



Environmental Science

Standard **IV**

Part 2

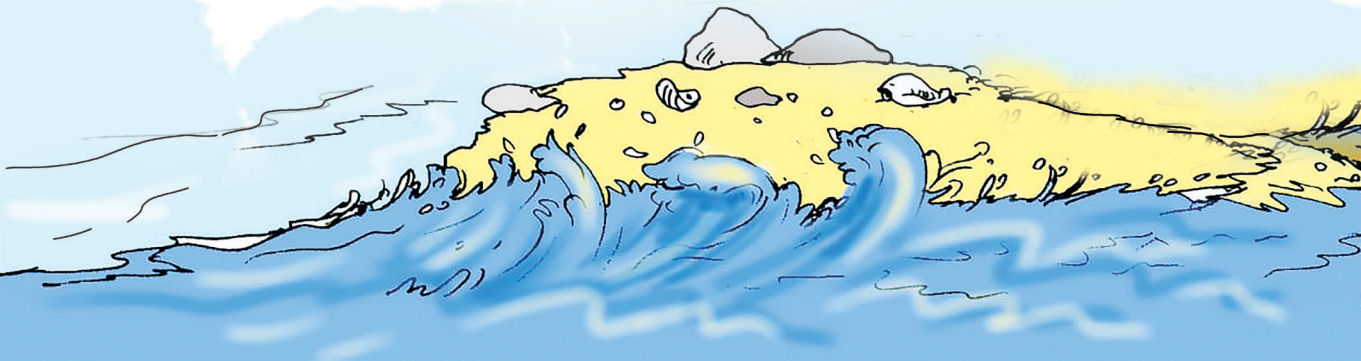


Government of Kerala
Department of General Education

Prepared by

State Council of Educational Research and Training
(SCERT) Kerala

2025





THE NATIONAL ANTHEM

Jana-gana-mana adhinayaka, jaya he
Bharatha-bhagya-vidhata
Punjab-Sindh-Gujarat-Maratha
Dravida-Utkala-Banga
Vindhya-Himachala-Yamuna-Ganga
Uchchala-Jaladhi-taranga
Tava subha name jage,
Tava subha asisa mage,
Gahe tava jaya gatha
Jana-gana-mangala-dayaka jaya he
Bharatha-bhagya-vidhata
Jaya he, jaya he, jaya he,
Jaya jaya jaya, jaya he.

PLEDGE

India is my country. All Indians are my brothers and sisters.

I love my country, and I am proud of its rich and varied heritage. I shall always strive to be worthy of it.

I shall give my parents, teachers and all elders, respect and treat everyone with courtesy.

To my country and my people, I pledge my devotion. In their well-being and prosperity alone, lies my happiness.

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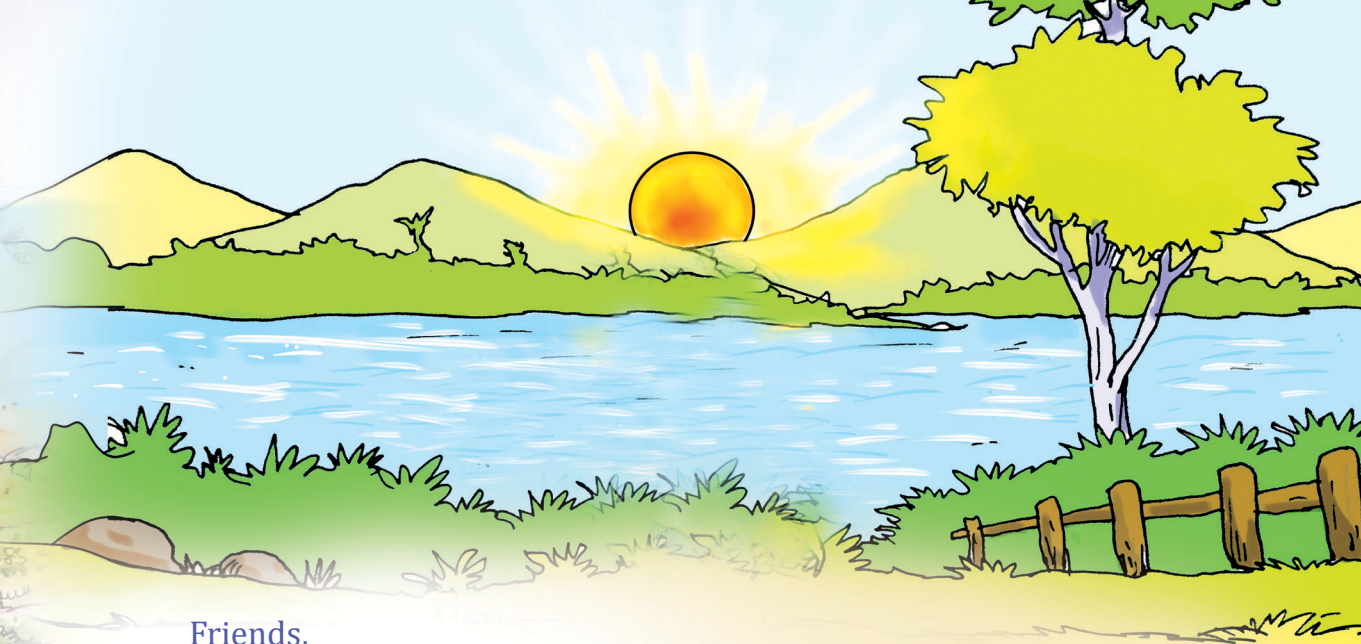
Phone : 0471 - 2341883, Fax : 0471 - 2341869

Typesetting and Layout : SCERT

First Edition : 2025

Printed at : KBPS, Kakkanad, Kochi-30

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Friends,

The Earth we live on and its beauty are precious to us.
So much of diverse events and facts which prompt us to
learn and explore more!! Numerous forms of life existing
in different environments, with interdependence.

Birds which showcase nature's colourful diversity...

The vast sky and countless celestial bodies...

The diverse forms of matter in our surroundings!!

This book will help you expand your knowledge by
observing these wonders, gathering information,
comparing them and conducting experiments.

This textbook also offers opportunities to learn about
our country and society.

May this new knowledge inspire you to become guardians
of the environment and our homeland.

Best wishes,

Dr. Jayaprakash R.K.

Director
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Icons used in this textbook
for convenience



For Further Reading



ICT



Let's Assess



Extended Activities

THE CONSTITUTION OF INDIA

PREAMBLE

WE, THE PEOPLE OF INDIA, having solemnly resolved to constitute India into a ¹**[SOVEREIGN SOCIALIST SECULAR DEMOCRATIC REPUBLIC]** and to secure to all its citizens :

JUSTICE, social, economic and political;

LIBERTY of thought, expression, belief, faith and worship;

EQUALITY of status and of opportunity; and to promote among them all

FRATERNITY assuring the dignity of the individual and the ²[unity and integrity of the Nation];

IN OUR CONSTITUENT ASSEMBLY this twenty-sixth day of November, 1949 do **HEREBY ADOPT, ENACT AND GIVE TO OURSELVES THIS CONSTITUTION.**

-
1. Subs. by the Constitution (Forty-second Amendment) Act, 1976, Sec.2, for "Sovereign Democratic Republic" (w.e.f. 3.1.1977)
 2. Subs. by the Constitution (Forty-second Amendment) Act, 1976, Sec.2, for "Unity of the Nation" (w.e.f. 3.1.1977)

5

Around us in different forms

Anu is talented in drawing. Nalin is requesting her to draw pictures of different objects.



You can also try to draw pictures of the objects mentioned by Nalin. Among them, name the objects that you were able to draw correctly.

- Stone
- Chocolate
-

Name the objects you are unable to draw.

○ ○ ○

Why were you able to draw the objects in the first set?

There are different types of objects around us.

Do all of them appear to be of the same shape?

Objects having definite shape are called Solids.

Weight

Try to lift a small brick and a large brick. Which brick is more difficult to lift? Why?

Do all objects have the same weight? Measure the weight of different solid materials using a spring balance available in your school.

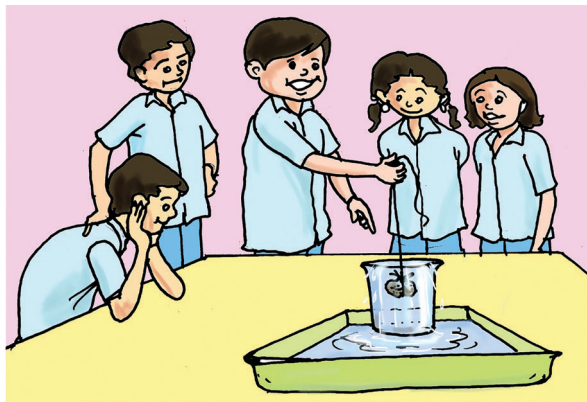
A place to occupy

Take a glass tumbler filled with water. Tie a stone with a string and slowly immerse it into the water. What is your observation?

What might be the reason?

Try again by immersing a larger stone into the water. What difference do you observe?

What might be the reason?



Solids require space to occupy. Larger solids require more space to occupy.



Write down the general properties of solid materials in **My Environmental Science Diary**.

- have definite shape
-
-

Shape of water

You were not able to draw the picture of water, right?

Fill water in the vessels having different shapes as given below.



Observe the shape of water in each of the vessels.

Are the shapes the same?

Write down your inference about the shape of water in **My Environmental Science Diary**.

Water doesn't have definite shape. It takes the shape of the container it occupies.

Weight of water

Measure the weight of your water bottle before and after filling it with water, using the spring balance available in your school.

Weight of water bottle before filling with water :

Weight of water bottle after filling with water :



What is the difference between the two weights?

What can be the reason?

Water has weight.

The power of water

Does flowing water have power?

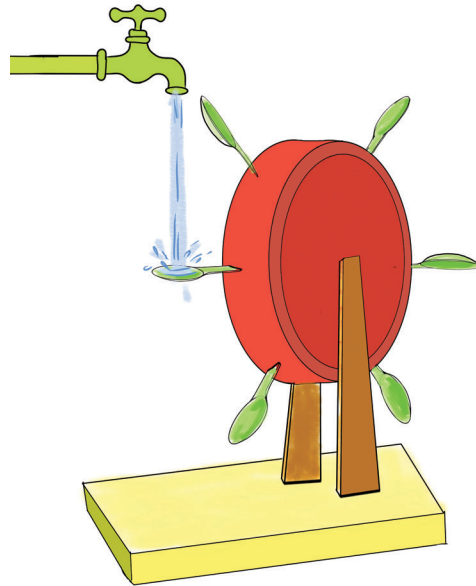
Make a wheel by attaching six ice cream spoons to the circular lid of a jar.

The wheel is to be arranged as shown in the picture.

Place it below the water flowing from a pipe, as shown in the picture.

What do you observe?

Which is the force that made the wheel to rotate?



Flowing water has power.

In which state does water exist?

List out other examples that exist in the same state.

- Coconut oil
- Kerosene
-
-

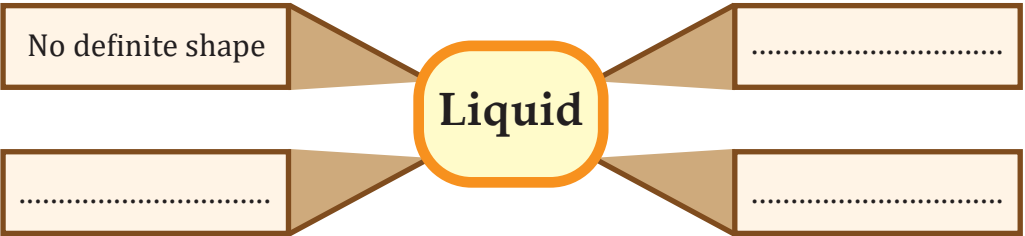
Objects that flow and having no definite shape are called Liquids. Water, oil etc. are liquids.



Identify and mark the liquid objects from the table given below.

