans. We can separate oil and water mixture by the process of decantation. In this process, the oil that forms layer on water is removed by tilting the vessel.

Let us Enhance Our Learning

1. What purpose does handpicking serve in the process of separation?

(i) Filtration **(ii) Sorting**
(iii) Evaporation **(iv) Decantation**

Ans. (ii) Sorting

2. Which of the following substances are commonly separated using the churning method?

(i) Oil from water **(ii) Sand from water**
(iii) Cream from milk **(iv) Oxygen from air**

Ans. (iii) Cream from milk

3. Which factor is usually essential for the filtration?

(i) Apparatus size
(ii) Presence of air
(iii) Pore size
(iv) Temperature of the mixture

Ans. (iii) Pore size

4. State with reason(s) whether the following statements are True [T] or False [F]. Also, correct the False statement(s).

(i) Salt can be separated from salt solution by keeping it under the Sun. **[ ]**
(ii) Handpicking should be used only when the quantity of one component is less. **[ ]**
(iii) A mixture of puffed rice and rice grains can be separated by threshing. **[ ]**
(iv) A mixture of mustard oil and lemon water can be separated by decantation. **[ ]**
(v) Sieving is used to separate a mixture of rice flour and water. **[ ]**

Ans. (i) True (ii) True (iii) False; A mixture of puffed rice and rice grains can be separated by winnowing as puffed rice is lighter than rice grain. (iv) True (v) False; To separate rice flour and water, evaporation or filtration is used.

5. Match the mixtures in Column I with their method of separation in Column II.

Column I	Column II
(i) Gram flour mixed with black gram	(a) Handpicking
(ii) Chalk powder mixed with water	(b) Magnetic separation
(iii) Corn mixed with potatoes	(c) Decantation
(iv) Iron powder mixed with sawdust	(d) Sieving
(v) Oil mixed with water	(e) Filtration

Ans. (i) – (d) (ii) – (e) (iii) – (a) (iv) – (b) (v) – (c)

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6. In what situations would you use decantation instead of filtration to separate solids from liquids?

Ans. We would use decantation instead of filtration to separate the mixture of two liquids such as oil and water.

7. Can you relate the presence of nasal hair to any separation process?

Ans. Yes, the presence of nasal hair causes separation of solid dust particles from the air we breathe in. This prevents them from entering the respiratory tract. This is similar to the process of separation by filtration.

8. During the COVID-19 pandemic, all of us wore masks. Generally, what material are they made of? What is the role of these masks?

Ans. These masks are generally made of cotton fabric, polyester and polypropylene. The role of these masks is to prevent the entry of dust particles, bacteria, viruses and other pathogens into our body through our nose and mouth.

9. A mixture containing potatoes, salt and sawdust has been given to you. Outline a stepwise procedure for separating each component from this mixture.

Ans. Stepwise procedure for separating each component:

1. Separate the potatoes from the mixture by the process of handpicking.
2. Add water to the remaining mixture of salt and sawdust, which will dissolve the salt.
3. Filter the sawdust from the salt solution using a filter paper.
4. Evaporate the water from the salt solution to obtain the salt.

10. Read the following story titled 'Intelligent Leela' and tick the most appropriate options. Provide a suitable title of your choice for the paragraph.

Leela was working in the farm with her father when she realised that they left their drinking water at home. Before her father felt *thirsty*/*hungry*, she went to the nearby pond to fetch some *water*/*grains*. After obtaining some water in the container, she noticed that the water was muddy and *fit*/*unfit* for drinking. To purify the water, she kept it for some time and then she *filtered*/*churned* the muddy water using a piece of *paper*/*muslin cloth*.

Leela, then, *cooled*/*boiled* the water for about 10 minutes in a covered pan. After *cooling*/*boiling*, she *filtered*/*churned* it again and made it *fit*/*unfit* for drinking. She served this water to her father while having food, who blessed her and appreciated her efforts.

Ans. Title: Leela's clever solution for clean water/making water potable.

