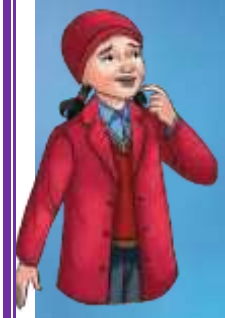

Curiosity

Class 6 Science

Textbook Solutions

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Curiosity

Textbook of Science for Grade 6

CONTENTS

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Class 6 Science Curiosity

Chapter 1. The Wonderful World of Science

Let us enhance our learning

1. What is Science?

A. 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.

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

A. In this book we will explore and understand the beautiful world we live in and the natural phenomenon we witness.

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

A. We can find answers on our own by using scientific inquiry. Our observations and our experimentation allows us to find the answer.

4. After all, to be a wise, person, you must be a "whys" person!

A. A curious mind is a wise mind. A person who asks questions displays critical and analytical mind, which shows wisdom. Hence a why's person is said to be wise.

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?

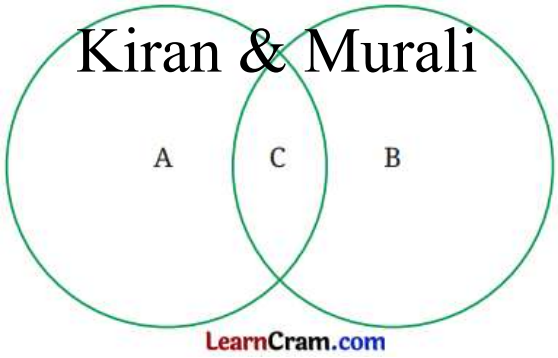
(a) Wheat

(b) Kidney beans

A. Wheat plants have fibrous roots and leaves with parallel venation. The Kidney bean plants have taproots and leaves with 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



A. Aquatic animals (A) = Dolphin and Whale

Terrestrial animals (B) = Horse, Sheep, Squirrel, Pigeon and Earthworm.

Animals living on land and sea both (C) = Frog, Tortoise and Crocodile .

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 is. What type of venation would you observe in the leaves of radish plant?

A. Tap of Root: Tap root

Type of venation: Reticulate

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

A. **Similarities:**

- Both are goats and belong to the same family.
- Herbivore diet: Both are herbivores. That is they eat plants including roots, stems, leaves etc.

Differences:

Mountain Goat	Plains Goat
1. Has thick, long fur to protect against cold mountain temperatures.	Has shorter fur suited for warmer climates.
2. Generally stockier and more muscular, adapted for climbing rocky terrains.	Leaner build suitable for flat, open areas.
3. Specialised hooves with a rough texture for better grip on rocky surfaces.	Hooves more suited for walking on flat, grassy lands.

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.
A. We can group these animals into two groups based on whether they have backbone or not.

Animals which have backbone	Animals which do not have backbone
Cow, pigeon, bat, tortoise, whale, fish, lizard	Cockroach, grasshopper

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?

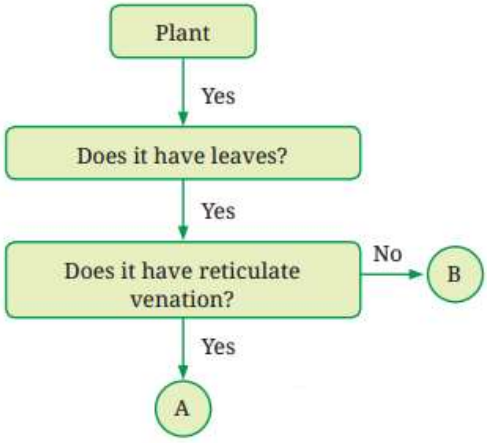
A. The loss of trees and other vegetation due to cutting down of forests can cause climate change, loss of biodiversity, soil erosion, flooding, etc.

We can address this challenge by the following methods

1. Replanting of trees and, putting a ban on cutting of trees.

2. Implementing regulations and laws to address the severity of cutting down the forest.

7. Analyse the flow chart. What can be examples of 'A' and 'B'.



A.

(A) – The plants having leaves with reticulate venation have tap roots.
(B) – The plants not having leaves with reticulate venation have fibrous roots.

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

A. 1. What is the nature of its stem?
2. What is the height of the Gudhal (hibiscus) plant?
3. Is the stem of the Gudhal plant woody?

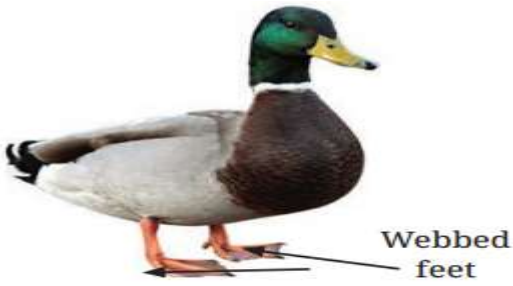
9. Based on the information in the table find out examples of these plants for each group.

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

Group	Type of seed	Type of root	Example
A	Dicot	Taproot	Gram, beans, bottle ground, mango
B	Monocot	Fibrous root	Wheat, rice, maize

(a) What other similarity do plants of group A have?
A. Plants of group A have reticulate venation.
(b) What other similarity do plants of group B have?
A. Plants of group B have parallel venation.

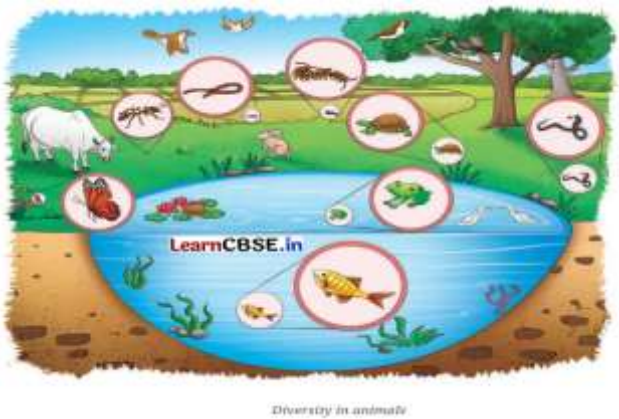
10. Observe the labelled part of a duck in the picture given below. What differences do you observe in the feet of the duck compared to the other birds? Which activity would the duck be able to perform using this part?



(a) Duck

(b) Pigeon

A. Ducks have webbed feet, which are different from the feet of the other birds like pigeon. Ducks use their webbed feet like paddles to provide more surface to push against the water, which helps them to move through the water.



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

Let us enhance our learning

1. Pick the odd one out and give reasons:

(i) Jowar, Bajra, Ragi, Chana

A. Chana;

Reason: Chana is rich source of proteins while Jowar, Bajra and Ragi are rich sources of carbohydrates.

(ii) Kidney beans, Green gram, Soya bean, Rice

A. Rice;

Reason: Rice is rich source of carbohydrates while Kidney beans, Green gram and Soya bean are rich sources of proteins.

2. Discuss traditional versus modern culinary practices in India.

A. Cooking practices, also called culinary practices, have changed over time. Earlier, most cooking was done using chulha and spices were grinded using Sil-batta. Modern practices use gas stoves, electric grinders and other kitchen appliances. These changes are due to technological advancements, improved transportation and conveinence.

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

A. (i) How individual health depends on social and mental well-being?

(ii) Justify the following statement: Meena is suffering from cholera. It is likely that the children sitting around her will be exposed to the infection. Do all the students get infected and suffer from disease. Give reason.

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

A. Delicious food is not always healthy: Like, burgers, pizzas, chats, potato chips etc. are very tasty but not nutritious. These foods contain refined flour (Maida), spices and a lot of oil which is not good for health.

On the other hand, nutritious food may not always be delicious to eat like, boiled vegetables, pulses, leafy vegetables etc., which are not always tasty but are very good for health. These foods contain important nutrients (proteins, vitamins, minerals etc.) which help us to maintain our body strong and healthy.

5. Medu does jnot eat vegetables but enjoys biscuits, nqbdles 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.

A. Roughage is an essential component of our ‘ food. It helps our body get rid of undigested food and ensures smooth passage of stools. Medu is suffering from stomach ache and

constipation because all food items that he is eating such as biscuits, noodles and white bread do not contain roughage.

He should include good sources of roughage like green leafy vegetables, fresh fruits, wholegrains, pulses in his diet to get rid of problems he is facing.

6. Reshma has 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?

A. Reshma is suffering from nigh blindness.

(ii) Which food component may be lacking in her diet?

A. Vitamin-A is lacking in her diet,

(iii) Suggest some food items that she should Include in her diet to overcome this problem (any four).

A. She should add milk, carrot, papaya, spinach in her diet.

7. You are provided the following:

(i) Canned fruit juice.

(ii) Fresh fruit juice.

(iii) Fresh fruit.

Which one would your prefer and why?

A. We would prefer fresh fruit. It contains fibre and more nutrients compared to juices which might have added sugars and preservatives.

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. Ref to Fig. 3.5 and answer the following questions.

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

A. The doctor gave calcium tablets to Gourav because calcium plays a crucial role in bone health and healing. When a bone is fractured, calcium is essential for the process of bone healing.

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

A. The doctor gave Vitamin D syrup along with calcium tablets on the second visit to Gourav because Vitamin D helps in calcium absorption.

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

A. One question that arises about the choices made by the doctor in giving the medicines is:

"How long does Gourav need to continue taking the calcium tablets and Vitamin D syrup?"

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?

A. All carbohydrates do not give blue-black colour with iodine solution. This is the only starch which gives blue-black colour with iodine solution.

Though, sugar is a carbohydrate but it is not a starch. So it does not give blue-black colour with iodine solution.

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.