M	I	T	S	S	K	E	R	O	S	E	N	E	R	O	D
I	R	I	A	O	C	O	C	O	N	U	T	O	I	L	
L	O	L	L	I	H	O	N	E	Y	P	E	T	R	O	L
K	N	E	T	L	W	A	T	E	R	P	L	A	N	K	

Based on the general properties of liquids, complete the Pada-suryan (Word-sun).



Toy fan and wind

Read the picture story.

Anu and her family are returning home in a bus after watching a festival. Her brother has a toy fan which they bought from the festival. The toy fan began to rotate when the bus started moving.



When the bus stopped in the next stop, the toy fan ceased rotating. Her brother started to cry.

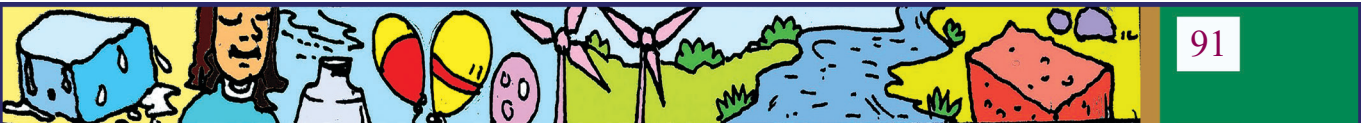


When he continued crying, his mother blew into the toy fan. It started to rotate again.



When the bus started moving, the toy fan started to rotate again. He became very happy.





Haven't you had such experiences?

Why did the toy fan cease rotating, when the bus stopped?

In what all situations does the toy fan rotate?

- while running with the toy fan
-
-

In the above situations, what helped the toy fan to rotate?

How did we know that there is wind?

- leaves are moving
- kite is flying
-
-

Take a sheet of paper and gently fan yourself with it. What do you experience?

○

What did we do to generate the wind?

We made the air around us move, right?

What is wind? Write it down in **My Environmental Science Diary**.

Moving air is called Wind

Shall we make a toy fan?

Materials required:

Two pieces of coconut leaves of 15 cm length, pieces of midribs of coconut leaves, and scissors.



Follow the steps given in the picture to make the toy fan.



Try blowing air into it.

Now run, holding the toy fan in your hand.

What happens then?

Write down your observation in **My Environmental Science Diary**.

Is air always moving?

Don't we feel the movement of air when the fan in the classroom is rotating?

Stop the fan and observe.

Is the air still moving?

What happened to the movement of air, when the fan was stopped?

Observe the picture.



How did the fragrance reach the child's nose?

.....

Light an incense stick and place it on the table or place some jasmine flowers or a piece of cotton soaked in lemon-grass oil in a corner of the classroom and observe.

What do you experience?

How did the fragrance spread all through the classroom?

.....

Could you experience the movement of air this time?

Are we able to identify the gentle movement of air?

Shall we make an instrument to detect the gentle movement of air?

Materials required: Paper, scissors, thread.

Take a thin and narrow paper and cut a piece of about 15 cm length from it. Roll this paper around a pencil. Tie a thread to one end of the paper, as shown in the picture. Hang it in a fixed spot in the classroom and observe.

Write down your observation.

Instead of the thin paper, use a thick cardboard piece and hang it. What did you observe?

Why?

What is your inference about the movement of air?



Air is always in movement in the atmosphere.

We experience it only when the movement of air is strong.

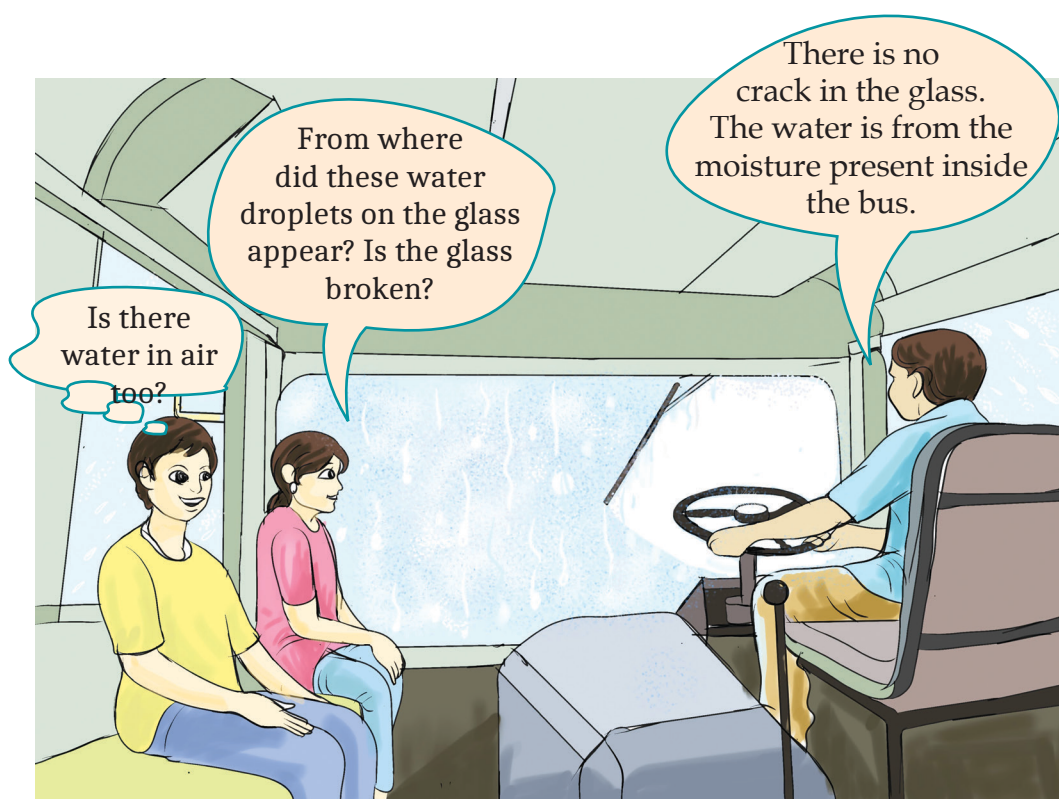


What are the different ways in which we make use of air?

- to breathe
- to fill air in the tyres of vehicles
-
-

Is water present in air too?

One day Meenu and her younger brother were going for a picnic with their family. On the way, it started raining heavily. Note the questions that Meenu asks the driver, on noticing water droplets inside the glass pane of the bus.



Let's do an experiment to clarify Milan's doubt.

Materials required: A glass tumbler, ice cubes.

Put a few ice cubes in a glass tumbler.

Observe the outer surface of the glass. What changes can you observe?



- From where did the water droplets appear?
- Which component of air became water droplet?

Air contains water droplets.

Does air require space?

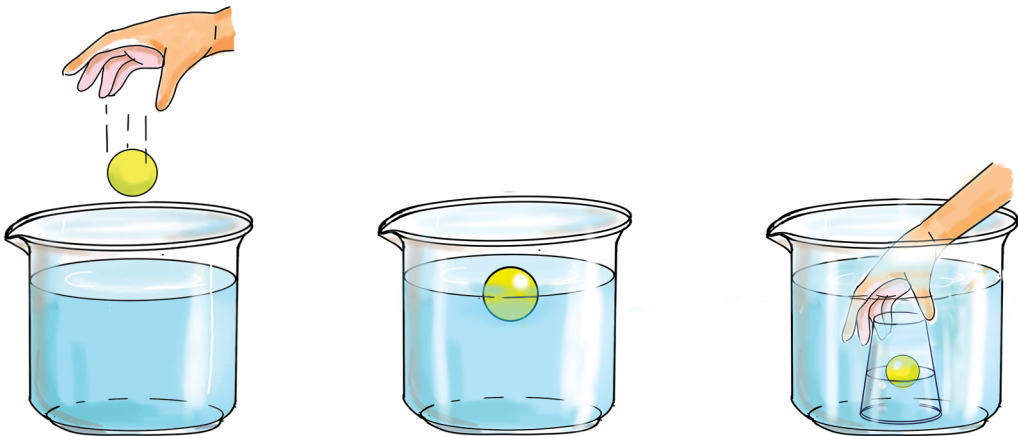


We are not able to see air. If so, does air require space to occupy?

To clear Vidhu's doubt, can we do an experiment?

Materials required: Beaker, water, a small plastic ball, transparent plastic tumbler.

Fill the beaker up to three-quarters with water. Place the plastic ball on top of the water. Keep the plastic tumbler invertedly and firmly on top of the ball. Observe the position of the ball.



What forced the ball to move to the bottom of the beaker?

What can we do to bring the ball back to its initial position?

Write down your assumption and its reason.



Repeat the same experiment using a transparent plastic tumbler that has a hole at its bottom.

What did you observe?

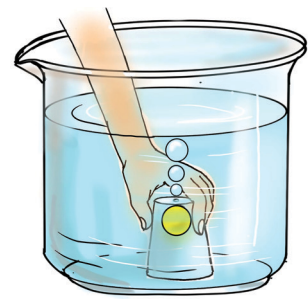
Why does the ball move to the bottom of the tumbler in the first experiment?

Why does it move upwards in the second experiment?

What did we do differently in the second experiment?

When we did so, what moved out from the plastic tumbler?

After doing the experiment, write your observation in **My Environmental Science Diary**.



Air requires space to occupy.

Let's see how this experiment was done in a different way in Anu's class.



Why did Anu's paper get wet and Mili's paper not get wet?

Shape of air

Haven't you seen balloons filled with air, used as decorations for birthday celebrations? When filled with air, what happens to the shape of balloons?



Is the shape of air the same, in each alphabet?

Does air have definite shape?

Write down your observation in **My Environmental Science Diary**.

Does air have weight?



Air has weight.



Listen to the dialogues in the picture. To whose opinion do you agree?

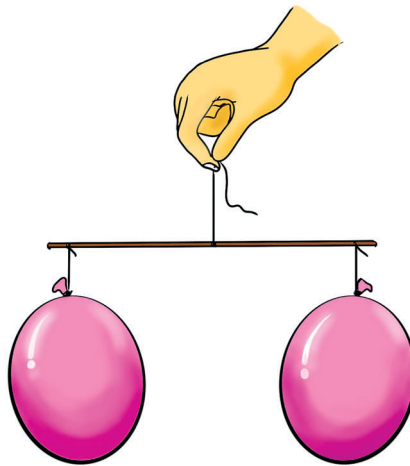
Write down your opinion in **My Environmental Science Diary**.

How can we prove that air has weight?

Shall we do an experiment?



Materials required : Two balloons, thread, a small stick.



Inflate two balloons and tie their mouths. Tie each balloon on either ends of a long and thin stick. Tie a thread to the middle of the stick and balance the balloons on it. Prick one of the balloons with a pin to release the air inside it.

What has happened?

Write down your observations as an experimental note in **My Environmental Science Diary**.

Please follow the steps of writing an experimental note.

Experimental note

- Name of the Experiment
- Aim
- Materials
- Procedure
- Observation and findings
- Conclusion

Shall we do another experiment?

Measure the weight of a cycle tube, before and after filling it with air. Do you observe any change? What can be the reason?

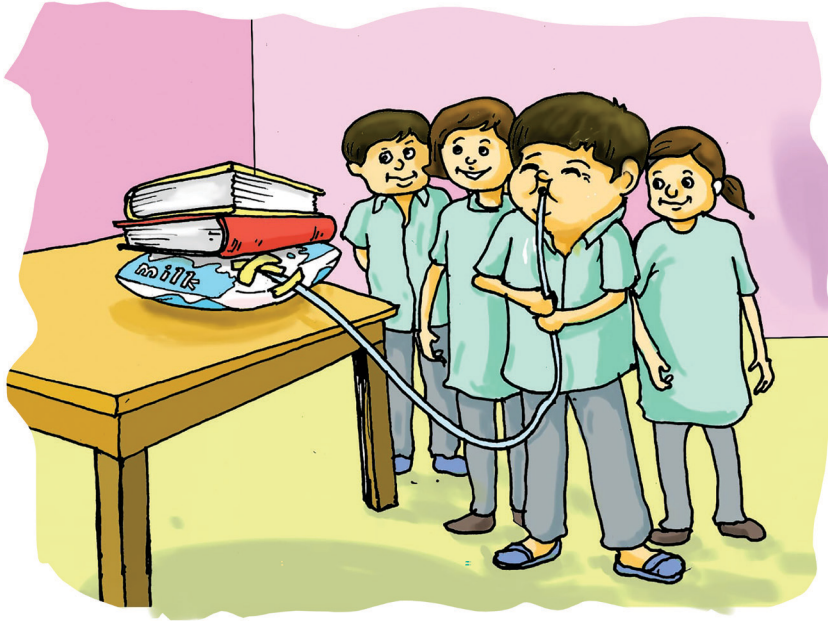
Air has weight



The power of air

Let's do an experiment.