Leela was working in the farm with her father when she realised that they left their drinking water at home. Before her father felt **thirsty**, she went to the nearby pond to fetch some **water**. After obtaining some water in the container, she noticed that the water was muddy and **unfit** for drinking. To purify the water, she kept it for some time and then she **filtered** the muddy water using a piece of **muslin cloth.** Leela, then, **boiled** the water for about 10 minutes in a covered pan. After **cooling**, she **filtered** it again and made it **fit** for drinking. She served this water to her father while having food, who blessed her and appreciated her efforts.

CHAPTER 10.
LIVING CREATURES – EXPLORING THEIR CHARACTERISTICS

Page-191

1. How would you now categorise a seed, as living or nonliving?

Ans. Germination and growing into a plant under favourable conditions shows that seed is a living thing.

Page-197

Q. How can the life cycle of a mosquito be disrupted?

Ans. Kerosene is sprayed on the surface of stagnant water to kill larvae and pupae of mosquitoes.

Let us Enhance Our Learning

1. List the similarities and differences in life cycles of plants and animals.

Ans. Similarities in life cycles of plants and animals:

- Both animals and plants have distinct life stages that start with initial stage and followed by several stages of development and lastly end into death.
- Both have reproductive stages where they produce offsprings.
- Both animals and plants have male and female organs required for reproduction.

Differences in life cycles of plants and animals:

Life Cycle of Plants	Life Cycle of Animals
1. Seed germination starts life cycle of a plant.	1. An animal's life cycle begins with a newborn or egg.
2. Plants grow throughout their life.	2. Animals stop growing after a certain stage of time.
3. Seeds or reproductive parts are produced throughout their life.	3. Animals have definite time for reproduction.
4. Plants do not move from one place to another.	4. Animals move from one place to another.
5. Plants use flowers, cones or spores.	5. Animals have specialised organs for reproduction.

2. The table given below shows some data. Study the data and try to find out examples appropriate for the conditions given in the second and third columns. If you think that an example for any of the conditions given below is not possible, explain why.

S. no.	Does it grow?	Does it respire?	Example	Remarks
1.	No	No		
2.	No	Yes		
3.	Yes	No		
4.	Yes	Yes		

Ans.

S. no.	Does it grow?	Does it respire?	Example	Remarks
1.	No	No	Rock	Nonliving, No growth or respiration.
2.	No	Yes	Virus	Viruses are nonliving outside host cells but respire in host.
3.	Yes	No	Crystals (salt)	Nonliving, can grow in size due to deposition from outside but does not respire.
4.	Yes	Yes	Humans, Plants	Living beings

3. You have learnt that different conditions are required for seed germination. How can we use this knowledge for proper storage of grains and pulses?

Ans. To ensure proper storage of grains and pulses, we can do following:
- Keep them dry
- Keep them in cool area
- Store them in airtight containers

4. You have learnt that a tail is present in a tadpole but it disappears as it grows into a frog. What is the advantage of having a tail in the tadpole stage?

Ans. The tail helps a tadpole to maintain balance, change the direction and enables swift movement while swimming to escape predators and to find food.

5. Charan says that a wooden log is nonliving as it cannot move. Charu counters it by saying that it is living because it is made of wood obtained from trees. Give your arguments in favour or against the two statements given by Charan and Charu.

Ans. Charan's argument (Wooden log is nonliving)

Favour: A wooden log cannot grow, reproduce, move, breathe or respond to stimuli, thus it is nonliving.

Against: While a wooden log is nonliving, it is derived from a living tree and retains some properties of life such as cellular structure.

Charu's argument (Wooden log is living)

Favour: Wooden log was once a part of living tree, so it may retain some living qualities.

Against: The log is no longer connected to life supporting tree, and it ceases all biological function, making it nonliving.

6. What are the similarities and distinguishing features in the life cycles of a mosquito and a frog?

Ans. Similarities in life cycles of Mosquito and Frog:
- Life cycle of both, frog and mosquito, has four stages.
- Both begin life as eggs.
- Both lay eggs in water.
- Both have a larval stage (tadpole in frogs, larvae in mosquitoes) that is aquatic.

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Differences between life cycles of Mosquito and Frog:

Life Cycle of Mosquito	Life Cycle of Frog
1. Life cycle of mosquito has four stages – egg, larva, pupa and adult.	1. The life cycle of frog has four stages – egg, tadpole, froglet and adult frog.
2. The adult mosquito cannot live in water.	2. The adult frog can live both on land and in water.
3. The adult mosquito may survive for 10 to 15 days.	3. The adult frog may survive for 14 weeks.
4. Larvae and pupae breathe through siphons.	4. Tadpoles have gills, adults have lungs and can respire through their skin.