A. Raman's statement is correct. To test this, perform the iodine test on different carbohydrates like rice (starch) and sugar (non-starch). Only rice will turn blue-black, confirming the presence of starch. Therefore, confirming the fact that all starches are carbohydrates, but not all carbohydrates are starches.

11. While using iodine in the laboratorys a few drops of iodine feld 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?

A. Teacher's saree contains starch,therefore the drops of iodine on the turned blue-black.

On the other hand, there is no starch on Mishti's socks.

Therefore, the colour on the socks did not change.

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

A. 1. Millets are considered a healthy choice of food because of their numerous health benefits.

2. They are good sources of vitamins, minerals like iron and calcium, and dietary fibers as well.

3. That is the reason they are also called nutri-cereals.

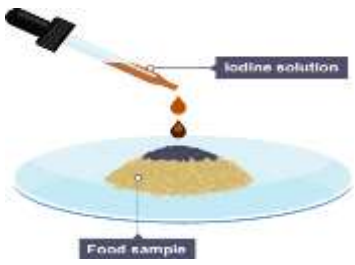
4. Yes, eating just millets can suffice for the nutritional requirements of the body as they are multi-cereals and also contribute to a balance diet.

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

A. We can check whether the given solution is iodine solution or not by adding a small amount of starch in it.

If the solution on adding starch turns blue-black then the solution is iodine solution.

If the solution does not turn blue-black then the solution is not iodine solution.



Food component (Vitamin/ Mineral)	Functions	Some sources	Deficiency disease/ disorder	Symptoms
Vitamin A	Keeps eyes and skin healthy	Papaya, carrot, mango, milk	Loss of vision	Poor vision, loss of vision in darkness (night blindness), sometimes complete loss of vision
Vitamin B_1	Keeps heart healthy and supports body to perform various functions	Legumes, nuts, whole grains, seeds, milk products	Beriberi	Swelling, tingling or burning sensation in feet and hands, trouble in breathing
Vitamin C	Helps body to fight diseases	*Amla*, guava, green chilli, orange, lemon	Scurvy	Bleeding gums, slow healing of wounds
Vitamin D	Helps body absorb calcium for bone and teeth health	Exposure to sunlight, milk, butter, fish, eggs	Rickets	Soft and bent bones
Calcium	Keeps bones and teeth healthy	Milk/soya milk, curd, cheese, paneer	Bone and tooth decay	Weak bones, tooth decay
Iodine	Helps to perform physical and mental activities	Seaweed, water chestnut (*singhada*), iodised salt	Goitre	Swelling at the front of the neck
Iron	Important component of blood	Green leafy vegetables, beetroot, pomegranate	Anaemia	Weakness, shortness of breath

Fig. 3.5: Chart of vitamins and minerals, their functions, some sources, related deficiency disease(s)/disorder(s) and symptoms

Chapter 4. Exploring Magnets

Let us enhance our learning

1. Fill in the blanks

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

A. attract, repel

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

A. magnetic materials

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

A. north-south

(iv) A magnet always has _____ poles.

A. 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.

A. False

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

A. True

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

A. False

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

A. True

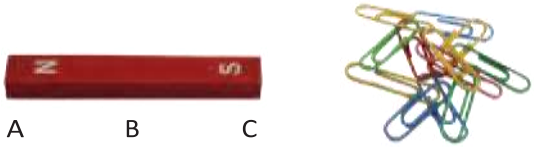
3. Column I shows different positions in which one pole of a magnet is placed near that of the other. Column II indicates the resulting action between them for each situation. Fill in the blanks.

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

A.

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

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



Bar magnet and heap of steel U-clips

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

Table: 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

A. From the figure, it is clear that the ends of the magnet have more iron fillings attached to it. This is because the strength of a magnet lies more at the ends of the magnet. Hence option (i) is correct.

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)?

A. Magnets both attract and repel, whereas iron only attracts. Thus, repulsion helps to find which one is the bar and which one is the magnet.

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?

A. To find the poles of an unmarked magnet, bring one end of the marked magnet near one end of the unmarked magnet. If they attract, the unmarked magnet's end is the opposite pole (i.e., if the marked North pole attracts, then the unmarked end is South pole). If they repel, then the poles are similar.

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?

A. When a bar magnet is suspended freely, it always rests in north-south directions. The end pointing towards north is called north seeking end or the north-pole and the end pointing towards south is called south seeking end or the south-pole of the magnet.

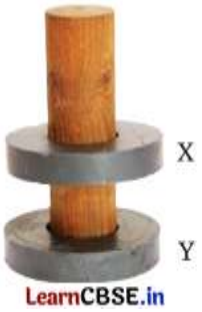
8. If the earth is itself a magnet, can you guess the poles of earth's magnet by looking at the direction of the magnetic compass?

A. Yes, we can guess the poles of Earth's magnet by looking at the direction of the magnetic compass. The north seeking end of the compass needle points towards the geographic North Pole of the Earth.

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.

A. The mechanic needs to magnetise his screwdriver which will not just lift the screw but hold it in place while he works.

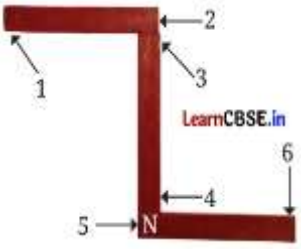
To magnetise a screwdriver he needs a magnet. He be advised to, "place the screwdriver on a wooden table. Then keep one end (pole) of the magnet at one end of the metallic part of the screwdriver. Move the magnet along the length of the metallic part of screwdriver. Lift it and bring the same pole of magnet to the same end of screwdriver he began, and repeat moving it over the length of the screwdriver. On repeating this process about 30 times the screwdriver will get magnetised"



10. Two ring magnets X and Y are arranged as shown in Fig. (below). 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

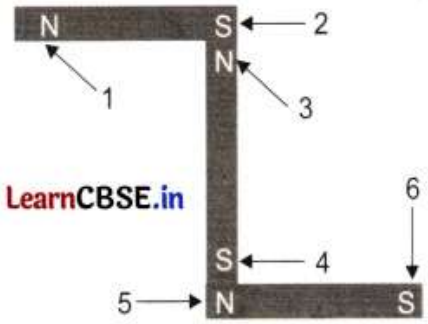
A. Magnet X must be floating because the like poles are facing each other (like poles repel each other). If we change the direction of the magnet X by rotating it the unlike poles will face each other and the magnets will come closer.

11. Three magnets are arranged on a table in the form of the shape shown in Fig. (below). What is the polarity, Nor S, at the ends 1, 2, 3, 4 and 6 of the magnets? Polarity of one end (5) is given for you.

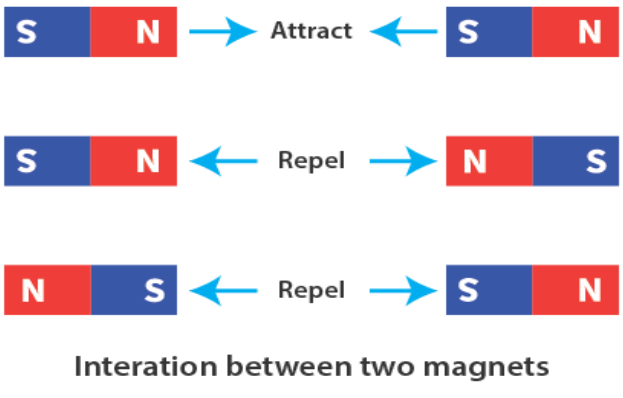


A.

Kiran & Murali



Point	Polarity
1	N
2	S
3	N
4	S
6	S



Interation between two magnets

Chapter 5. Measurement of Length and Motion

Let us enhance our learning

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

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

A.

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.

A. True

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

A. True

(iii) 1 km = 100 cm

A. False

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

(i) millimetre

(ii) centimetre

(iii) kilometre

(iv) handspan

A. **(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.

A.

Type of Scale, Tape, Device	Smallest Value of Measurement
15 cm Scale	1 mm
Flexible Tape	1 mm, 1 inch
Long Tape Roll	1 cm, 1 inch
Vernier Calliper (from School Lab)	0.1 mm
Screw Gauge (from School Lab)	0.01 mm

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

A. ∵ 1 km = 1000 metres

∴ 1.5 km = 1.5 × 1000 = 1500 metres

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

A. Hint: Use a flexible measuring tape or a piece of string to measure the length of the curved part of the base of the tumbler, then measure the string against a ruler.

7. Measure the height of your friend and express it in

(i) metres

(ii) centimetres and

(iii) millimetres.

A. Hint: Measure the height using a metre scale and express it in:

Metres (e.g., 1.4 m)

Centimetres (e.g., 140 cm)

Millimetres (e.g., 1400 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.

A. Hint: Measure the diameter of the coin and the length of the notebook. Divide the length of the notebook by the diameter of the coin to estimate the number of coins required. Say the diameter of the coin is 2 cm and the length of the notebook is 18 cm. Then 182 = 9 coins can be placed side to side along the length of the notebook. Verify by placing the coins end-to-end and measuring again.

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

A. Linear motion: A car moving on a straight road, an eraser dropping straight down.

Circular motion: A merry- go-round, the motion of a whirling stone tied to a thread.

Oscillatory motion: A swinging pendulum, the motion of a metal strip pressed and released.

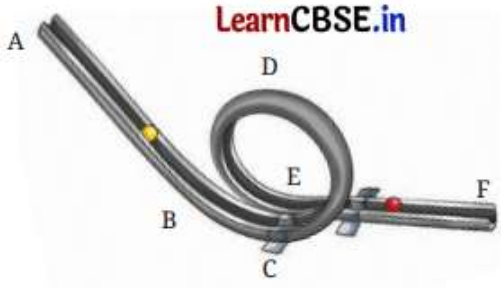
10. Observe different objects around you. It is easier to express the lengths of some objects in mm, some in cm and some in m. Make a list of three objects in each category and enter them in the following Table.