Materials required: Mason pipe, an empty milk cover, books, thread.



Insert a mason pipe through the small hole of an empty milk cover and tie it with a thread. Place a book above the cover. Blow air into the cover through the mason pipe.

What did you observe?

Let us continue the experiment by increasing the number of books.

How many books can be lifted?

Write down your guesses.

Place more books and blow air strongly through the mason pipe.

What is your observation?

From this, what inference can you arrive at?

Do the experiment and write down the conclusion in **My Environmental Science Diary**.

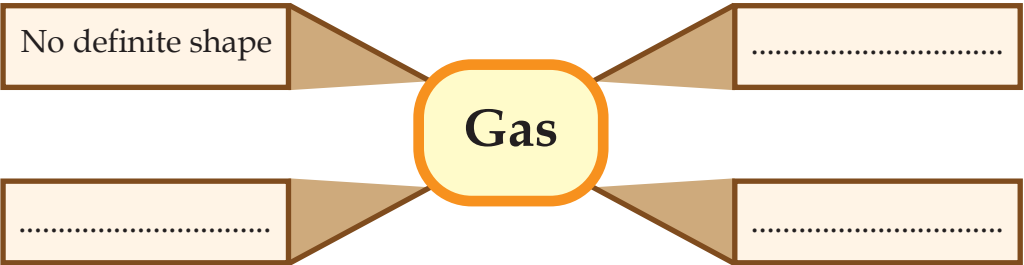
In which state does air exist?



Air exists in gaseous state

The balloon seen rising up in parks and beaches is filled with a gas. Find out which gas it is.

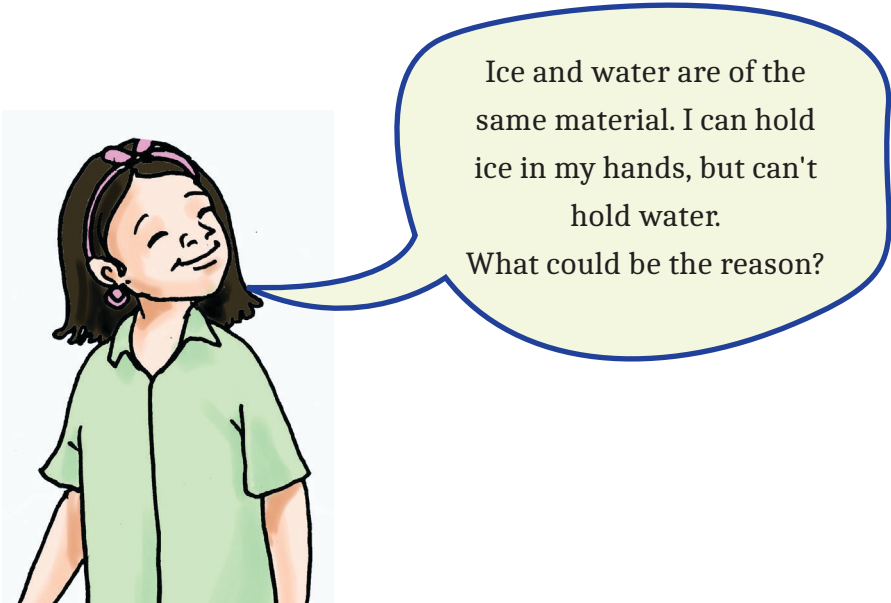
What are the properties of gases?



You are already familiar with the three states of matter-solid, liquid and gas. Complete the table based on their properties.

Properties	Solid	Liquid	Gas
Shape			
Weight			
Space to occupy			

In different forms



Listen to Anu's doubt

What is your response?

Place an ice cube in a vessel.

Observe after sometime.

What changes did you see?

Write down your observation in **My Environmental Science Diary**.

Observe the pictures.



1



2



3

What do you observe in each picture? What is the state of the matter in each picture?

1. Ice : Solid
2. :
3. :

Ice, water, steam (water vapour) are the three different states of the same substance. Which is that substance?

Can water be changed from one state to another?

Take some ice cubes in a beaker and heat it, as shown in the picture.

What are the changes you can see?

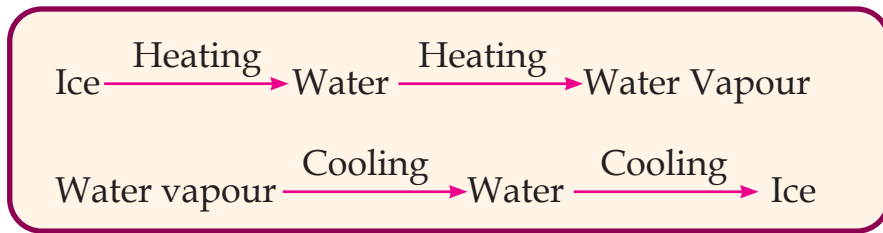
What happens if heated again?

Can water vapour be converted back to ice again?



What needs to be done for that?

Look at the flowchart given below.



Coconut oil is another liquid. Can this also be converted into three states?

Write down examples of substances that change their state upon heating.

- Ghee
-
-



Mercury

Generally most metals are seen in solid state. But mercury is a metal that is seen in liquid form at room temperature. It is used in thermometers, an instrument to measure temperature.

As at the same rate?

Haven't you noticed that wet clothes become dry after some time? What happened to the water in the clothes?

What could be the reason?

Write it down in **My Environmental Science Diary**.



Do all liquids become vapour?

Name the process by which liquids become vapour.

The process by which liquids become vapour is known as evaporation.

Do all liquids vapourise at the same rate?

Do a simple project to find out the difference in the rate of evaporation of the liquids you are familiar with, and present it in class.

We can use liquids like milk, coconut oil, water, sanitizer, etc.

Using a dropper, take five drops of each liquid in identical containers. Keep them all open in the same place and observe.

The objects around us exist in three states:
Solid, Liquid and Gas.

The same substance may be found in more than one state. There are certain common properties for the substances that exist in different states.

Identify the common properties and write it down in **My Environmental Science Diary**.

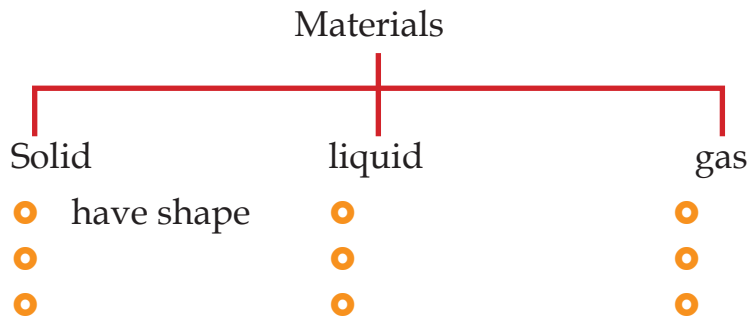


Let's Assess

1. Fix a small candle inside the lid of a ball ice cream cup and light it. Can you keep it burning when placed under the water in a container? Prepare an experimental note.



2. Complete the concept map given below:



3. Observe the different materials around you and understand their properties. Prepare a table by classify them into solid, liquid and gas.



Extended Activities

3. **A doll that makes sound when dipped in water.**

Make a small hole on the cap of a plastic bottle. Fix a whistle tightly into the hole in such a way that it completely seals the opening. After cutting the bottom of the bottle, dip the bottle into the water and observe.

What happens? Why does it happen?

(Paste a picture of a doll on the bottle).

2. Take two transparent plastic bottles of the same size. Fix a balloon on the mouth of each bottle as shown in the picture. Make a small hole on the side of one of the bottles. Then, try blowing air into the balloon inside each bottle.

What difference do you notice? Why?



6

Marvels of sky

"Kadalinappurimengo poyi

Sooryan thaanumarayumbol

Maanathambili poothu vidarnnu

Chuttum thaarakal minnunu"



Have you observed the sky at night?

What are the sights that can be seen in the sky during night? And what about the sights in the sky during day time?

In which direction can the Sun be seen in the morning?

In the evening?

What are the spherical bodies seen in the sky?

What is the shape of the Earth in which we live?

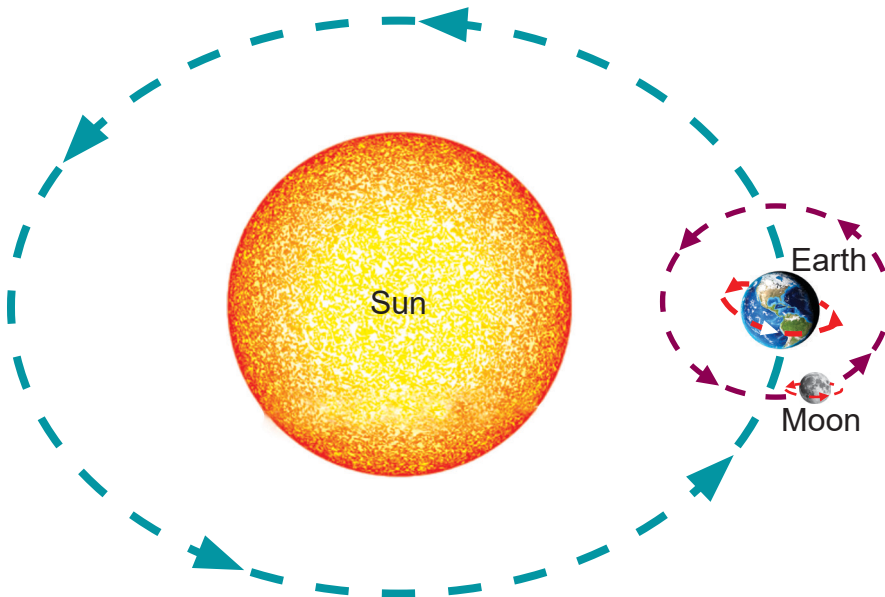
Does the Earth move?
How does the Earth move?

You already know how day and night occur.

Earth moves in its own axis and also moves around the Sun.

Does the Moon move like the Earth?

Let us understand the movement of the Earth around the Sun and the movement of the Moon around the Earth by observing the figure given below:



Conduct a role play along with your classmates, to demonstrate the movement of the Earth around the Sun and the movement of the Moon around the Earth.

The movement of the Earth in its own axis is called **Rotation**.
The movement of the Earth around the Sun in a fixed path is known as **Revolution**.