7. A plant is provided with all the conditions suitable for its growth (Fig. 10.9). Draw what you expect to see in the shoot and the root of the plant after one week. Write down the reasons.

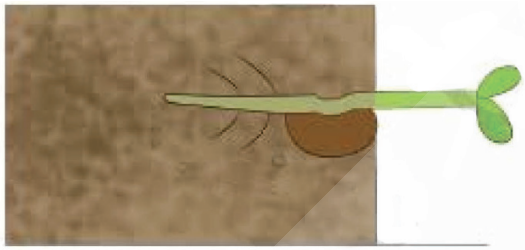

Fig. 10.9 Pot kept along the ground

Ans. Expected observations:

- **Shoot:** Grows upwards, exhibits movement towards sunlight.
- **Root:** Grows downwards, exhibits movement towards the ground.

Reasons:

- Shoots grow towards light (phototropism) for photosynthesis.
- Roots grow downwards (geotropism) towards water (hydrotropism) for stability and water absorption.

8. Tara and Vijay set up the experiment shown in the picture (Fig. 10.10). What do you think they want to find out? How will they know if they are correct?

Fig. 10.10 Experimental set-up

Ans. Tara and Vijay want to find out in which direction the root and shoot of a plant would grow and move if the plant is placed inverted or along the ground.

Observation: The shoot always grows upwards (towards the light) and the root always grows downwards (into the soil), regardless of how the seedling is placed. This shows that plants have natural mechanisms (like phototropism and geotropism) that guide their growth direction.

9. Design an experiment to check if temperature has an effect on seed germination.

Ans. Aim: To check if temperature has an effect on seed germination.

Materials: Identical pots, soil, seeds, thermometers and different temperature controlled environments (e.g., refrigerator, room temperature, heated environment).

Procedure:

1. Fill each pot with the same type of soil.
2. Then plant seeds in each pot.

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3. Now, each pot is kept in a different environment with controlled temperatures (e.g., cold temperature, room temperature and warm temperature).

   For example: one pot outside in balcony to get sunlight, another pot in shade in the room and the third one in basement or at coldest part of the house.
4. Each pot is given water in equal quantity.
5. Number of seeds germinated in each environment is recorded daily for two weeks.

Observation: Measure and compare the rate of germination and growth in different temperatures.

Conclusion: Temperature affects seed germination.

CHAPTER 11.
NATURE'S TREASURES

Page-216

Q. What will happen if the Sun is not visible for a few days?

1. **We may have to depend on artificial lighting during day time also.**
2. _____
3. _____

Ans. 2. Without sunlight, photosynthesis would stop, which may kill some of the plants.

3. There will be no natural light and heat, hence, stopping many natural phenomena like evaporation, transpiration, condensation, etc.

Page-217

Q. What are the consequences of cutting a large forest area? Make a presentation or do a role play, or write a story or a poem that shows what could happen if we continue to cut down trees in our forests.

Ans. The loss of trees and other vegetation can cause climate change, desertification, soil erosion, flooding, increased greenhouse gases in the atmosphere, and a lot of problems for humans and wildlife.

Presentation/Play/Story or Poem: Do yourself.

Let us Enhance Our Learning

1. **Fig. 11.9 shows items related to natural resources. Match them with their jumbled up names. Make another table and write the names of these resources. Classify these resources as renewable or nonrenewable.**

Item	Jumbled up name
	ocrk
	refost
	ndiw
	atwre

Fig. 11.9 Natural resources

Ans.