Size	Objects
mm	
cm	
m	

A. Classify objects by the convenience of measuring in mm, cm, and m: Sizes of objects around us

Size	Objects
mm	Thickness of a coin, thickness of a cardboard and diameter of a small screw
cm	Length of a pencil, width of a book and height of a water bottle
m	Height of a room, Width of a playground and height of a lamppost

11. A rollercoaster track is made in the shape shown in Fig. 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.



Rollercoaster track

A. Portions of the track and corresponding types of motion:

- A to B: Linear motion
- B to C: Circular motion (loop)
- C to D to E: Circular motion
- E to F: Linear motion

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?

A. Tasneem should not use stretchable rubber because it can change length when stretched, leading to inaccurate measurements. Plywood, cloth, paper, and steel are more suitable as they maintain consistent lengths.

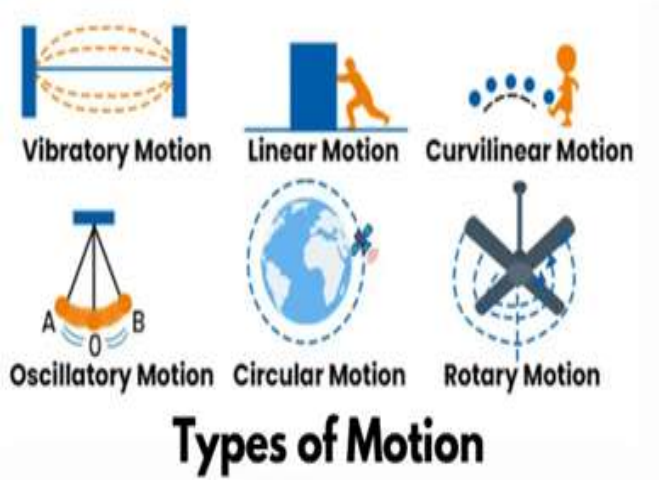
13. Think, design and develop a card game on conversion of units of length to play with your friends.

A. Create 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 "100 cm" would match with "1 m".

International system of Measurements

System	Length	Mass	Time
CGS	Centimetre	Grams	Second
FPS	Foot	Pound	Second
MKS	Metre	Kilogram	Second
SI	Metre	Kilogram	Second

Types of motion observed in a children's park



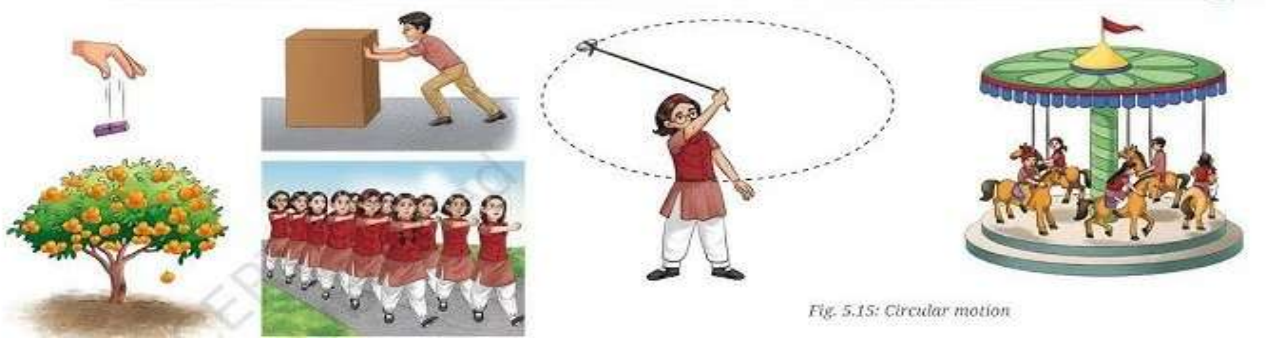


Fig. 5.15: Circular motion

Chapter 6. Materials Around Us

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.

A. Pulses such as moong dal, chana dal, urad dal, arhar dal, etc., should be grouped together. Cereals such as rice, dalia, wheat flour, maize flour, etc., should be grouped together.

Spices such as red chilli powder, salt, clove, black pepper, ajwain, cumin (jeera), coriander seeds (dhaniya), turmeric powder, garam masala etc., should be grouped together.

Cooking oils and ghee such as mustard oil, soyabean oil, olive oil, cow ghee, etc., should be grouped together.

Jams and squashes should be placed together.

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
(iv) E R U S T L	(d) Mixes completely in water

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.
(iv) 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.

A. The containers which are used to store materials in shops and at home are usually transparent so that the materials stored in them can be seen through them and can be found easily.

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

(i) Wood is translucent while glass is opaque.

A. False

Wood is opaque while glass is transparent.

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

A. True

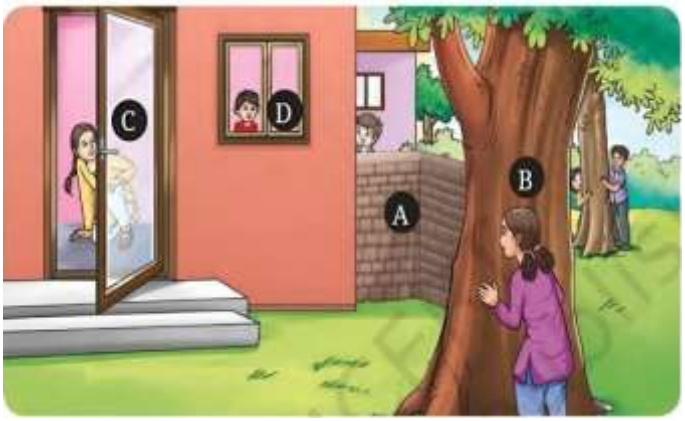
(iii) Sugar dissolves in water whereas sawdust does not.
A. True
(iv) An apple is a matter because it occupies no space and has mass.
A. False
An apple is a matter because it occupies space and has mass.
5. We see chairs made up of various materials, such as wood, iron, plastic, bamboo, cement and stones. Following are some desirable properties of materials which can be used to make chairs. Which materials used to make chairs fulfill these properties the most?
(i) Hardness (does not bend or shake on sitting even after long use).
A. Iron, cement and stones
(ii) Lightweight (easy to lift or to take from one place to another).
A. Plastic and bamboo
(iii) Does not feel very cold when sitting during winters.
A. Wood and bamboo
(iv) Can be cleaned regularly and made to look new even after long use.
A. Plastic, iron, cement 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?
A. We can use plastic containers for collection of (i) food waste (ii) broken glass and (iii) waste paper. These containers may have different colours because food waste is biodegradable, broken glass is hazardous and waste paper is recyclable. In case of food waste, the material of the container should not react with food and should be leak proof. For broken glass the material of the container should be hard so that glass should not cut it. For storing waste paper the material of the container should be light and strong.

7. Air is all around us but does not hinder u‘s 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
A. (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 shapk 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.
A. X can be sugar crystal and Y can be rubber block.
The material X is hard.
The material Y is soft.

9. (i) Who am I? Identify me on the basis of the given properties.
(a) I have lustre.
A. Steel
(b) I can be easily compressed.
A. Rubber
(c) I am hard and soluble in water.
A. Sugar
(d) You cannot see clearly through me.
A. Cardboard or Plywood
(e) I have mass and volume but you cannot see me.
A. Air
(ii) (a) You can see clearly through me Mirror
(b) I am soft Cotton
(c) I am non-lustrous Wood
(d) I am liquid and insoluble in water Oil
(e) I cannot be compressed easily. Iron
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.
A. Soluble pairs
(i) Water and glucose
(ii) Water and vinegar
Insoluble pairs
(i) Water and mustard oil
(ii) Water and wheat flour

Kiran & Murali

Objects around us



Chapter 7. Temperature and its Measurement
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
(in) 32.0 °C
(iv) 27.0 °C
A. **(ii) 37.0 °C**

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

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

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
A. **(ii) -10 °C to 110 °C**

5. Four students used a laboratory thermometer to measure the temperature of water as shown in the figure (Page 137)

Who do you think followed the correct way for measuring temperature?

(i) Student 1

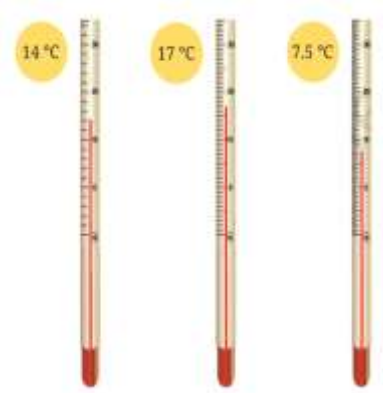
(ii) Student 2

(iii) Student 3

(iv) Student 4

A. **(ii) Student 2**

6. Colour to show the red column on the drawings of thermometers (Fig. 8) as per the temperatures written below:



A. Hint: 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 colour up to fifteen small lines above mark 0 (each small line indicates 0.5 degree Celsius). Red lines are marked alongside the respective thermometers for information.

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

(i) What type of thermometer is it?

A. The lowest mark on the thermometer is -10' so this is a laboratory thermometer that has a measuring range of -10 °C to 110°C.

(ii) What is the reading of the thermometer?

A. The reading of the thermometer is 26 °C.

(iii) What is the smallest value that this thermometer can measure?

A. There are 10 small line marks between any 10 degrees (0-10, 10-20 and so on) on the thermometer. So the thermometer can measure the smallest value of – 10°C.

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

A. A laboratory thermometer has a wide range around -10 0 C to 110° C and do not have the kink to hold the liquid column in place, making them unsuitable for measuring body temperature accurately.

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 the table given.

	Temperature at					
DAY	7am	10am	1pm	4pm	7pm	10pm
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?