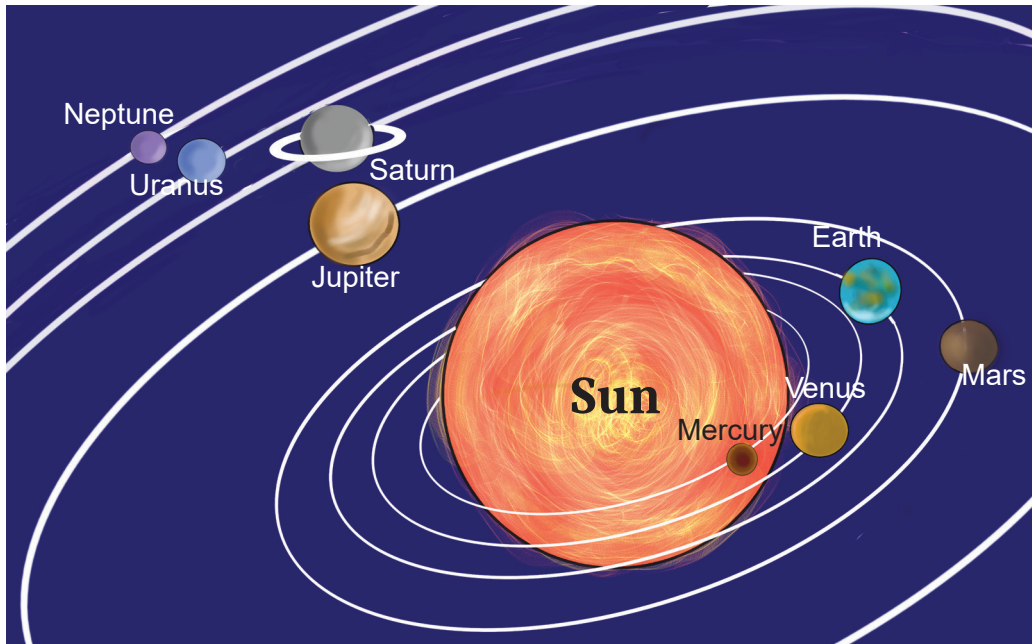
Construct a working model using balls of different sizes, to demonstrate movement of the Earth around the Sun and the movement of the Moon around the Earth.



The time required for one rotation of the Earth is estimated as **one day (24 hours)**. Earth requires **one year (365 1/4 days)** to complete a revolution. Day and night on Earth is the result of its rotation.

Solar system

Observe the picture.



What do you see in the picture?

Which are the celestial bodies that revolve around the Sun?

What are the peculiarities in their path?

The celestial bodies that revolve around the Sun in definite paths, are known as Planets.

How many planets that move around the Sun?

Which planet is the closest to the Sun?

Which planet is the farthest from the Sun?

List out the names of the planets on the basis of their distance from the Sun.



Which celestial body revolves around the Earth?

The celestial bodies that revolve around the planets are known as **Satellites**. Moon is the satellite of the Earth.

Solar system is the system which consists of the Sun, the planets which revolve around the Sun, satellites of these planets as well as many other celestial bodies.

Let's have a trip to the solar system.

What sights can we see there?



View the marvels of the sky using **Stellarium app** and write down your experiences in **My Environmental Science Diary**.

Moon : Satellite of the Earth

Do you see the Moon in the sky?

Does it have the same shape every day in the sky?

What could be the reason?

Let's do an experiment.

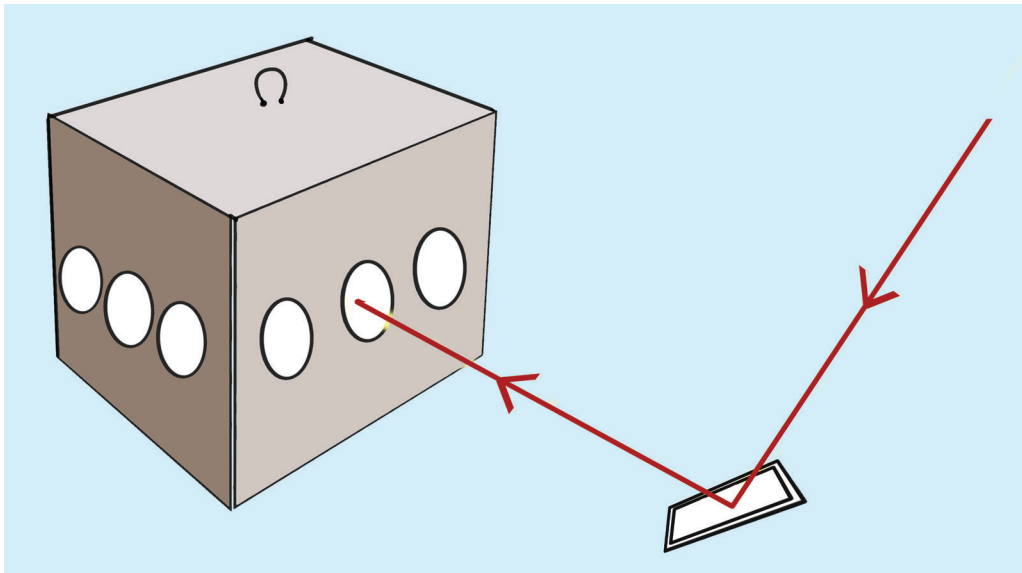
Materials required

A square card board box, ball/lemon, torch/mirror and thread.

Procedure

Take a square cardboard box. Make three holes each having 3 cm size at the centre of all the four sides of the box. Hang a ball or lemon of about 3 cm size in the centre of the box, using a thread. Through any one of the holes in the box, light up the ball/lemon, using a torch/mirror. Observe through the other holes.





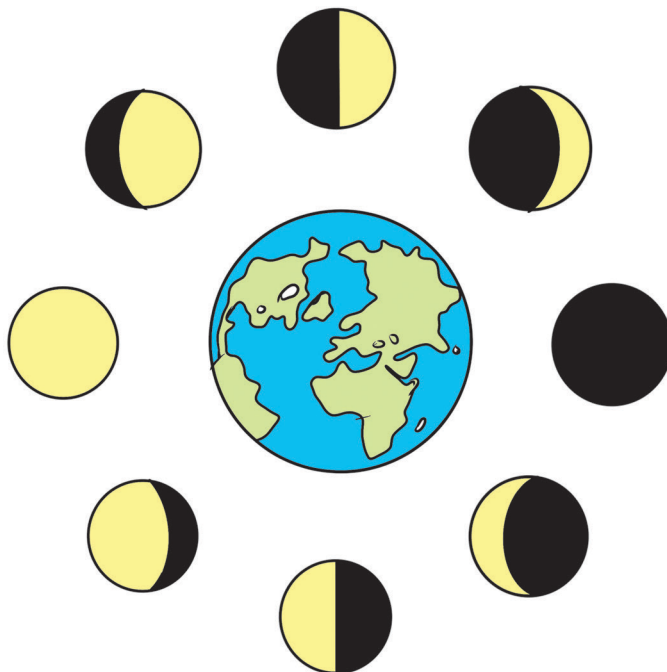
Draw your observations.

Hole	1	2	3	4	5	6	7	8	9	10	11	12
Picture												

Write an experimental note in **My Environmental Science Diary**.
Through which hole can you see the Moon completely?

Through which hole can't you see the Moon at all?

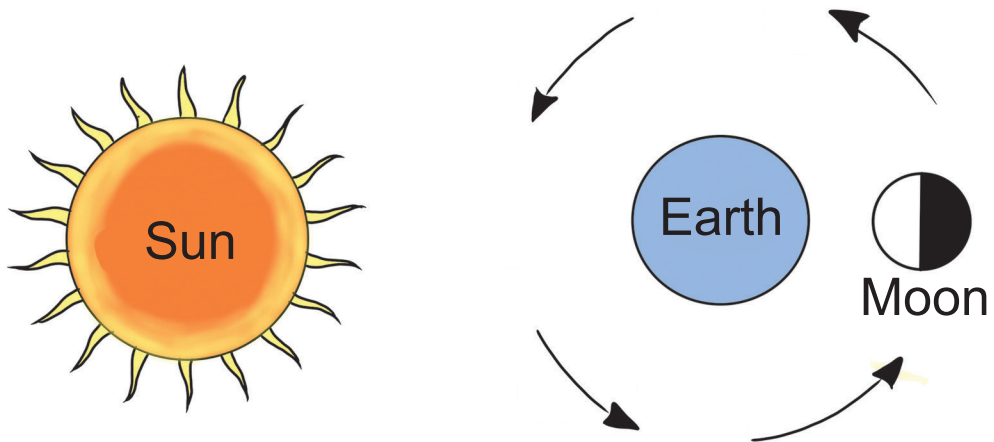
Observe the picture.



The Full Moon is the day in which the entire illuminated part of the Moon is visible from the Earth.

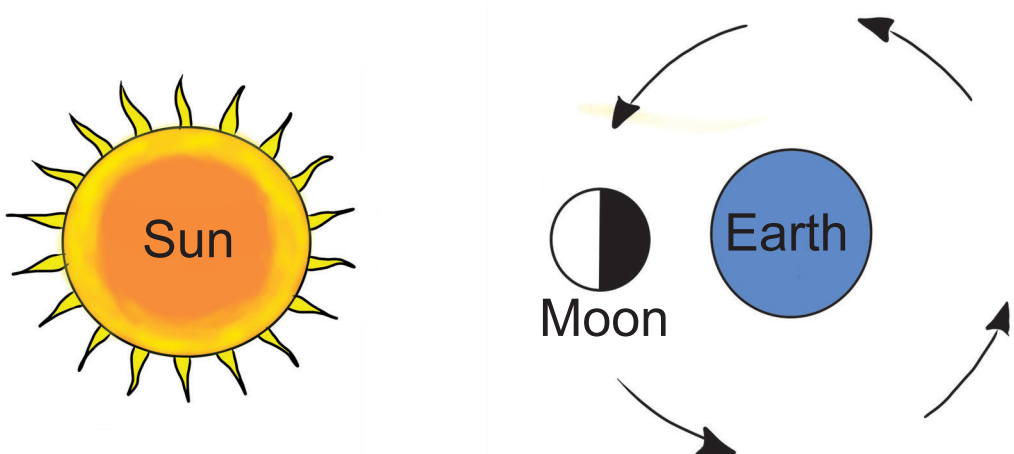
Let's examine the position of the Sun, the Earth and the Moon on a Full Moon day.

Observe the picture.



When the Earth is in between the Sun and the Moon, the illuminated part of the Moon is facing the Earth.

Observe the picture.



When the Moon is in between the Sun and the Earth, the non-illuminated part of the Moon facing the earth appears dark.

The day in which the Moon is not at all visible to us is called New Moon Day.



Find out the reasons for the Full Moon and the New Moon and write it in **My Environmental Science Diary**.

Observe the Moon from New Moon to Full Moon. Try to observe the Moon at the same time every day. Draw the shape of the Moon seen each night.

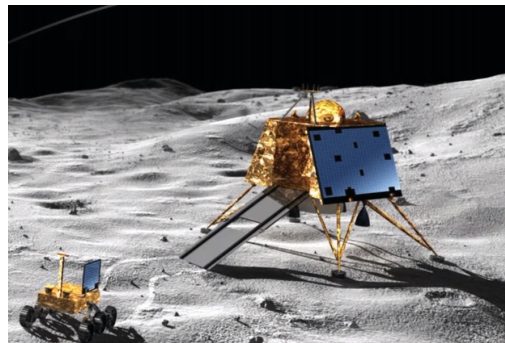
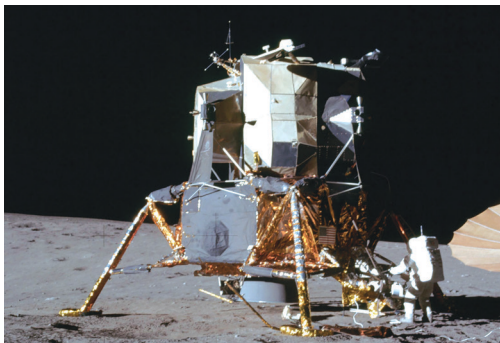
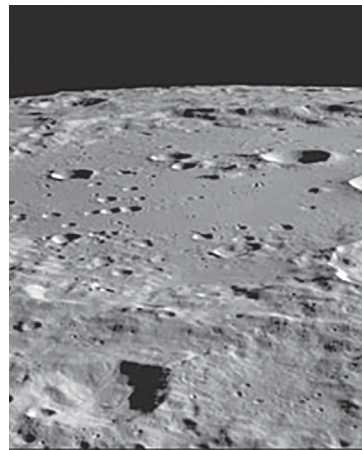
Day	Time of observation	Shape of the Moon
First day		
Fourth day		
Seventh day		
Tenth day		



You can observe the Moon using the Stellarium app also.