Item	Jumbled up	Name	Renewable or Nonrenewable Resource
	ocrk	Rock	Nonrenewable
	refost	Forest	Renewable
	ndiw	Wind	Renewable
	atwre	Water	Renewable

2. State whether the following statements are True [T] or False [F]. If False, correct them.

(i) Nature has all the resources to meet human needs. [ ]

(ii) Machines are a resource found in nature. [ ]

(iii) Natural gas is a nonrenewable resource. [ ]

(iv) Air is a renewable resource. [ ]

Ans. (i) True (ii) False; Machines are human-made resources. (iii) True (iv) True

3. Fill in the blanks using the most appropriate option—

(i) A fuel that is commonly used in two wheelers like scooters or bikes is _____

(a) Kerosene
(b) Petrol
(c) Diesel
(d) LPG

(ii) An example of a renewable resource is _____

(a) Coal
(b) Water
(c) Natural gas
(d) Petrol

Ans. (i) (b) Petrol (ii) (b) Water

4. Classify the following as renewable or nonrenewable resources—coal, natural gas, forests and minerals.

Ans. Renewable – forests

Nonrenewable – coal, natural gas, minerals

5. Why do we say that petroleum is a nonrenewable resource?

Ans. Petroleum is considered a nonrenewable resource because it takes millions of years to form from the remains of microorganisms and plants that got buried deep inside the Earth. Once extracted and used, it cannot be replenished.

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6. It is difficult to regrow forests. Justify this statement.

Ans. Regrowing forests is difficult because it takes many years for trees to mature. Additionally, the soil may become degraded, losing its nutrients and structure due to deforestation, making it less suitable for new plant growth. Human activities such as urban development and agriculture can also hinder reforestation efforts.

7. Make a list of five daily activities in which you use natural resources. Suggest ways by which you can reduce their use.

Ans.

Daily Activity	Natural Resource Used	Ways to Reduce use
1. Cooking	Natural gas/Wood from forests	Use solar cookers
2. Bathing	Water	Use a mug and a bucket instead of shower
3. Using paper	Trees (forests)	Use digital documents/recycle paper
4. Using electricity	Coal, natural gas	Use energy-efficient appliances
5. Driving a car	Petroleum	Use public transport or cycle

8. List four activities that are possible due to the presence of air.

Ans. Four activities that are possible due to the presence of air are as follows:

(i) Breathing
(ii) Generating electricity through wind turbines
(iii) Transportation through aeroplanes.
(iv) Flying kites
(v) Inflating tyres (Any four)

9. How can you contribute towards enhancing the green cover of your locality? Make a list of actions to be taken.

Ans. List of actions to be taken are as follows:

(i) Encourage neighbours to grow plants in their gardens.
(ii) Collaborate with local schools to create green initiatives.
(iii) Advocate for the protection of existing trees and green spaces.
(iv) Participate in community tree planting drives.
(v) Plant trees in local parks and open spaces.

10. In the given illustration, we see that food is being cooked.

Answer the following questions—

(i) What type of energy is being used for cooking?
(ii) Name one benefit and one drawback of using this type of energy for cooking.

Ans. (i) Solar Energy

(ii) **Benefit:** Solar energy is a renewable, clean and free source of energy that is derived from sunlight. Hence, it is environment friendly.

Drawback: Solar energy cannot be used during cloudy days or at night.

11. Cutting down trees on a large scale impacts the quality of the soil. Why do you think it is so?

Ans. Cutting down trees on a large scale impacts the quality of the soil because tree roots help to bind the soil particles together and thus prevent soil erosion. Without trees, the soil particles are not held together and soil can be easily washed away by rain or blown away by wind, leading to loss of fertile topsoil. Furthermore, fallen leaves from trees decompose and add organic matter to the soil which enhances soil fertility.

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12. Explain two ways in which human activities pollute the air. Propose one action which can help in reducing air pollution.

Ans. Two ways in which human activities pollute the air:

- Emission of pollutants like carbon monoxide and sulphur from vehicles by burning of fossil fuels.
- Industrial emissions releasing harmful gases.
- Deforestation reduces the number of trees that can absorb carbon dioxide, which increases the concentration of greenhouse gases.