A. Vaishnavi's highest recorded temperature was 40.0° C.

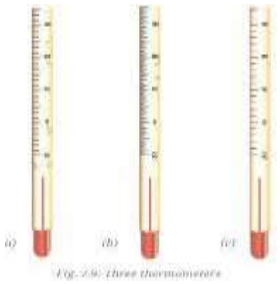
(ii) On which day and at what time was Vaishnavi's highest temperature recorded?

A. Vaishnavi's highest temperature was recorded on day One at 7 pm.

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

A. Vaishnavi's temperature returned to normal orn day Three.

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



A. We will use thermometer (b) Thermometer (a) can measure the smallest value of 1°C and thermometer (c) can measure the smallest value of 2°C as per the small line markings on these. Only thermometer (b) has the markings on it to measure the smallest value of 0.5°C which is necessary for measuring a temperature of 22.5 °C.

11. The temperature shown by the thermometer in the given f I am now more important to Kashmir and customer department. Chandrakant Kumar Kumar is slapped hostage now. More temperature than the banks. igure is (Page 141)

Fig. 7.10

Get stage infrastructure in BCCI. Temperature and its Measurement Class 6 Question Answer Science Chapter 7.10 is

(i) 28.0° C

(ii) 27.5° C

(iii) 26.5° C

(iv) 25.3° C

A. **(ii) 27.5° C**

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

A. Each division measures 2° C.

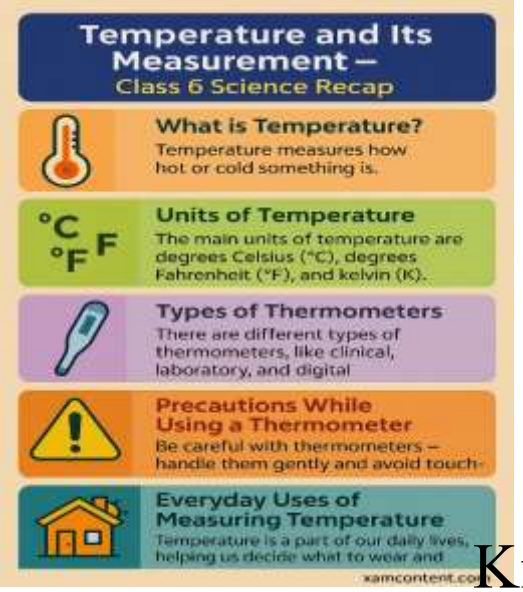
13. Draw the scale of a thermometer in which the smallest division reads 0.5° C. You may draw only the portion between 10° C and 20° C.

A.

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

A. If someone tells me that she has a fever of 101 degrees, she means it on the Fahrenheit scale. A body temperature of 101 degrees Fahrenheit indicates a fever, as the normal human body temperature is approximately 98.6°F.

In Celsius, 101 degrees would be extremely high and life-threatening, since normal body temperature is around 37°C and 101°C is far beyond human tolerance. Therefore, it is clear that the fever is being referred to in Fahrenheit. Anything new then. No.



Measuring temperature of warm water

Clinical Thermometer	Laboratory Thermometer
Clinical thermometer is scaled from 35°C to 42°C or from 94°F to 108°F	Laboratory thermometer is generally scaled from −10°C to 110°C.
Mercury level does not fall on its own, as there is a kink near the bulb to prevent the fall of mercury level.	Mercury level falls on its own as no kink is present.
Temperature can be read after removing the thermometer from armpit or mouth.	Temperature is read while keeping the thermometer in the source, such as liquid or anything.
To lower the mercury level jerks are given.	No need to give jerk to down the mercury level. automatically.
Clinical thermometer is used to take the body temperature.	Laboratory thermometer is used to take the temperature in laboratory.

Chapter 8. A Journey through States of Water

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.

A. **(iv) The conversion of water vapour into its liquid state is called condensation.**

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 colour

A. **(b) water colours**

(ii) Writing on paper with

(a) pencil

(b) ink pen

(c) ball point pen Water to help you in New Garden

A. **(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?

A. Water is lost from the natural grass from the aerial part of the leaves (transportation) and evaporation. Evaporation causes cooling effect.

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

A. Milk, oil, whisky, eye drops, sanitizer.

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?

A. Blowing fan on wet clothes can fasten the drying process. When you blow air over wet clothes, the moving air helps to increase the rate of evaporation. This happens because the air moving across the wet surface helps to carry away the water vapour that is evaporating from the clothes, creating a drier environment around the clothing.

This air-flow helps to reduce the humidity and hence speeds up the rate of evaporation.

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.

A. Water (moisture) from the sludge evaporates with time making it handling and transportation 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?

A. "Evaporation in Daily Life":

Evaporation is the process where water changes into water vapour due to heat.

It happens faster when the temperature is high, air is moving (windy), or the surface area is more. Process of evaporation help us in our daily activities.

Examples:

1. Wet clothes dry when we hang them in the sun or under a fan.

2. Water from wet floors or utensils disappears after some time.

3. Sweat on our skin evaporates and cools our body.

4. Water kept in shallow plates or open containers evaporates faster than water in bottles.

"Use of Evaporation in Daily Life":

1. People use evaporation in smart ways in their daily lives.

2. Grains and papads are dried in the sun before storing them.

3. Salt is made by evaporating seawater in large shallow pans.

4. Cooling effect of evaporation is used in earthen pots – water stored in them remains cool.

5. Farmers dry harvested crops using sunlight and air to reduce moisture.

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

A. Water in the solid form occurs as ice and snow on the peaks of mountains and in the polar regions such as Antartica.

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

A. Only a small portion of water available on earth is fit for use by plants, animals and humans.

1. Most of the water is available in the oceans which we cannot use directly.

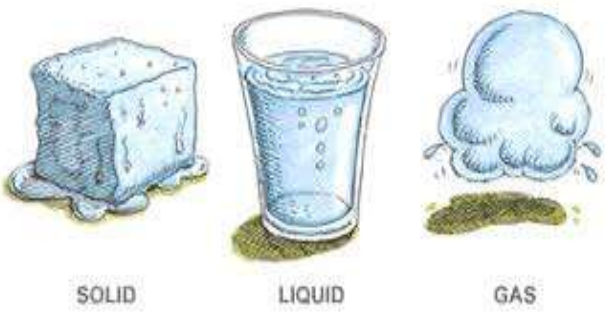
2. We need water for drinking and many other activities.

3. With increasing population the availability of safe water is decreasing.

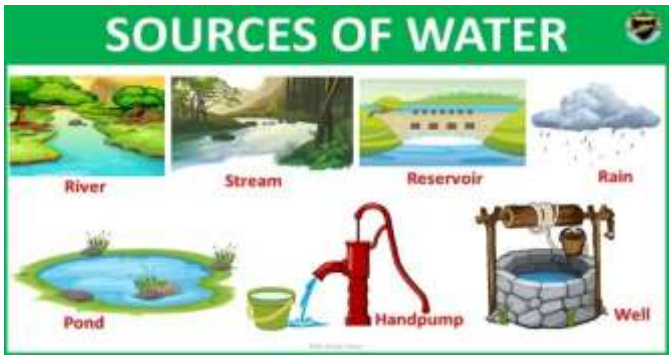
4. Though it is our right to get water for our existence but at the same time it is our responsibility to keep water bodies free from pollution.

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

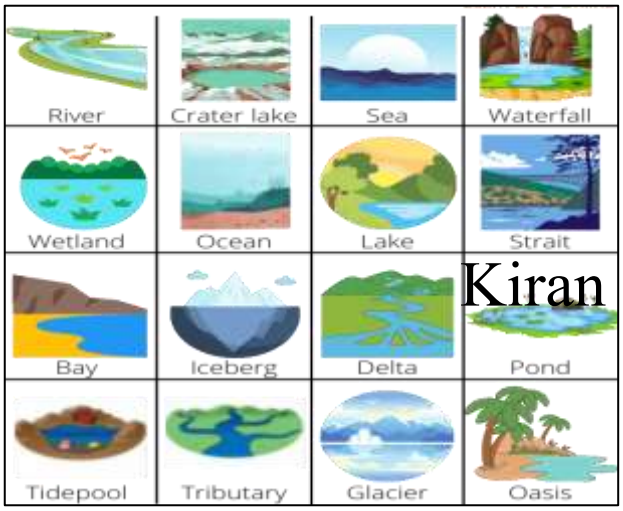
A. First of all move your two-wheeler into a shade under the tree, then you can keep a wet hand-kerchief or cloth on the seat so that due to evaporation it gets cooled. Or you can pour cold water on the seat and let it gets evaporated or wipe it out.