To the Moon

Observe the pictures.



Collect more information based on these pictures and discuss it in the class.

Do you celebrate Moon Day in your school?

What activities were carried out in your school related to Moon Day? Collect the details and prepare a magazine.

Let us observe the Moon in the next Full Moon Day. Use Binoculars to observe the Moon. Write down your observations in My Environmental Science Diary.

The Moon is the only celestial body that humans have ever set foot on. It has been discovered that there are many hills and craters on the Moon. Even today, efforts are being made by man to know more about the mysteries related to the Moon.



The scientific study of Moon is known as Selenology. The study of the surface and physical features of Moon is called as Selenography.

Calendar

What is the use of the Calendar?

Write down the names of English months using the calendar in your classroom.

- January ○
- February ○
- ○
- ○
- ○
- ○



In which month of the English calendar does today occur?

Likewise, you know that there are Malayalam months also.

Let's sing a song including the names of Malayalam months.

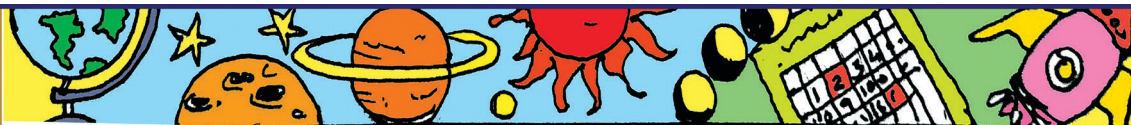


Months and rain

Chinni chinni Chingamazha
 Minni minungi Kannimazha
 Thoorkam nokki Thulamazha
 Vrischikamaayaal kulirumazha

Dhanu-Makarathil manjumazha
 Kumbham Meenam aavimazha
 Medam nedi puthiyamazha
 Puthuvarshathil harshamazha

Idipodi idipodi Edavamazha
 Dhimi dhimi thadhimi Midhunamazha
 Thakkida tharikida Karkidakam
 Thirimuriyaathoru vikruthymazha



Which are the months mentioned in this Rain song?

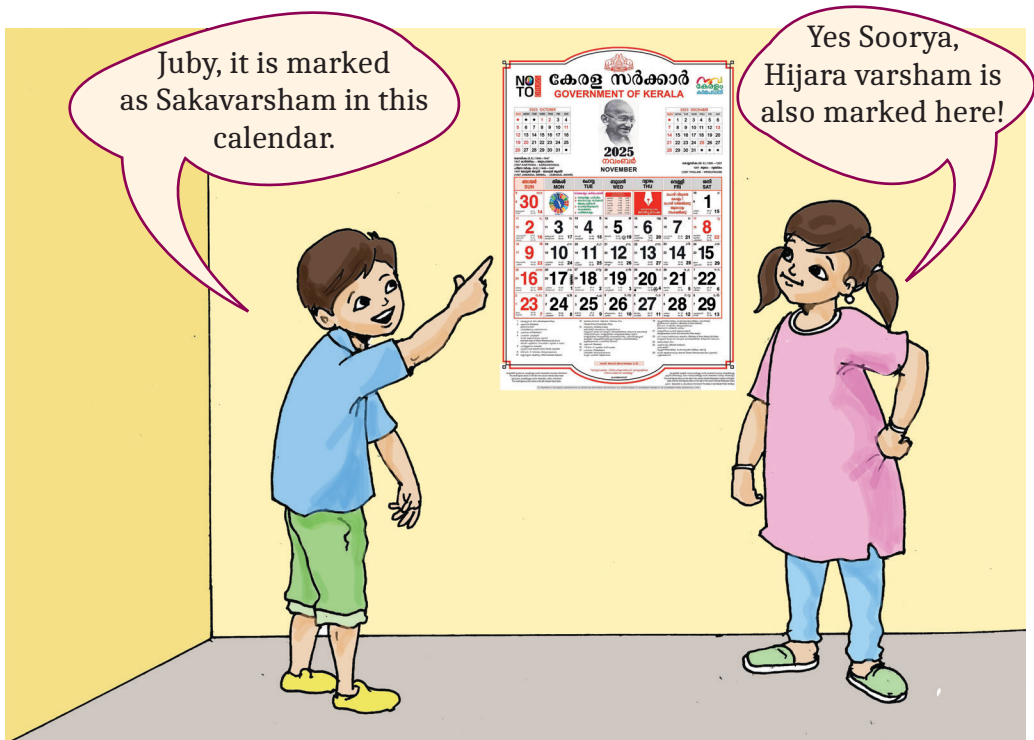
- Chingam
- Kanni
-
-
-
-
-

These are the Malayalam months that come under the *Kollavarsha* calendar.

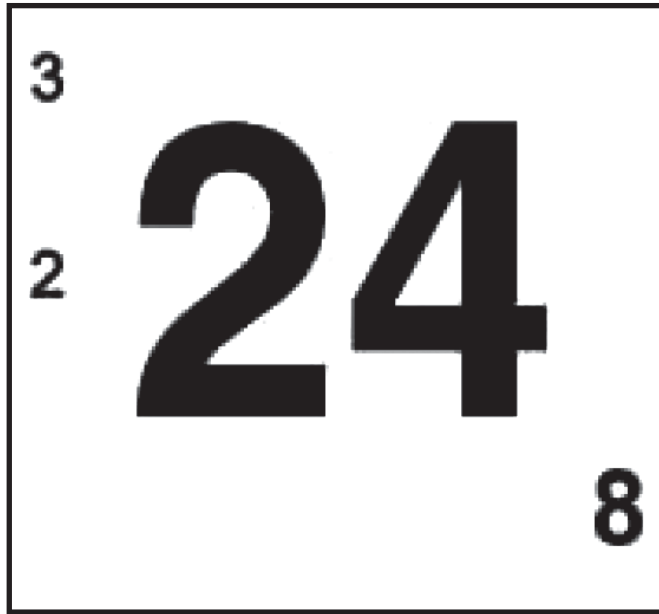
Name the Malayalam months by referring the calendar.

In which month of the *Kollavarsha* calendar does today occur?

Listen to the conversation between Juby and Soorya.



Let's examine the numbers in a column of the calendar for the month of November 2025, to clarify the doubts of Juby and Soorya.



Which is the date in the column given above?

Which are the other numbers in the column? What do they represent?

- 24 - English calendar (Gregorian) - 2025 November
- 8 - *Kollavarsham* - 1201 Vrischikam
- 3 - Shaka year - 1947 Agrahayana
- 2 - Hijara year - 1447 Jamad-ul-Akhir

The other numbers given in smaller font size in the column of the English calendar represent the day in *Kollavarsham*, Shaka year and Hijara year.



Observe today's date in the calendar and complete the following table.

Calendar	Year	Month	Day
Gregorian year			
<i>Kollavarsham</i>			
Shaka year			
Hijara year			

Mark true/false using (✓/ x) symbols.

- Each calendar has months with different names. ☐
- The number of months in the *Kollavarsha* calendar and Gregorian calendar are different. ☐
- Shaka year is another name for *Kollavarsham*. ☐
- English calendar is also known as Gregorian calendar. ☐
- Malayalam months come under *Kollavarsham*. ☐

Using calendar of the current year, find out the number of days in the months of English calendar and *Kollavarsha* calendar.



Sl no.	English calendar		Kollavarsha calendar	
	Month	Number of days	Month	Number of days
1	January	31	Chingam	31
2	February		Kanni	
3	March		Thulaam	
4	April		Vrishchikam	
5	May		Dhanu	
6	June		Makaram	
7	July		Kumbham	
8	August		Meenam	
9	September		Medam	
10	October		Idavam	
11	November		Midhunam	
12	December		Karkidakam	

Let's prepare questions based on the completed table.

- In which month does the Malayalam year (*Kollavarsham*) begin?
- Which month in the English year has the least number of days?



- Which months have equal number of days in Gregorian year and *Kollavarsham*?
-
-
-
-
-
-

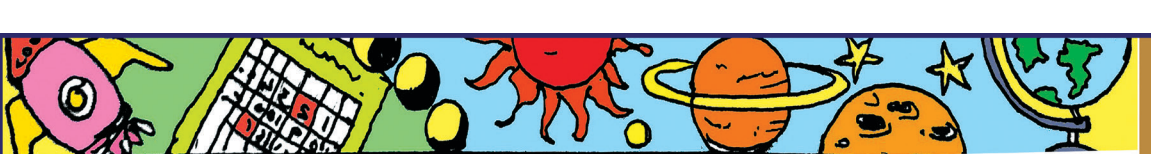
Dividing the class into different groups, conduct a quiz based on these questions.



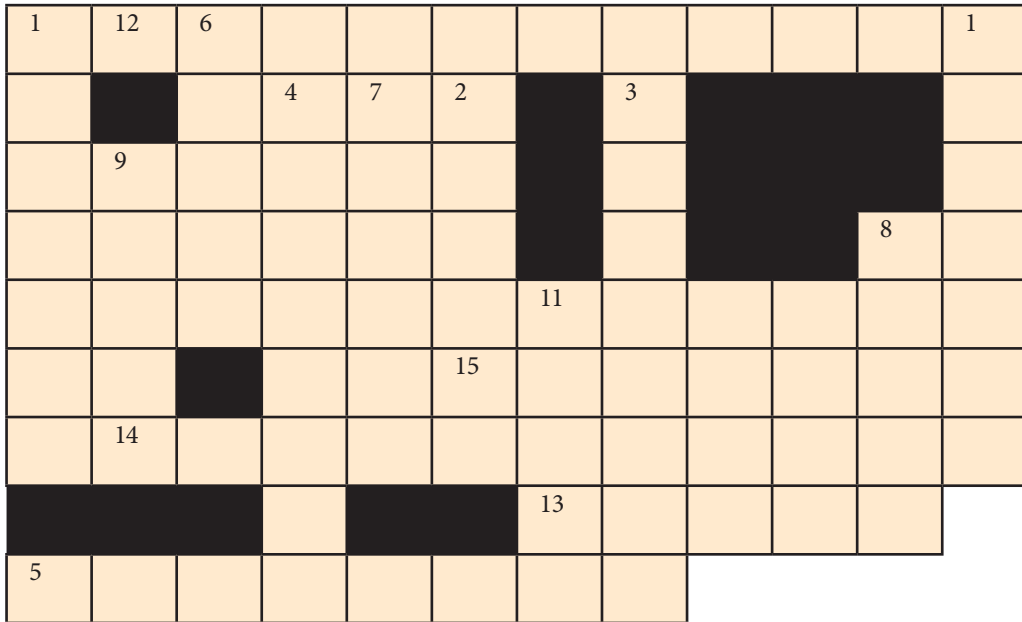
Let's Assess

1. Logically connect the terms given in the following table.

Satellite of the Earth	24 hrs
November	365 $\frac{1}{4}$ days
Planets in the solar system	Jupiter
Rotation of the Earth	30 days
One year	Moon
Biggest planet in the solar system	8



2. Complete the puzzle and prepare your own puzzles from the unit.



Down

1. The day in which we can't see the Moon at all
2. The planet which is closest to the Earth
3. The movement of celestial bodies in its own axis
4. The celestial bodies that revolve around the Sun in a definite path
6. The planet in which we live
7. The Malayalam month in which we celebrate Vishu
8. A month in *Kollavarsham* (5 letters)
9. The month in which the schools reopen in Kerala
10. The first month in the Gregorian calendar

To the right

5. The day in which we can see the entire illuminated part of the Moon
11. A planet
12. The movement of celestial bodies around the Sun
13. The satellite of the Earth
14. The celestial body that moves around a planet
15. The planet with rings

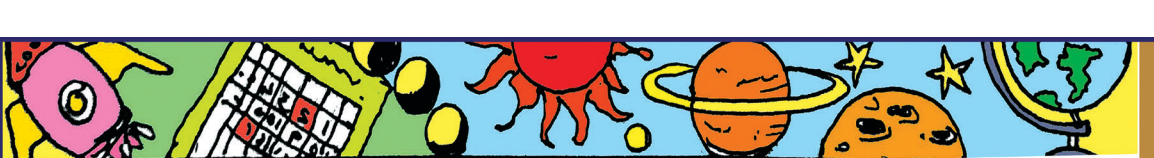


3. Using the calendar identify in any one of the months, in which the days marked as Full Moon and New Moon.



Extended Activities

1. The Moon is a celestial body that makes us very happy. Studies about the Moon and journeys to the Moon are still continuing. Collect information about Lunar missions and prepare a magazine.
2. Collect news and pictures from the media about space missions and prepare a digital album.
3. Construct models of rockets using materials around us.