Actions to reduce pollution:

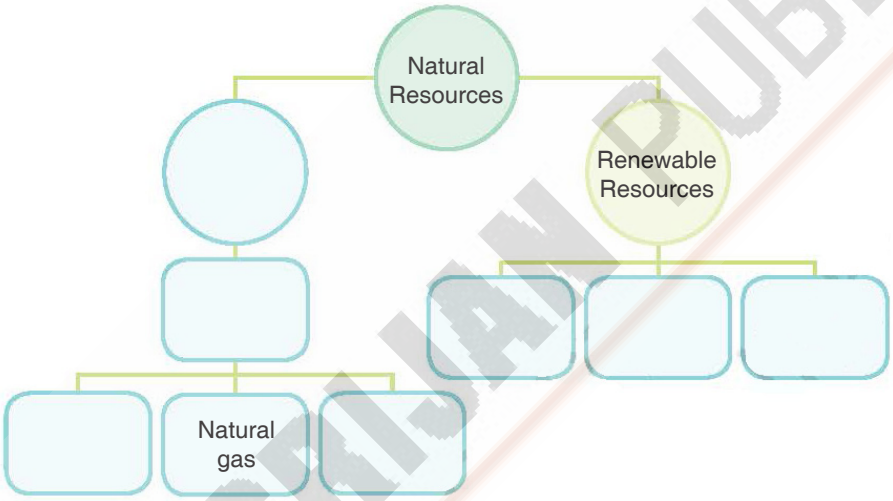
- Use of electric vehicles and public transportation to reduce emissions from vehicles.
- No-fuel options like walking and biking are also good options to reduce air pollution.
- Establishing air filters in chimneys of industries to capture air pollutants.
- Use of clean fuels and solar devices for cooking of food, heating water, etc.

13. A family uses solar panels to generate electricity, a gas stove to cook food and a windmill for pumping water from a well. What would happen if there were no sunlight for a week?

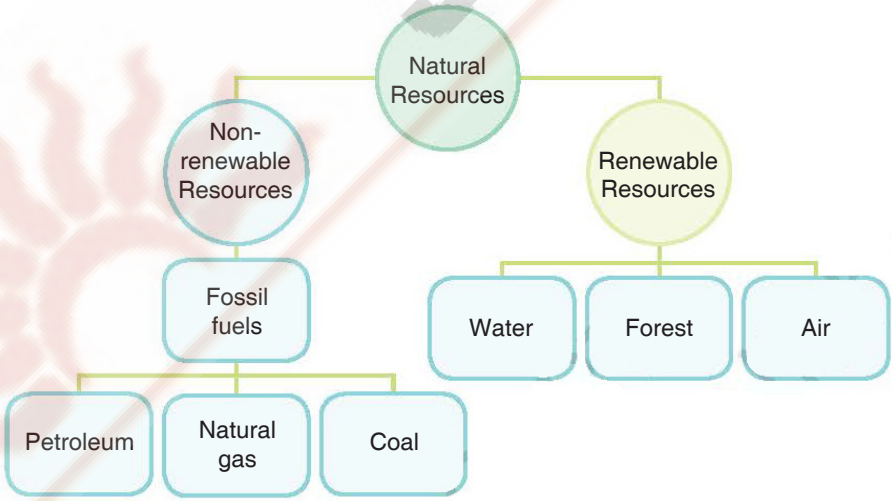
Ans. If there were no sunlight for a week, the solar panels would not be able to generate electricity, leading the family to rely on alternative sources of power. Additionally, the growth of plants would be affected due to the lack of sunlight for photosynthesis.

14. Fill up the blanks using the following terms—

(fossil fuels, forest, air, petroleum, coal, water and nonrenewable resource)



Ans.



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15. There is an increasing demand of trees to meet the requirements of industries and for housing. Therefore, trees are being felled. Is it justified? Discuss and prepare a brief report.

Ans. The increasing demand for trees to meet industrial and housing requirements is leading to deforestation, which is not justified.

Reasons for the same are given below:

- Felling of trees disrupts habitats of many wild animals, including birds and insects as it provides food and shelter to them.
- Deforestation leads to soil erosion and contributes to climate change.
- Trees provide us with oxygen for breathing.
- Trees also protect us from various natural calamities like drought, flood, etc.
- Trees provide us with food which is the basic need of humans.

Therefore, we should try to plant more and more trees to balance developmental needs with environmental conservation.

16. Propose a plan to use less water in your school. What steps would you take to make this plan happen and how would it help the environment?