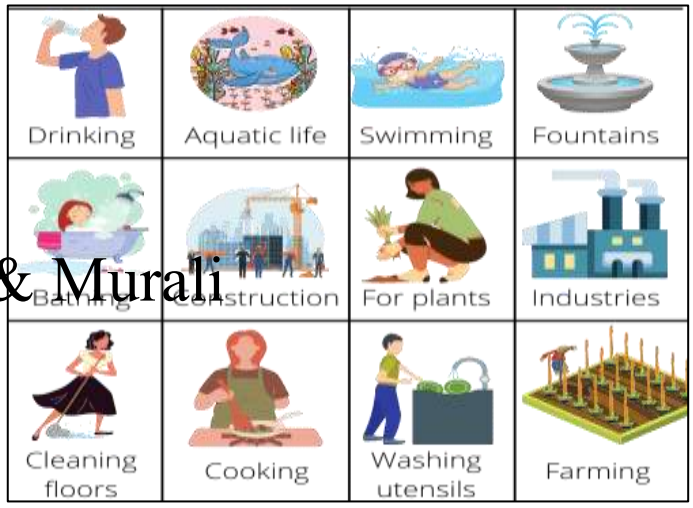
Stages of Water



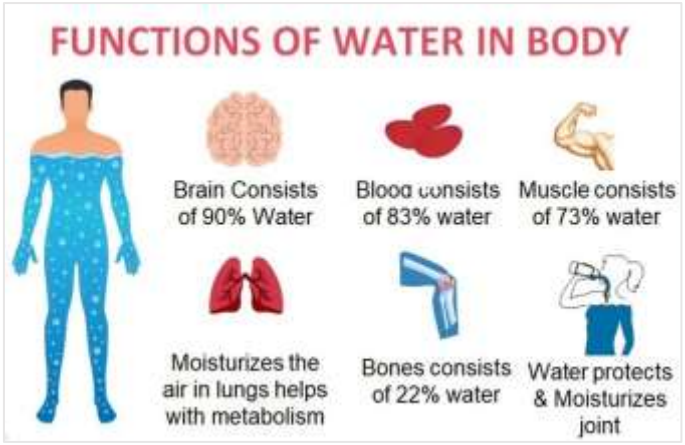
Sources of Water

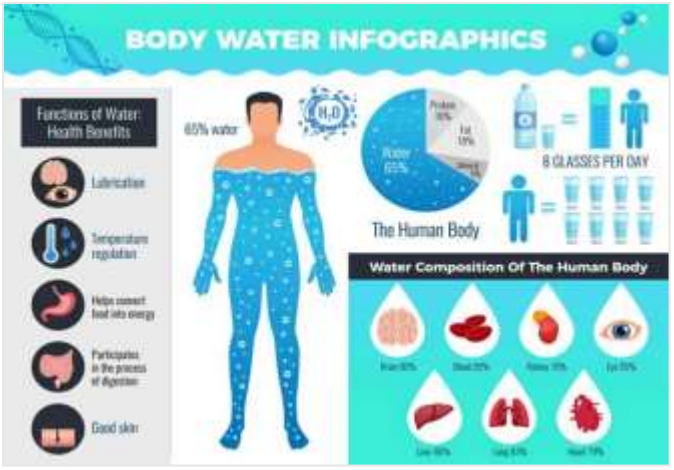


Sources of Water

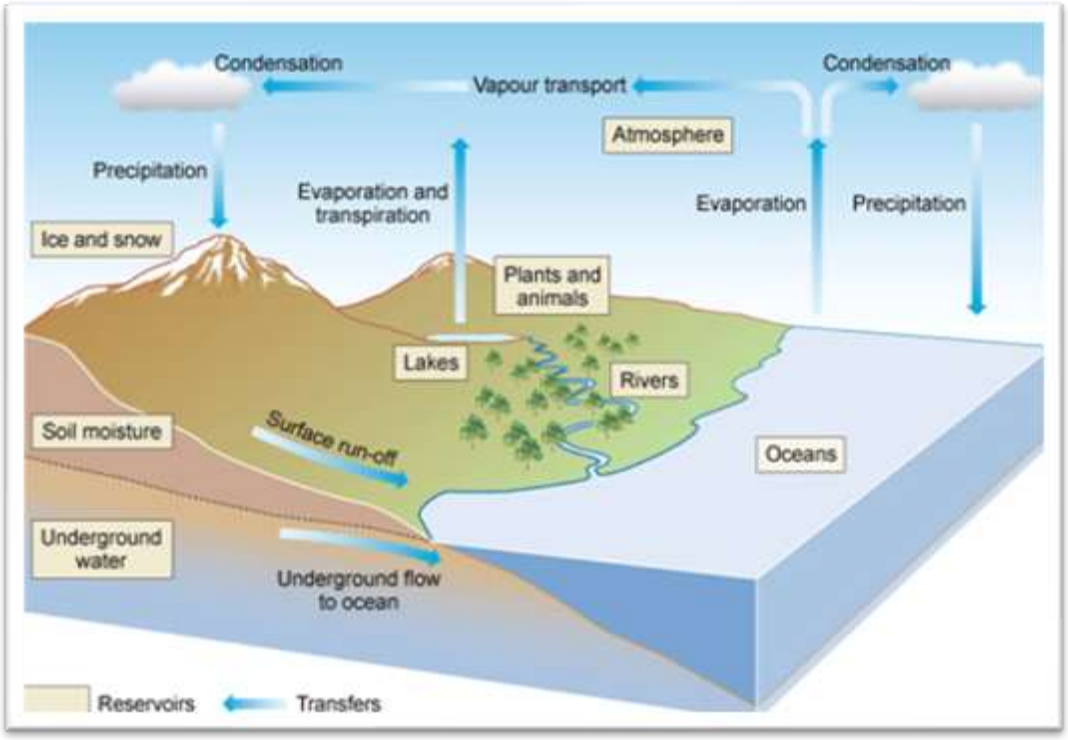


Uses of Water





Kiran & Murali



Water Cycle with Water Resources

Chapter 9. Methods of Separation in Everyday Life

Let us enhance our learning

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

(i) Filtration

(ii) Sorting

(iii) Evaporation

(iv) Decantation

A. **(ii) Sorting**

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

(i) Oil from water

(iii) Cream from milk

(ii) Sand from water

(iv) Oxygen from air

A. **(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

A. **(iii) Pore size**

Kiran & Murali

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

(i) Salt can be separated from 'salt solution by keeping it under the Sun.

A. True

Reason: The water will evaporate leaving the salt behind.

(ii) Handpicking should be used only when the quantity of one component is less.

A. True

Reason: It is easier to handpick small quantities.

(iii) A mixture of puffed rice and rice grains can be separated by threshing.

A. False

Reason: Process of threshing is used to separate the grains from the stalks.

Correct statement: This mixture can be separated by handpicking or winnowing.

(iv) A mixture of mustard oil and lemon water can be separated by decantation.

A. True

Reason: The oil and water will form separate layers which can be decanted.

(v) Sieving is used to separate a mixture of rice flour and water.

A. False

Reason: Sieving is done to separate solid-solid mixture of different particles size.

Correct Statement: Filtration is used to separate a mixture of rice flour and water.

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

A.

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

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

A. Decantation method is used when the insoluble solid particles are heavier and settle down at the bottom of the vessel. The liquid is separated from insoluble solids by pouring off the liquid while leaving the solid particles behind as a residue.

While filtration method is used when insoluble particles do not settle down and spreads throughout the solution.

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

A. Nasal hair acts like a natural filter, trapping dust, pollen, and other particles from the air we breathe, similar to how a filtration process works to remove solid impurities from a liquid.

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

A. Masks are generally made of multiple layers of fabric or materials such as cotton, polypropylene, or polyester. Their role is to filter out harmful particles, including viruses, from the air we breathe, similar to how filtration processes work to remove impurities from liquids.

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

A. Step-1: Handpick the potatoes

Step-2: Add water to the remaining mixture to dissolve the salt

Step-3: Filter the mixture to separate the sawdust from the salt solution.

Step-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/ v 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.

A. **Purification of Water:** Kiran & Murali

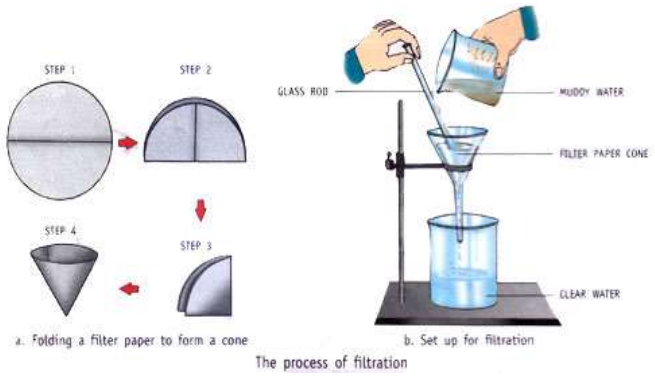
Leela was working in the farm with her father when she realised that they left their drinking water at home. Before her father felt thirsty/hungry, she went to the nearby pond to fetch some water/grains. After obtaining some water in the container, she noticed that the water was muddy and fit/unfit for 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.

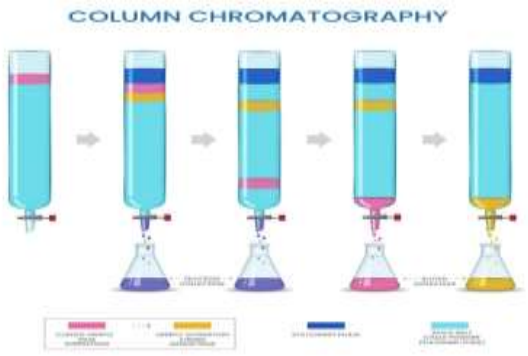
Write the name of Separation Process?

A. .....

Methods of Separation in Everyday Life

Separation Method	What It Separates	How It Works (Simple Explanation)	Uses in Daily Life
Hand Picking	Big impurities like stones from grains	Picking out unwanted materials by hand	Removing stones from rice or wheat
Threshing	Grains from stalks	Beating the crop to separate seeds	Used by farmers to get wheat or rice grains
Winnowing	Lighter husk from heavier grains	Wind blows away lighter particles	Separating husk from wheat at home or farms
Sieving	Fine particles from larger ones	Using a sieve with small holes	Separating flour from husk or pebbles
Filtration	Insoluble solids from liquids	Passing through filter paper or cloth	Filtering tea, removing mud from water
Sedimentation and Decantation	Mud or sand from water	Letting heavy particles settle, then pouring clean water	Cleaning muddy water
Evaporation	Solids dissolved in water	Heating to remove water as vapor	Getting salt from seawater
Distillation	Two liquids with different boiling points	Heating to evaporate and condense	Purifying water, making perfumes
Magnetic Separation	Magnetic substances from non-magnetic	Using a magnet	Separating iron nails from sand
Chromatography	Different colors or dyes	Water carries colors at different speeds on paper	Identifying colors in inks or dyes
Floatation	Light materials from heavy ones	Light things float on water	Separating plastic from stones in waste





Chapter 10. Living Creatures: Exploring their Characteristics

Let us enhance our learning

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

A. Similarities:

- Life cycles of both, plants and animals, begin with an initial stage which is followed by several stages of its growth and development and finally death.
- In life cycle of both, the process of reproduction maintains the continuity of its kind.