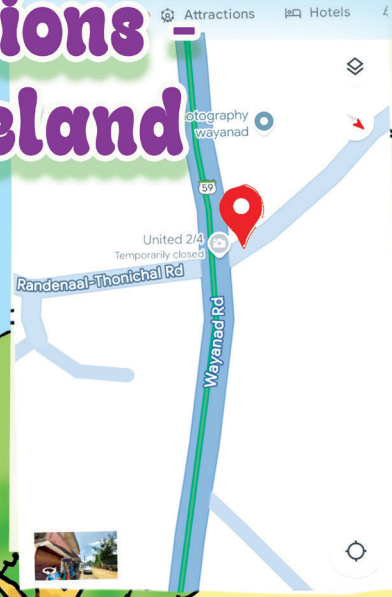


7

Know the Directions Know our Homeland

Daughter,
I think we have lost
our way.

Shall we
check the GPS,
Mom?



You might have noticed the use of GPS (Global Positioning System) to find the way while travelling.



Global Positioning System (GPS) is a satellite-based system that provides users with information about their location and time.

What were the methods we used to find the routes before GPS came into use?

- by asking others
-
-

Before the implementation of modern systems, we depended on directions, in order to find out routes and to determine the location.

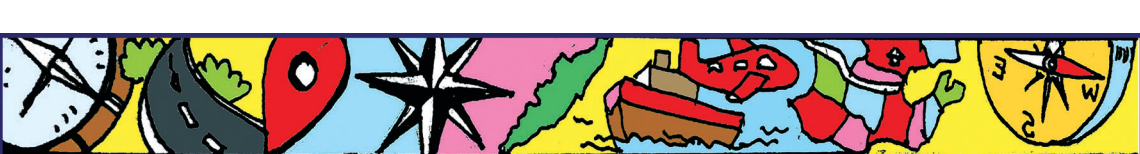
Which are the different directions that you know?

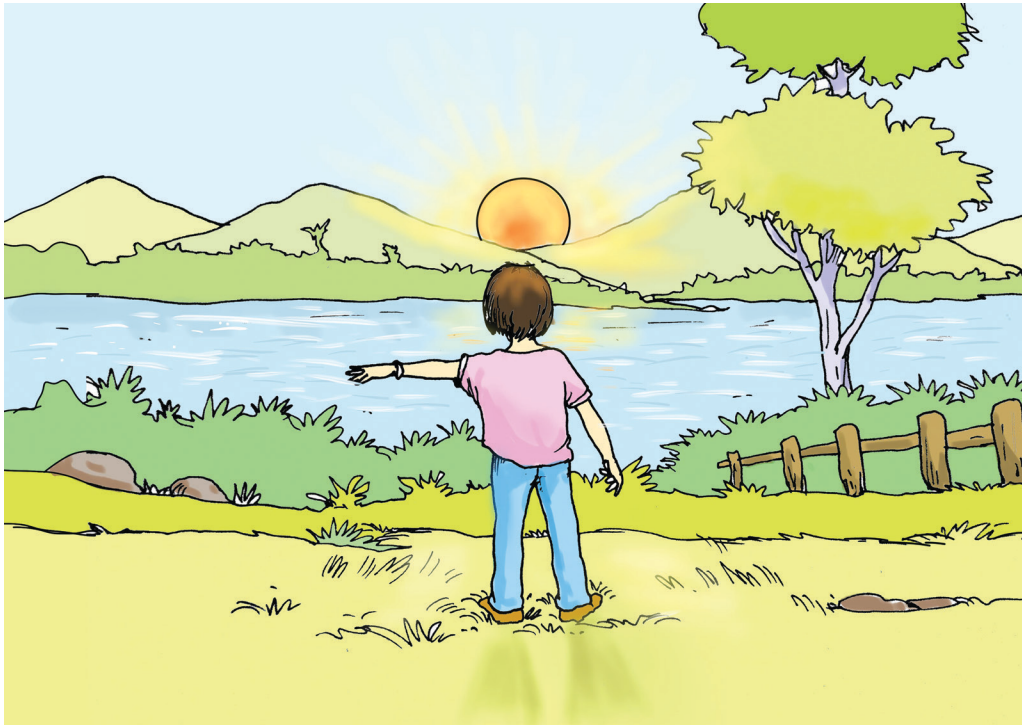
- East
-
-
-

What are the methods used to find the direction?

- observing the position of the Sun
- observing shadows
- observing certain Stars
-
-

Let us see how Ahana finds the directions based on the position of the rising Sun.





In which direction does the Sun appear to rise?

To which direction is Ahana facing?

Which direction is behind Ahana?

Which direction is on the left side of Ahana?

Then, what about the direction on her right side?

How can we find the directions when the Sun is not visible to us?

Magnetic Compass

Magnetic Compass is an instrument used to find out the directions. There is a magnetic needle in the centre of the compass. This needle always points in the north-south direction. The specifically marked tip of the needle indicates the north direction.



Shall we help Rahan to find the directions using a compass?

Let us find out the direction towards which Rahan is facing.

When we observe the needle in the compass which Rahan holds, it can be seen that he is facing the South.

Which is the direction on Rahan's left side?

Name the direction on Rahan's right side.

Like wise, try to find out the directions of your classroom using a compass.

In which direction is the blackboard in the classroom?

In which direction is the door of the classroom?

In which directions are the windows of the classroom?

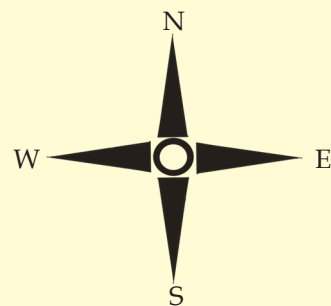
Let us mark the directions

We have already found out the directions of different objects in our classroom. Let us draw a sketch of the classroom.

How are the directions marked when you make a sketch?

Stand facing the north. Place the paper in north south direction and mark all the four directions.

While drawing the sketch on paper, mark the north on the topside of the paper, south on the bottom side, east on the right side and west on the left side. The directions should be marked using the given symbol.



**Represent the objects
in the classroom
using the symbols
given below.**

-  Blackboard
-  Window
-  Door
-  Desk
-  Bench

Let us find out



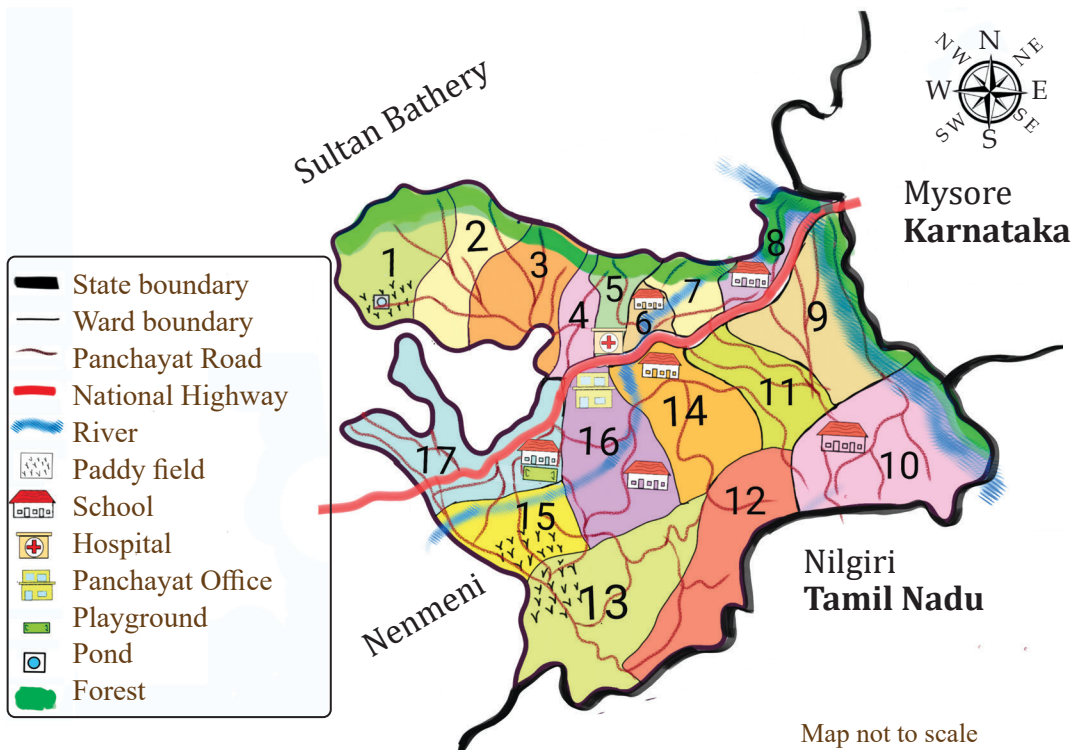
Observe the picture given above and find answers.

- In which direction of the school is the library?
- In which direction of the post office is the library?
- In which direction should Ahana and Rahan travel to reach the hospital from their houses?
- In which direction of Rahan's house is the school?
- In which direction of the school is the hospital?
Is it exactly on the East?

Frame more questions.



Map of Noolpuzha Grama Panchayat



Let us observe the map of Noolpuzha, the Grama Panchayat in Kerala which shares its border with both Tamil Nadu and Karnataka.

There are 17 wards in Noolpuzha Grama Panchayat.

Which are the wards that have schools?

Which are the wards that have Paddy cultivation?

In which ward is the hospital situated?

Which are the wards through the river flows?

Frame more questions.

From the map, what helped us to find out the school and paddy fields?



There are signs and symbols to mark buildings, water bodies, modes of transport, agricultural resources, forests, and wildlife sanctuary in a map. These are known as index of a map.

Examine the map and list out the features of each ward.