Ans. Plans to use less water in school:

(i) Install water-efficient faucets and toilets
(ii) Adopt water harvesting techniques
(iii) Fix leaks to prevent water wastage
(iv) Use grey water for gardening purposes

Steps to implement the plan:

- Monitor water usage regularly and set reduction targets.
- Encourage student-led initiatives for water conservation.
- Collaborate with local authorities and experts to install water saving devices.

Environmental benefits:

- Promotes sustainability and responsible water usage within the community.
- Decreases the energy used in water treatment and distribution.

CHAPTER 12.
BEYOND EARTH

Let us Enhance Our Learning

1. Match the column:

Column I	Column II
(i) Satellite of Earth	**(a) Orion**
(ii) Red planet	**(b) Venus**
(iii) Constellation	**(c) Mars**
(iv) Planet which is commonly called an evening star	**(d) Moon**

Ans. (i) (d) (ii) (c) (iii) (a) (iv) (b)

2. (i) Solve the following riddle.
My first alphabet is in MAN but not in CAN
My second alphabet is in ACE and also in FAN
My third alphabet is in RAT and not in CAT
My fourth alphabet is in SUN but not in FUN
I am a planet that moves around the Sun.
(ii) Make two similar riddles by yourself.

Ans. (i) MARS

(ii) (a) My first alphabet is in VAN but not in PAN
My second alphabet is in EARTH and also in HEAVEN

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My third alphabet is in ONE and not in TWO
My fourth alphabet is in SUN and also in FUN
My last alphabet is in STAR but not in RADAR
I am a planet that moves around the Sun.

Ans. VENUS

(b) My first alphabet is in EAT but not in BAT
My second alphabet is in FAT and also in SAT
My third alphabet is in RAT and not in MAT
My fourth alphabet is in TEN and also in CAT
My fifth alphabet is in HAT but not in PAT
I am a planet that moves round the Sun.

Ans. EARTH

3. Which of the following is not a member of our Solar System?
(i) Sirius
(ii) Comets
(iii) Asteroids
(iv) Pluto

Ans. (i) Sirius

4. Which of the following is not a planet of the Sun?
(i) Jupiter
(ii) Pluto
(iii) Neptune
(iv) Saturn

Ans. (ii) Pluto

5. Which is the brighter star, the Pole Star or Sirius?

Ans. Sirius

6. An artist's representation of the Solar System is given in Fig. 12.12. Is the order of the planets correct? If not, write the correct order in the boxes in the figure.