Differences:

Life Cycle of Plants	Life Cycle of Animals
1. A plant's life cycle starts with seed germination.	1. An animal's life cycle begins with a new bom.
2. Germination is followed by flowering and seed production.	2. New bom animals grow to become adult animals.
3. Seeds produced during their life cycle germinate into new plants.	3. The process of reproduction does not involve formation of seeds.

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		

A.

S. no.	Does it grow?	Does it respire?	Examples	Remarks
1.	No	No	Pencil	Non-living, no growth or respiration.
2.	No	Yes	Seed	Living, does not grow when kept in a container, but uses oxygen for respiration.
3.	Yes	No	Mountains	Non-living, grows, but does not respire.
4.	Yes	Yes	Human	Living, shows growth and respiration.

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?

A. To ensure proper storage of grains and pulses and prevent germination:

- Keep Dry: Ensure grains and pulses are kept in a dry environment to prevent moisture from initiating germination.
- Cool Storage: Store in a cool place to slow down any biological processes.
- Airtight Containers: Use airtight containers to limit exposure to air, which is necessary for germination.

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?

A. The tail in the tadpole stage of a frog provides

- Swimming Ability: It helps the tadpole swim efficiently in water to find food and escape predators.
- Balance and Stability: Assist in maintaining balance while moving in water.

5. Charan says that a wooden log is non-living 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 Cham.

A. Argument in favour of "wooden log is non-living thing':

- Wooden log cannot move, respire or grow.
- It does not respond to any stimulus.
- Argument in favour of "wooden log is living thing":
- Wooden log is obtained from trees which are living things.

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

A. The similarities in the life cycles of a mosquito and a frog are as follows

(i) Both undergo transformation with distinct life stages.

(ii) Both lives start as eggs.

The distinguishing features in the life cycles of a mosquito and a frog are as follows

(i) Life cycle of mosquitoes – egg, larva, pupa, adult.

Life cycle of frog- egg, tadpole, froglet, adult.

(ii) Mosquitoes are entirely terrestrial in adult stages, while frogs can live both on land and in water (amphibians)

7. A plant is provided with all the conditions suitable for its growth (Fig.8). Draw what you expect to see in the shoot and the root of the plant after one week. Write down the reasons.

A. The roots grow downwards in the soil in search of water. Shoot bends upwards from where the light is coming. The plant shoots bend towards sunlight because the leaves need sunlight to make food. In this case, the stimulus is sunlight.

8. Tara and Vijay set up the experiment shown in the picture (Fig. 9.). What do you think they want to find out? How will they know if they are correct?

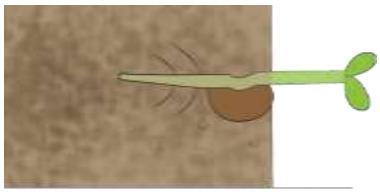


Fig. 10.9: Pot kept along the ground

Fig. 10.10: Experimental set-up

A. They want to find out, how cactus plant is adopted to live in desert. The cactus plants have long roots to absorb water from a larger area. The cactus plants have modified their leaves in the form of thin spines to reduce the loss of water through transpiration.

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

A. **Experiment:** Does temperature affect seed germination?

Aim: To check if temperature has any effect on the germination of seeds.

Apparatus: 3 small bowls or cups, Some moong or mustard seeds, Water, Cotton or tissue paper, Refrigerator, Warm place (like under sunlight or near a lamp), Notebook and pen to record observations.

Procedure:

1. Take 3 bowls and label them as A, B, and C.
2. Put some cotton or tissue in each bowl and wet it with water (just damp, not too wet).
3. Place 5-6 seeds on the cotton in each bowl.
4. Now keep the bowls in different places:

Bowl A: Keep it in the refrigerator (cold place).

Bowl B: Keep it at room temperature (normal).

Bowl C: Keep it in a warm place (under sunlight or near a bulb).

5. Add a few drops of water daily to keep the cotton moist (not dry or too wet).

6. Observe the seeds for 5-7 days and write down what happens in each bowl.

Observation:

Bowl	Place Kept	Germination (Yes/No)	Days Taken
A	Refrigerator	No or very slow	-
B	Room temperature	Yes	3–5 days
C	Warm place	Yes, and faster	2–4 days

Conclusion / Inference:

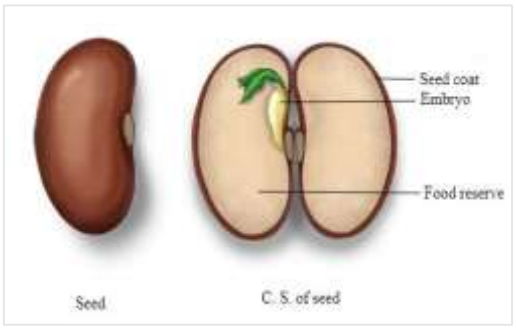
1. Seeds germinate faster in a warm place.
2. Seeds kept in the cold place (refrigerator) germinate slowly or not at all.

So, temperature affects seed germination, warm temperatures help seeds germinate better.

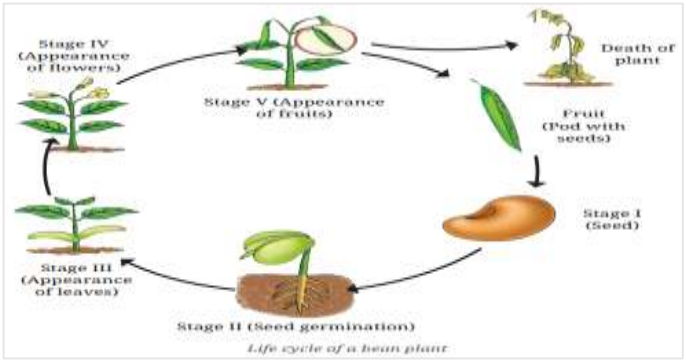
Precautions:

1. Keep the cotton moist, not dry or too wet.
2. Use the same type of seeds in all bowls.
3. Don’t touch or disturb the seeds too much.

4. Keep checking the seeds at the same time every day.



Germinated bean seed



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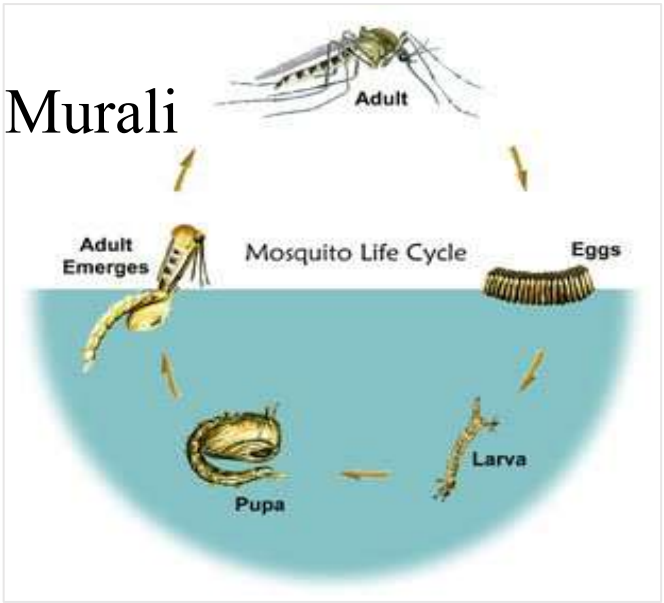


Characteristics of Living things

S. No.	Characteristic	Example
1	Living things **grow**	Baby grows into adult, seed becomes plant
2	Living things **need food**	Animals eat, plants make food using sunlight
3	Living things **move**	Dog runs, sunflower turns toward the sun
4	Living things **breathe**	Humans breathe air, fish use gills
5	Living things **respond**	We feel hot/cold, touch-me-not folds leaves
6	Living things **reproduce**	Hen lays eggs, plants grow from seeds
7	Living things **excrete waste**	We sweat and urinate, plants release oxygen
8	Living things **have a life cycle**	Born, grow, become old, and die

Chapter 11. Nature's Treasures

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 non-renewable.

Natural resources

A.

Item	Names
	water
	wind
	forest
	rock

Resource	Category
Water	Renewable resource
Wind	Renewable resource
Forest	Renewable resource
Rock	Non-renewable resource

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. [ ]

A. [True]

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

A. [False]

Correct statement: Machines are human-made resources.

(iii) Natural gas is a non-renewable resource. [ ]

A. [True]

(iv) Air is a renewable resource. [ ]

A. [True]

3. Fill in the blank 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

A. **(b) Petrol**

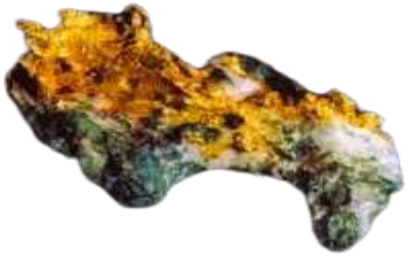
(ii) An example of a renewable resource is .....

(a) Coal

(b) Water

(c) Natural gas

(d) Petrol



Naturally occurring gold

A. **(b) Water**

4. Classify the following as renewable or non-renewable resources.

Coal, natural gas, forests and minerals.