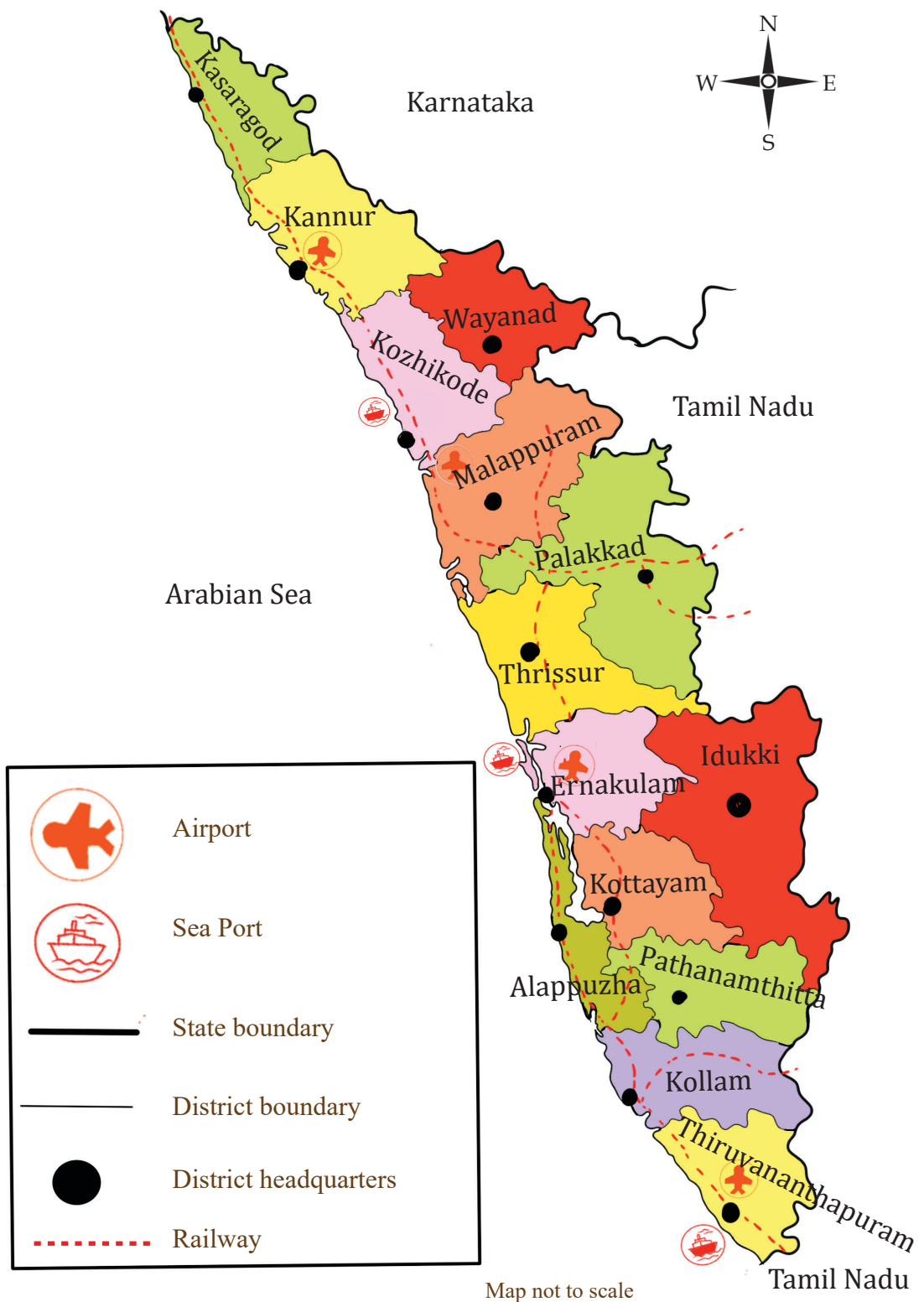
Ward	Features
1	Paddy fields, Forest areas
2	
3	

Examine the map of the Grama Panchayat in which your school is located and find out the features.



Through Kerala

Examine the map given below.



In which direction of Kerala State is the Arabian Sea?

Name the district at the southern end of Kerala.

Which of the districts have airports?

Which of the districts have seaports?

Which of the districts do not have railway lines?

Which of the districts share their borders with Tamil Nadu?

Which of the districts have seashores?

Prepare a handwritten magazine about Kerala, based on the information collected.

Rivers of Kerala

Kerala is a land with plenty of paddy fields, streams, rivers, backwaters, and lakes. They enhance the charm of our State.

There are forty-four rivers in Kerala. Forty one rivers flow towards the west and three rivers flow to the east.

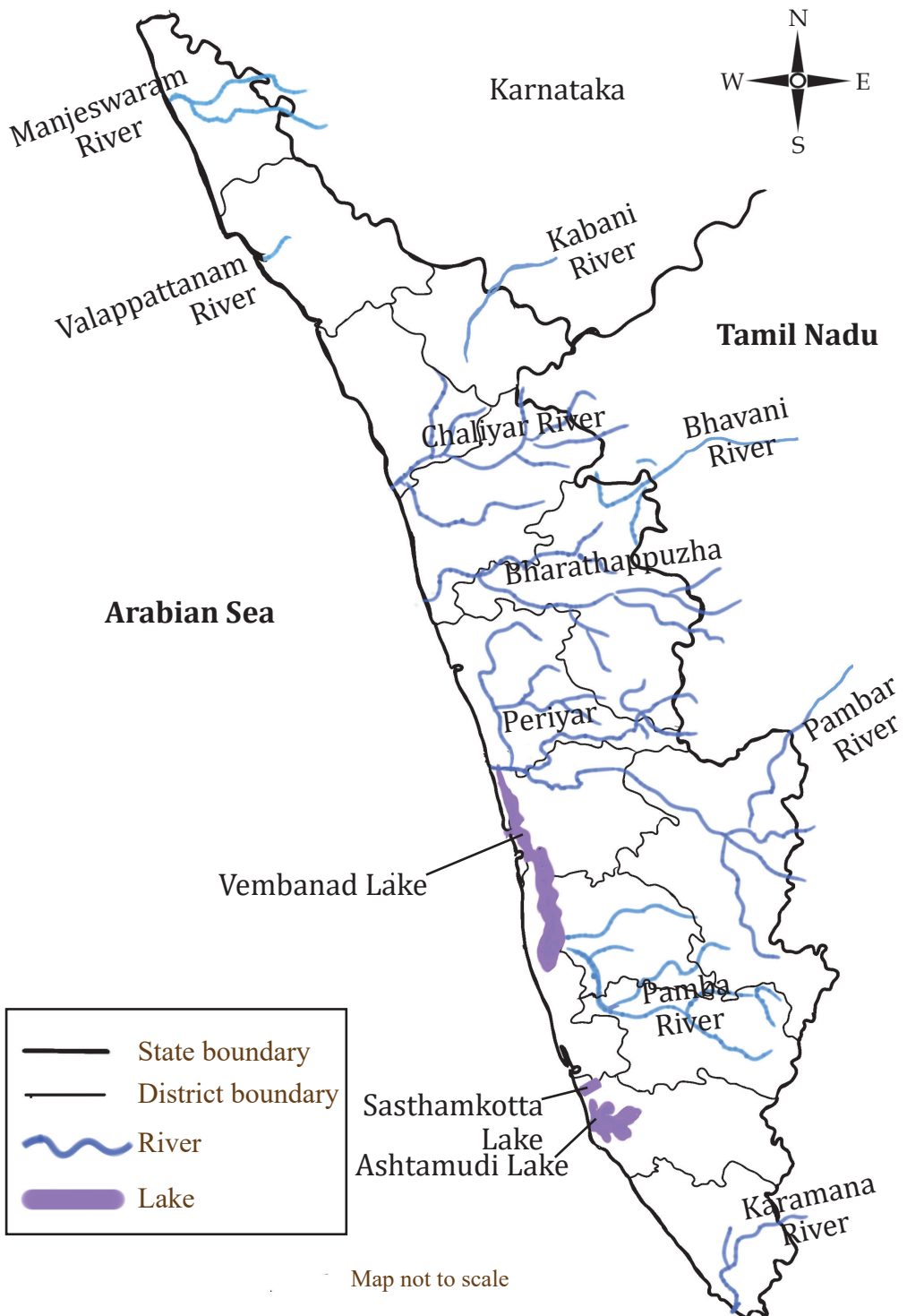
Using the map given in the next page, find out the rivers that flow to the east and the districts from which they originate.

Why do most of the rivers flow towards the west? Discuss.

Backwaters/Lakes

There are thirty four backwaters in Kerala, among them some are larger than others. Out of these, twenty seven are connected with the sea and the remaining seven are inland backwaters.





Which are the rivers flowing through more than one district?

Which are the rivers that flow through one district only?

Are there any differences between rivers and lakes?

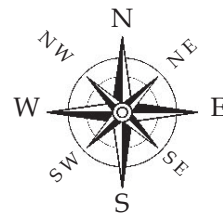


River	Lakes
Flowing at length	Spread wide across an area



Let's Assess

1. Observe the picture and make a '✓' mark against the most appropriate option.



- a) In which direction of the college is the museum situated?
(South-east, South)
 - b) In which direction of the park is the pond located?
(North, North-east)
 - c) In which direction of the police station is the college situated?
(North, North-west)
2. When a person is looking at a map, to which direction on the map does his right side point to?
(East, West, South, North)
 3. How many other schools are there in the Grama Panchayat in which your school is located?
 4. Liya is travelling with her family from Thiruvananthapuram to Kozhikode by train. In which direction are they travelling?



Extended Activities

1. Collect the map of your Grama Panchayat and mark public institutions, playgrounds, main roads, rivers, railway lines, agricultural lands, forest areas and the like.
2. Find out the major rivers and lakes in your district and mark them on the map.



Yesteryears and Now...

8

Grand father,
was my school a
thatched shed with
bamboo ply walls
in the past?

Yes dear.
At that time the
floor of classrooms
were not concreted
and usually fine
soil dust covered
the floor.



My school

My school was established by the people of the village in 1954. The first building was built using locally available materials such as dried coconut leaves and the wood of areca palm. At that time, the school started functioning by appointing educated persons of the village itself as teachers. In those days, people had to walk long distances to attend school. It was not possible for everyone to do so, and hence many of the villagers could not attend school.

The school was taken over by

the Government in 1964. Later, more buildings were built for the school. During that time, a bridge was built across the river in the village which helped more students to attend the school. During that time, half of the classes were held in the morning and the remaining in the afternoon because there were not enough number of classrooms. This system continued for many more years.

*The support obtained for writing
the history of the school*

*Teachers, elders, ward members,
school magazine and school documents.*

You've read the history of the school, prepared by Sonu.

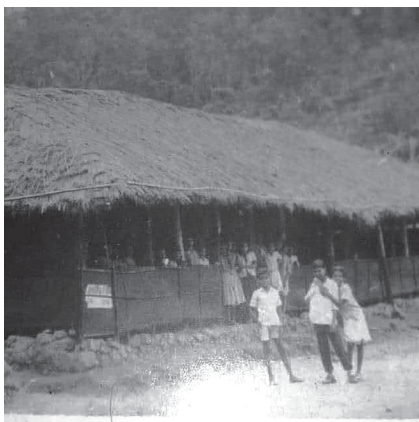
- What all incidents have been mentioned in the school history written by Sonu?
- In which year was the school established?
- How was the first building built?
- Who were the first teachers?
- What were the benefits of constructing the bridge across the river?
-
-

What additional information is to be added to complete Sonu's school history?

- Further development of the school
- Current features of the school.
- Changes in the locality
-
-

Likewise, collect information group-wise about the history of your school and write the school history in **My Environmental Science Diary**.

Development of the school as well as the homeland



School - then



School - now



What are the changes that have happened to schools nowadays?

- concrete buildings
- classrooms with modern facilities
- drinking water facilities
- bio-diversity garden
-
-
-

In your locality, have such changes occurred only to schools?

Observe the changes that have occurred to houses from yesteryears to now.



Prepare a report about the facilities present in modern homes.

-
-
-

You may have noticed the main roads in your place. How broadly and strongly they are built!

Were there roads like this in the past?



Observe the pictures and find out the differences between the roads of the past and the present.



What are the differences seen between roads of earlier times and those of today?

-
-
-

In earlier times, people used to travel through alleys, the ridges of fields, and the like.

Bullock carts and horse carts were the vehicles used in those days and they moved through mud roads.



Main roads and vehicles in yesteryears

Roads of earlier times are now undergoing changes to four lane and six lane roads.



Observe the pictures and discuss the different modes of transport used in earlier times.



Palanquin – to be carried by people



Canoe - moves by rowing



Sailboat - moves using the wind



Cycle rickshaw-Pedalled by the rickshaw puller

Observe these pictures and write the name of the vehicles that we use currently.



Now we have come to understand that there are even seaplanes that move both in water and air.

Apart from these, what are the other vehicles that we use now?

Find out and write.

- Helicopter
-
-

Find out the path of movement and use of the vehicles listed below and complete the table.

Number	Vehicle	Where do they move	Use
1	Car	By road	To travel
2	Lorry	-----	To bring cargo/ goods
3	Aeroplane	-----	To travel
4			
5			
6			

Observe the pictures and discuss the changes that have taken place in water transport.



Discuss with elders about the changes that have happened to rivers, lakes, and backwaters and write a note about this in **My Environmental Science Diary**.

Tremendous changes have occurred in vehicles over the time!

Let us look into the periodical changes that have taken place in the case of cars.