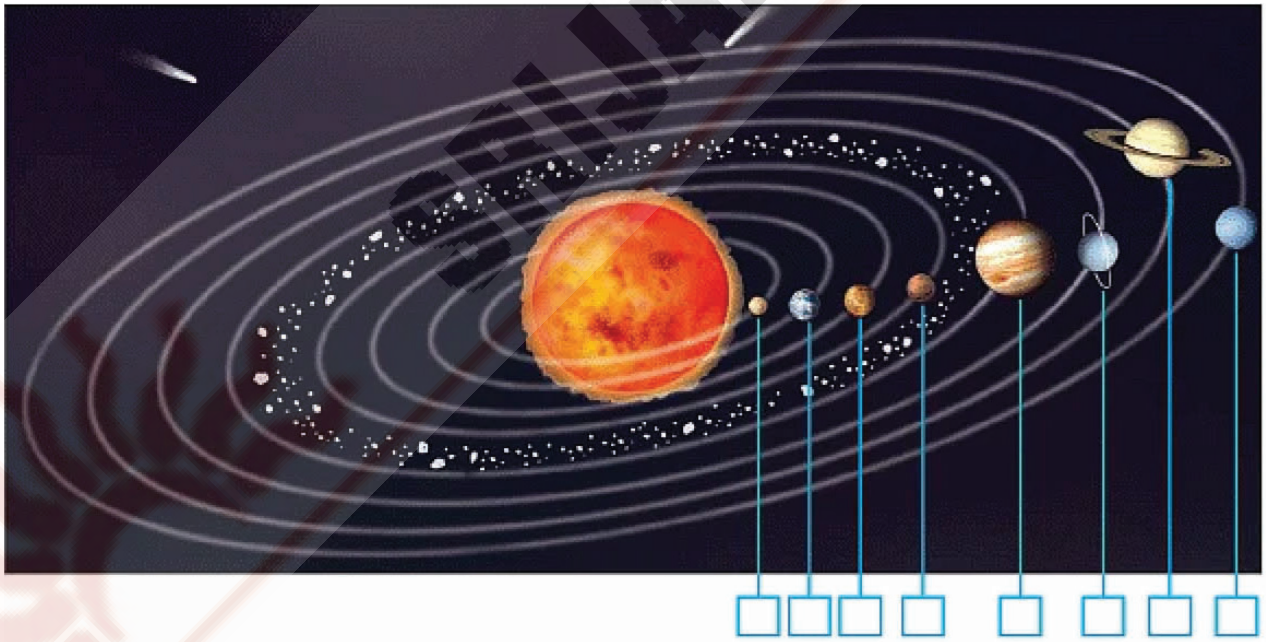
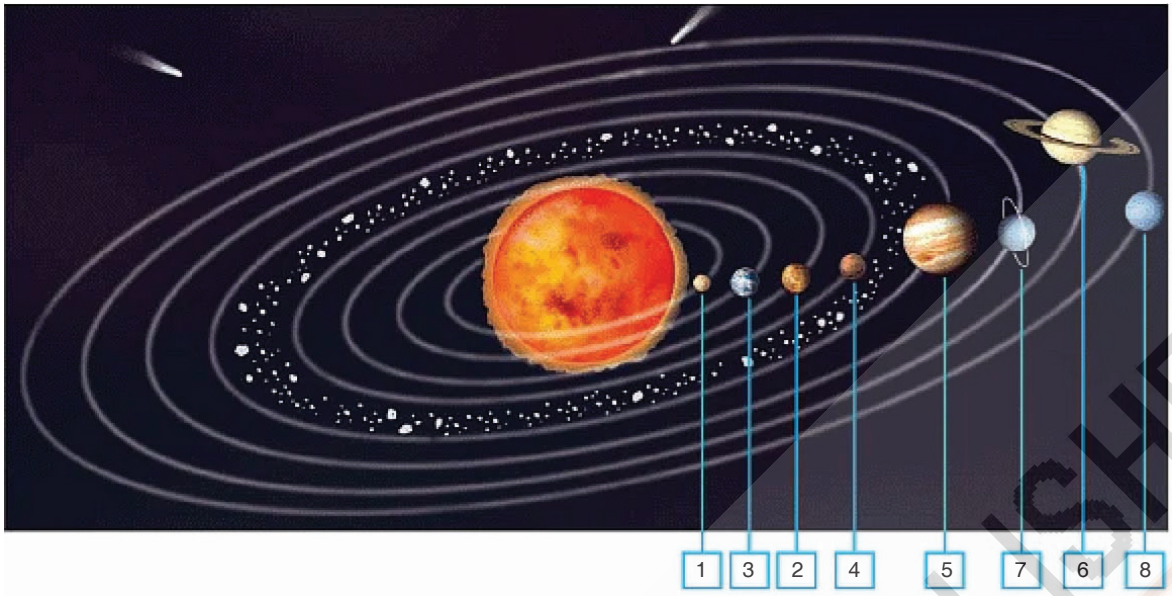


Fig. 12.12

Ans. The order of the planets in the figure is not correct. The correct order from the Sun is: Mercury, Venus, Earth, Mars, Jupiter, Saturn, Uranus and Neptune.



7. A portion of night sky with stars is shown in Fig. 12.13. Look carefully and identify the groups of stars that form the patterns—the Big Dipper and the Little Dipper. Draw lines to connect the stars for these patterns and label them. Also, identify and label the Pole Star. You may refer to Fig. 12.4 for help.