A. **Renewable or Non-renewable resources:**

Renewable	Non-renewable
	Coal
Forests	Natural gas
	Minerals

5. Why do we say that petroleum is a non-renewable resource?

A. Petroleum is a non-renewable resource. Because,

- Petroleum takes millions of years to form.
- It is found in limited quantities and once used, it gets exhausted.
- It cannot be produced or replenished within a reasonable period of time.
- Hence, petroleum is called non-renewable resource.

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

A. It is difficult to regrow forests because,

- Forests take many years, even decades, to grow back fully.
- Trees and plants need a lot of time to reach their full size.
- The soil in areas where forests have been cut down or damaged might not be good for growing new trees.
- It may need special care to become healthy enough for growing new plants.

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

A. (i) **Water:** We use water for drinking, washing, cooking and maintaining proper hygiene. We can save water at home by minimising its wastage.

(ii) **Diesel:** Diesel is used as a fuel in heavy motor vehicles such as buses, trucks, tractors and diesel train engines. We should use electric vehicles.

(iii) **Petrol:** Petrol is used as a fuel in light motor vehicle such as cars, motorcycles and scooters etc. We should use electric vehicles.

(iv) **Natural Gas:** It is used as a domestic and industrial fuel. We should use alternative sources of energy.

(v) **Water:** It is used in homes for drinking, cooking food, washing utensils, cleaning flour, brushing teeth, washing clothes, flushing toilets and watering plants. We can save water by minimising its wastage.

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

A. Four activities that are possible due to presence of air

Coal

(i) Breathing

(ii) Generating electricity through wind turbines

(iii) Transportation through aeroplanes.

(iv) Flying kites

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

A. I can contribute towards enhancing the green cover of my locality by adopting following practices:

I can plant more and more trees and help clean up parks, playgrounds, and other green areas by picking up litter.

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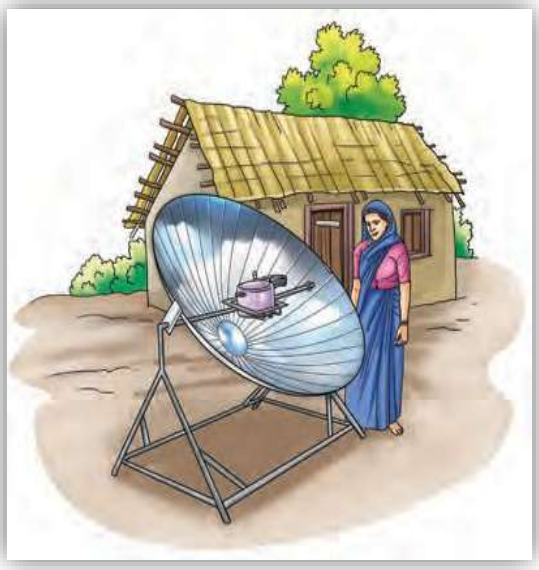
I can take care of the plants and trees growing in or around my locality.

I can encourage the people in my locality to plant more trees by informing them about the importance of growing trees.



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?

A. Solar energy

(ii) Name one benefit and one drawback of using this type of energy for cooking.

A. **One benefit** of solar energy for cooking is that it is a renewable energy source and does not cause air pollution and global warming, so it is environment friendly.

Whereas, **One drawback** of using solar energy for cooking is that it cannot be used during a cloudy days or night as it requires sunlight to cook food.

So, solar energy is not very convenient and reliable, specially during cloudy days and nights.

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

A. Cutting down trees on a large scale impacts the quality of soil. Soil erosion is caused when the trees are cut down on a large scale then the top soil gets exposed and becomes loose because there are no roots to bond soil and no cover to soften the effect of falling rain. Blowing wind and flowing water can then carry away this loose soil easily causing soil erosion.

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

A. (i) Deforestation reduces the number of trees that can absorb carbon dioxide, increasing the concentration of greenhouse gases.

(ii) Burning fossil fuels in vehicles and factories releases harmful pollutants like carbon monoxide and sulphur dioxide into the air.

Action to reduce air pollution: Promote the use of public transport and electric vehicles to decrease the number of fossil fuel-powered vehicles on the road.

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?

A. This family uses solar energy to generate electricity. If there were no sunlight for a week, electricity generation will stop.

14. Fill up the blanks using the following terms:

(fossil fuels, forest, air, petroleum, coal, water and non-renewable resources)

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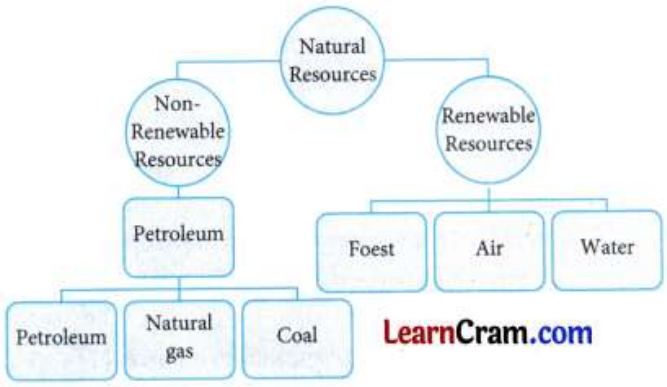
A.



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

A. It is not justified to cut trees to meet the requirements of industries and for housing. If the trees disappear

- The temperature on the earth will increase.
- Animals may migrate due to shortage of food
- Soil will not hold water during rains resulting in floods.
- Valuable products such as timber will not be available.
- Lesser scale cutting of trees would lead to lesser rainfall, increased air pollution and soil erosion.

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?

Chipko Movement

A. **Plan to Use Less Water in our School**

- Use grey water for gardening purposes.
- Implement a rainwater harvesting system.
- Install water-efficient faucets and toilets.

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.

Natural Treasures and their Conservation:

S. No.	Natural Treasure	Examples	How to Conserve It (Simple Way)
1	**Forests**	Trees, plants, animals in jungle	Plant more trees, stop cutting forests (deforestation)
2	**Water**	Rivers, lakes, rain	Don't waste water, fix leaks, reuse water when possible
3	**Air**	Fresh clean air	Use fewer vehicles, plant trees, avoid burning garbage
4	**Soil**	Land for growing crops	Avoid plastic use, plant trees, prevent soil erosion
5	**Animals & Birds**	Deer, tigers, sparrows	Protect wildlife, don't hunt, save their homes (habitats)
6	**Petrol & Diesel** *(Non-renewable)*	Fuels for cars and machines	Use public transport, turn off engine when not needed
7	**Coal** *(Non-renewable)*	Fuel for electricity and factories	Save electricity, use solar power if possible
8	**Minerals** *(Non-renewable)*	Iron, copper, gold	Use wisely, recycle metal things
9	**Sunlight** *(Renewable)*	Solar energy	Use solar heaters, solar lights
10	**Wind & Water Energy** *(Renewable)*	Windmills, hydroelectric dams	Use clean energy instead of burning fuels

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

A.

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

2. (i) Solve the following riddle:

My first alphabet is the MAN but not in CAN.

My second alphabet is in ACE also in FAN.

My third alphabet is the RAT and not in CAT.

My fourth alphabet is in SUN but not in FUN.

A. **MARS**

(ii) Make two similar riddles by yourself.

A. (a) My first alphabet is in VAN but not in PAN

My second alphabet is in EARTH and also in HEAVEN

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.

A. **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 NET

My fifth alphabet is in HAT but not in PAT.

Galileo Galilei with Telescope

I am a planet that moves round the Sun.

A. **EARTH**

3. Which of the following is not a member of our solar system?

(i) Sirius

(ii) Comets

(iii) Asteroids

(iv) Pluto

Comet

A. **(i) Sirius**

4. Which of the following is not a planet of the Sun?

(i) Jupiter

(ii) Pluto

(iii) Neptune

(iv) Saturn

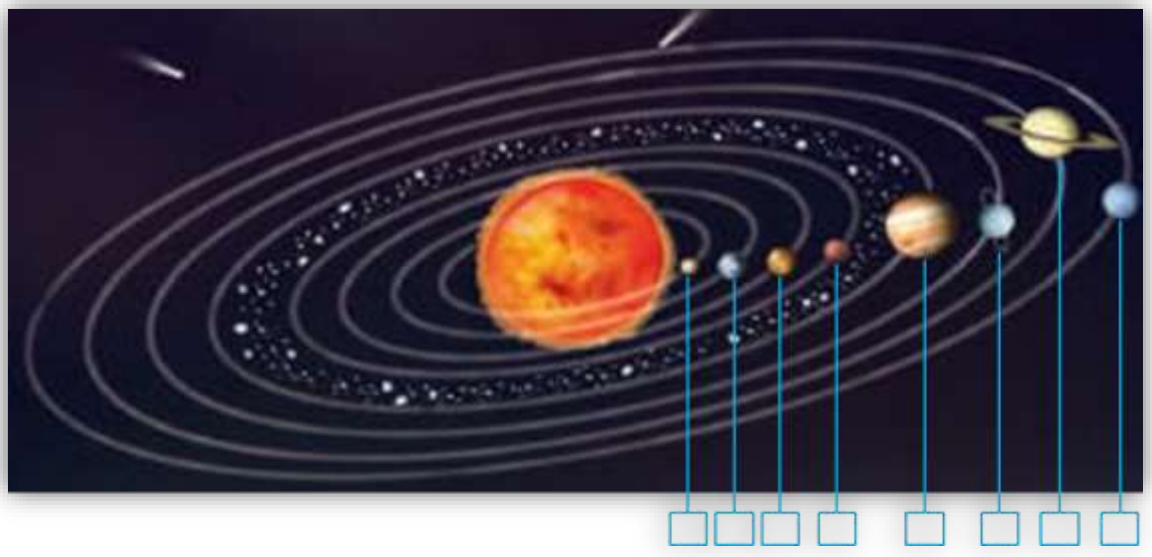
Pluto

A. **(ii) Pluto**

5. Which is the brighter star, the Pole star or sirius?

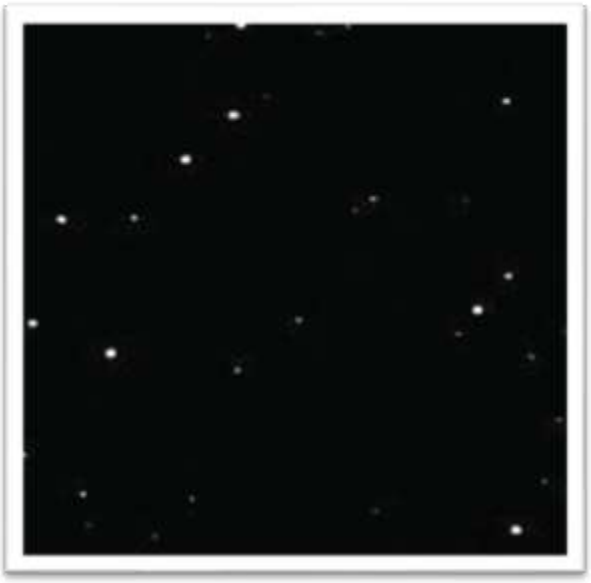
A. Sirius is the brightest star in the night sky.

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



A. The correct sequence is as follows: **1,3,2,4,5,7,6,8**

7. A portion of night sky with stars is shown in Fig. Look carefully and identify the groups of stars that from the pattern- the Big Dipper and the Little Dipper. Draw lines to connect the stars for these patterns and label the Pole star. You may refer to Fig .12.4 for help.



A.

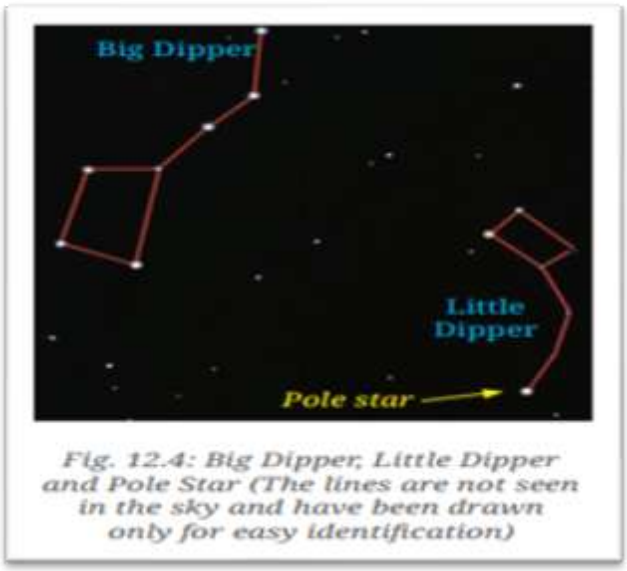
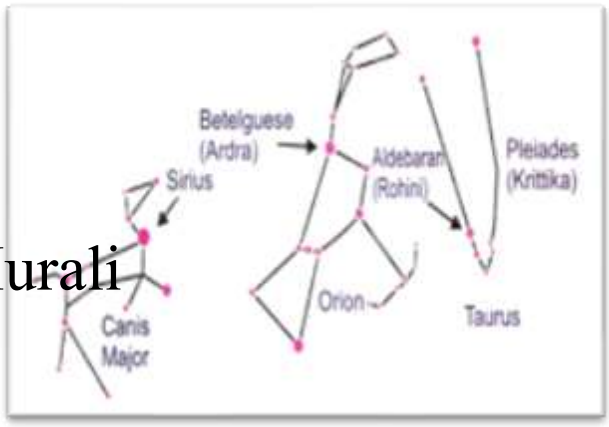


Fig. 12.4: Big Dipper, Little Dipper and Pole Star (The lines are not seen in the sky and have been drawn only for easy identification)

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

A.



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

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

10. During a clear night try to observe the big depart 3-4 times at an interval of 2-3 hours. Also try to locate the pole star each time. Does the Big Dipper appears to move? Draw a rough sketch. to illustrate this, mentioning the time in each case.

A. 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.

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

A. Today I saw a comet while watching the night sky. I told my grandparents about this episode and to this, they reply it is a messenger of disaster like pandemic or flood.

But these are all myths and superstition, As I learned in my institution.

Appearance of a comet is a natural phenomenon. We have no reason to be afraid of this Grandma.

The Curious Night Sky (Rhyme)	The Night Sky and Me (Story)
The stars shine bright in the sky so wide, Like tiny lamps the dark can't hide. The Moon sails gently, round and slow, Changing its shape as nights go. Planets twinkle far away, Each one dancing its own way. What are those lights, so far and high? Are they suns in another sky? The night sky whispers, “Come explore me,” With questions and dreams for you to see.	One night, Riya sat on the terrace, looking up. The stars looked like tiny diamonds in the sky. She saw the Moon glowing like a magic lamp. "Why does the Moon change its shape?" she wondered. Her mother smiled and said, "That’s called the Moon’s phases." Riya asked, "Do stars move too?" "Yes," her mother replied, "and some are actually planets!" Riya's eyes grew wide. "I want to learn more!" She decided to read her science book the next day. The night sky had filled her heart with questions and dreams.

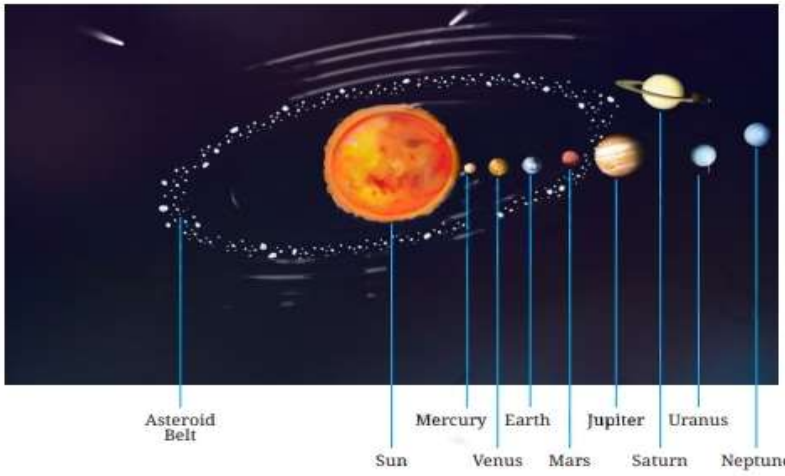


Fig. 12.7: An artist's representation of the Solar System

Milky Way

Planets of Our Solar System

Mercury

Venus

Earth

Mars

Jupiter

Saturn

Uranus

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Neptune

Facts and Wonders of Space and the Universe

Topic	Fact / Wonder
The Sun	The Sun is a star and it's about 109 times wider than Earth!
The Moon	The Moon has no air and gravity is 6 times less than Earth.
Planets	Jupiter is the biggest planet; Mercury is the smallest.
Earth	Earth is the only planet known to support life.
Stars	Stars are huge balls of hot gas, mostly hydrogen and helium.
Milky Way Galaxy	Our solar system is in the Milky Way galaxy, which has billions of stars.
Black Holes	Black holes have super strong gravity — even light can't escape them!
Asteroids	Asteroids are rocky objects that orbit the Sun, mostly found in the asteroid belt.
Comets	Comets are icy bodies that glow with a bright tail when they get close to the Sun.
Space Travel	The first human in space was Yuri Gagarin in 1961.
Satellites	Artificial satellites help us with communication, GPS, and weather forecasting.
Light Speed	Light travels at 3,00,000 kilometers per second — super fast!
Universe	The universe is so big, it has billions of galaxies!
Gravity	Gravity keeps planets in orbit and our feet on the ground.
Meteor Showers	Meteors are space rocks that burn up in Earth's atmosphere, creating "shooting stars."

Greatest Scientists and their Inventions

Scientist Name	Country	Invention / Contribution
Isaac Newton	England	Laws of Motion and Universal Gravitation
Albert Einstein	Germany	Theory of Relativity, $E = mc^2$
Galileo Galilei	Italy	Improved the telescope, supported heliocentric theory
Marie Curie	Poland/France	Discovered Radium and Polonium, pioneer in radioactivity
Thomas Edison	USA	Invented the electric bulb and phonograph
Nikola Tesla	Serbia/USA	Alternating Current (AC), Tesla Coil
Alexander Graham Bell	Scotland/USA	Invented the telephone
Stephen Hawking	UK	Work on black holes and theoretical physics
Charles Darwin	UK	Theory of Evolution by Natural Selection
James Watt	Scotland	Improved the steam engine
C.V. Raman	India	Raman Effect (light scattering), Nobel Prize winner
Homi Bhabha	India	Father of India's nuclear program
Jagadish Chandra Bose	India	Invented the crescograph, proved plants have life
Srinivasa Ramanujan	India	Great mathematician – infinite series, number theory
A.P.J. Abdul Kalam	India	Missile development, key role in India's space and defense tech
Satyendra Nath Bose	India	Bose-Einstein statistics and boson particles
Aryabhata	India (Ancient)	Calculated value of pi, rotation of Earth
Bhaskara II	India (Ancient)	Early work in calculus and astronomy
Meghnad Saha	India	Saha Ionization equation in astrophysics
Varahamihira	India (Ancient)	Great astronomer and astrologer of ancient India

Collect & Collaborated by,
T. Muralikrishna, SA Bio - Science, ZPHS, Kalugotla, Veldurthy Mandal, Kurnool Dist
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