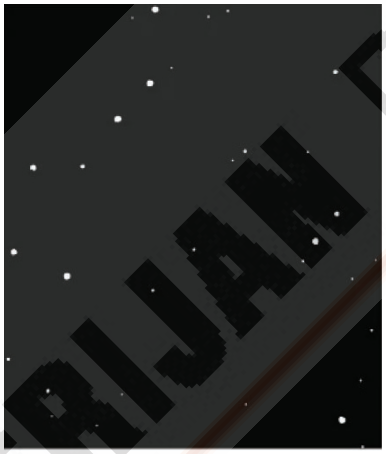
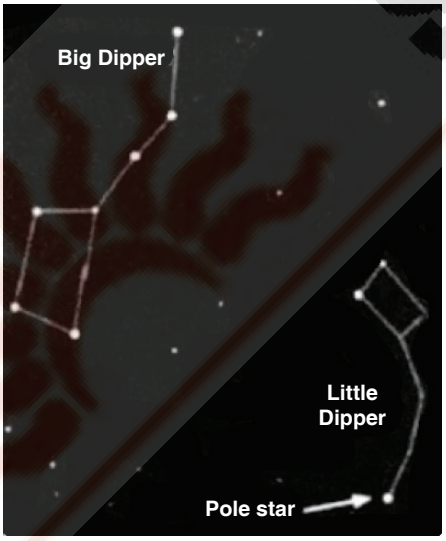


Fig. 12.13

Ans.



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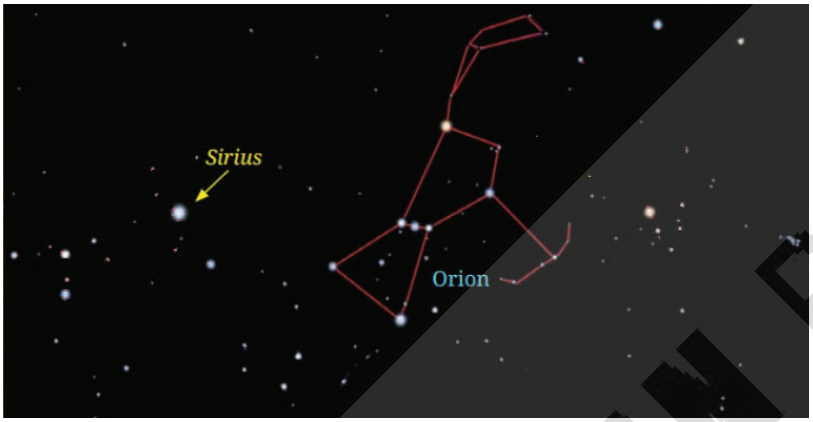
8. A portion of the night sky is shown in Fig. 12.14. Draw lines to connect the stars for Orion and label the star Sirius. You may refer to Fig. 12.3.

Fig. 12.14

Ans.



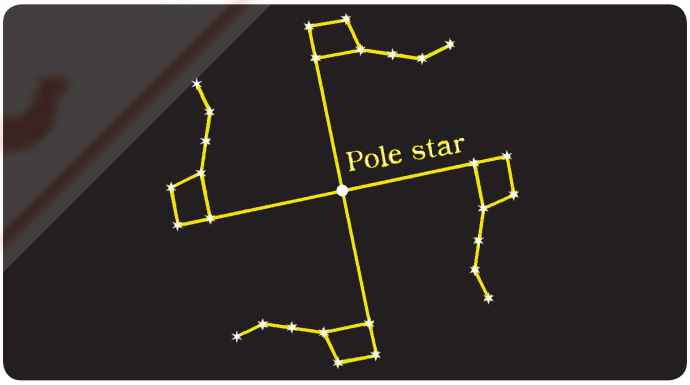
9. You can see stars fading away at dawn and appearing at dusk. During the day we do not see the stars. Explain why.

Ans. During the day, the Sun's bright light outshines the stars, making them invisible to our eyes. The atmosphere scatters the sunlight, creating the blue sky and masking the faint light of the stars.

10. During a clear night, try to observe the Big Dipper 3–4 times at an interval of 2 to 3 hours. Also try to locate the Pole Star each time. Does the Big Dipper appear to move? Draw a rough sketch to illustrate this, mentioning the time in each case.

Ans. The Big Dipper appears to move around the Pole Star due to the rotation of the Earth. Over a few hours, its position changes, making it seem as if it is rotating around the Pole Star.

Illustration: You can draw a picture as shown below.



11. Think about the night sky and write a poem or a story on it.

Ans. Do yourself.

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HEAD OFFICE Plot No. 10, 1st Floor, Vishal Market Commercial Complex, West Mukherjee Nagar, Delhi 110009
Phones: 011-42161600, 8882953632 ◆ **e-mail:** headoffice@srijanpublishers.com
Website: www.srijanpublishers.com

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