2025



2000



1984



1957



1940



1910

At present, the design and manufacture of vehicles are taking place in a rapid pace.

We use different modes of transport for travelling across the globe through land, water and air as well as for transporting materials to different parts of the world.

Schools and houses have been equipped with modern facilities. Roads have become excellent in quality. Smart roads have also been constructed recently. Different types of vehicles were introduced. Their number is also increasing. All these have upgraded our transportation as well as the standard of living.



Look at these pictures.



Palm leaf manuscript



Copper plate manuscript



Stone manuscript

Before the invention of paper, people used to write on palm leaves, copper plates, and stone.

Find out the improvements in writing tools from olden times to the present time.

Which were the tools that people used for writing in earlier times?



Metal stylus



Feather pen



Ink pen



Ball point pen

All the devices we used today are human inventions.



Innumerable discoveries!

Observe the pictures.



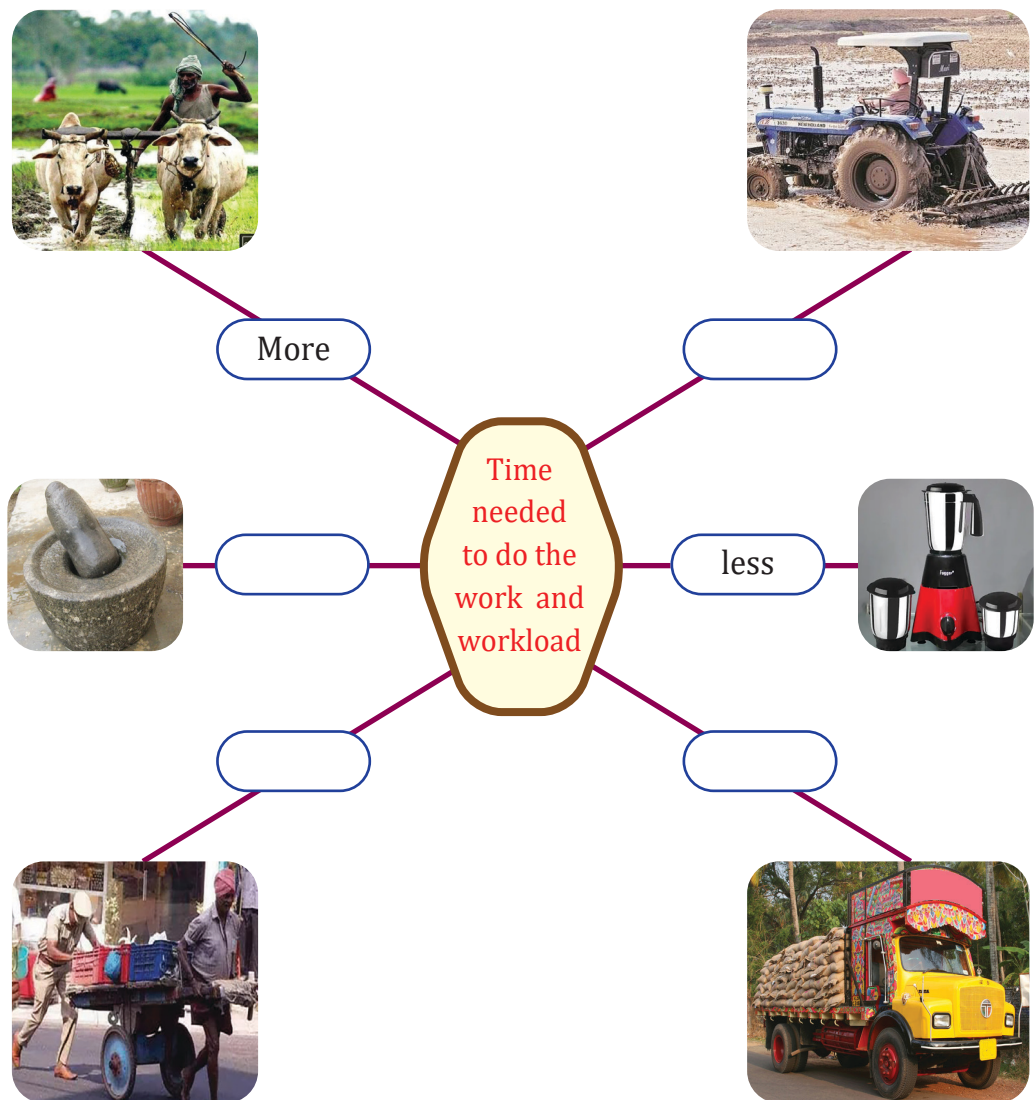
Write the uses of the devices shown above.

- Hose pipe :
- Washing machine :

Prepare a table of modern devices that we use in our houses to make our work easier.

Devices	Use
○ Fan	○
○ Gas stove	○
○	○
○	○
○	○

Examine the given concept map and fill in the gaps.



Find out more examples and write them.

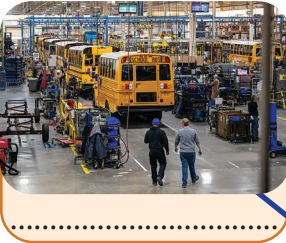
Make a table of useful devices that you are familiar with. What are the advantages of those devices? Discuss and write.

Number	Devices	Advantages
1	Motor pump	Distributes water from one place to another, in an easier and faster manner.
2	Smart Phone	
3	Robot	
4		
5		



- Now, machines do the work that was done earlier by humans or animals.
- New inventions help us to save time in addition to making work easier.

Haven't you travelled by bus? Buses are manufactured in huge factories. Workers do different types of jobs in factories. Do you know the different types of works associated with the bus? Observe the picture and write.



Mechanic



Pump employee



The service of many people is required for the production of tools and machines as well as for making them available for the beneficiaries.

Aren't there more jobs associated with buses?



Different types of works like painting, cleaning and greasing are required for the functioning of a bus. Each of these jobs is important. Workers who do these jobs are also important.

All jobs are significant and great. So there should not be any discrimination among workers doing different types of jobs.

Observe the pictures.



What are the uses of the devices given in the pictures?

- Vacuum cleaner : to clean rooms
-
-
-

Name the devices you are familiar with. What are the jobs related to them? Complete the table by adding more devices and the related jobs.

Number	Device	Related jobs
1	Television	Business, TV mechanic
2	Camera	Business, Camera man
3	Wood cutting machine	
4		
5		
6		
7		

Inventions of new tools and machines have led to the creation of new jobs.

Television, mobile phones and the like, help us to know about the events happening in any part of the world.

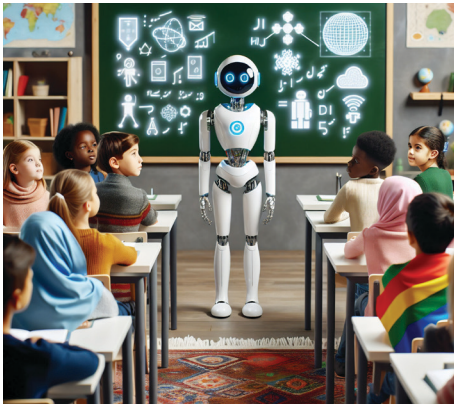


With the help of internet isn't it possible to use devices such as mobile phone, computer and the like, to see and talk to people who are far away?

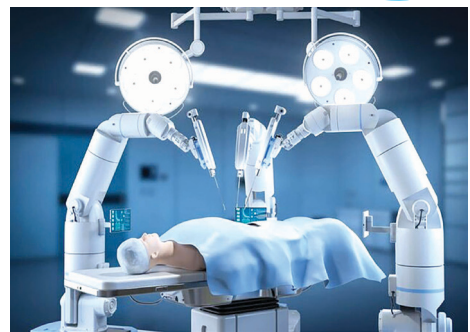
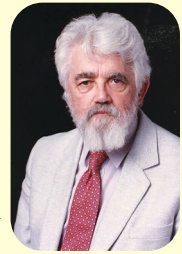
Each invention has made huge changes in human lives and in the world. Inventions are important events in history.



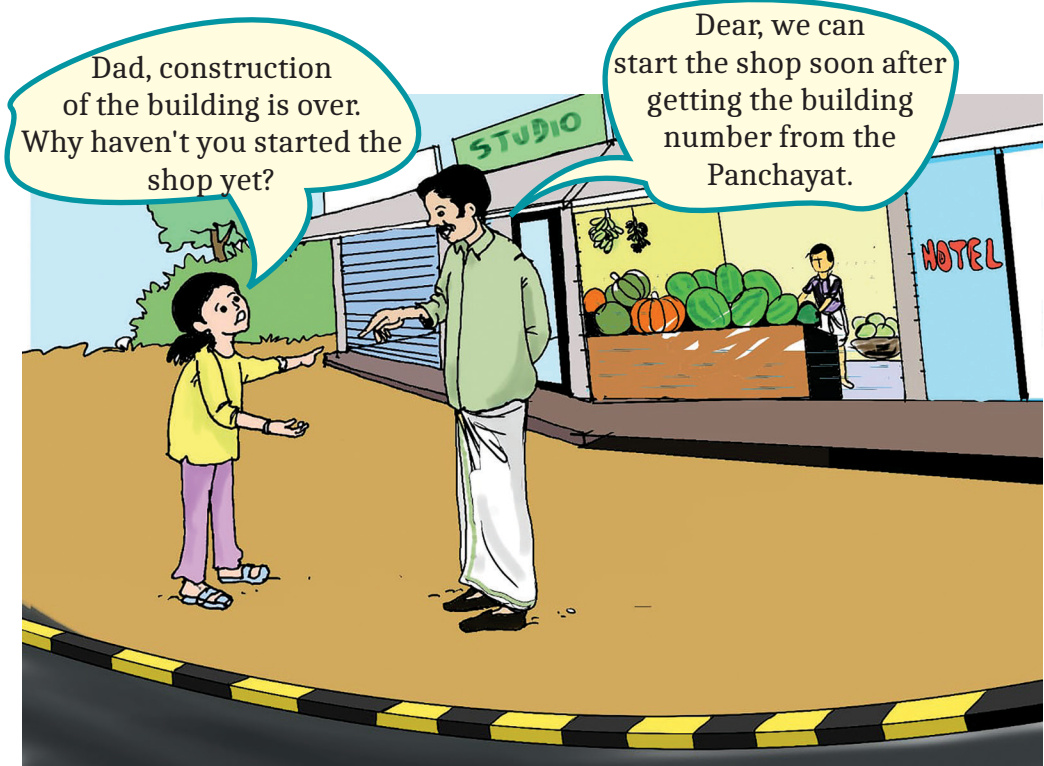
Invention of Artificial Intelligence (AI) has been leading to major changes. Observe the given pictures and find out the different fields in which artificial intelligence is used.



An American computer scientist John McCarthy is hailed as the father of Artificial Intelligence (AI).



Local Self Government



Haven't you seen the card on which your house number is written? What are the information that can be understood from this card?



My Panchayat/Municipality (Corporation)

Municipal Corporation :

My ward number :

My house number :

Collect information from similar cards of your friends and complete the table.

Sl. No.	Name	Ward	House Number	Panchayat/Municipality/Municipal Corporation
1				
2				
3				
4				
5				

Find out details like this related to your school.

Panchayat/Municipality/
Municipal Corporation in
which my school is located :

Ward in which the
school is located :

School building number :



All buildings in a ward
have building number.

From where did you get the numbers to buildings and houses?

Which fulfils the common needs of the people in a locality and decides on future actions?

Which self-governing body controls the activities in a village?
Which authority manages these activities in cities?

The **Local Self-Government** is responsible for fulfilling the common needs of the citizens and deciding on future actions. The Local Self-Government in villages is the **Grama Panchayat**. In towns, they are known as **Municipality**. In cities, which have more population than towns, it is known as **Municipal Corporation**.

Let us learn the title given for the administrative head of Local Self-Governments.

Local Self Government		Title of Administrative Head
Panchayath	→	President
Municipality	→	Chairperson
Corporation	→	Mayor



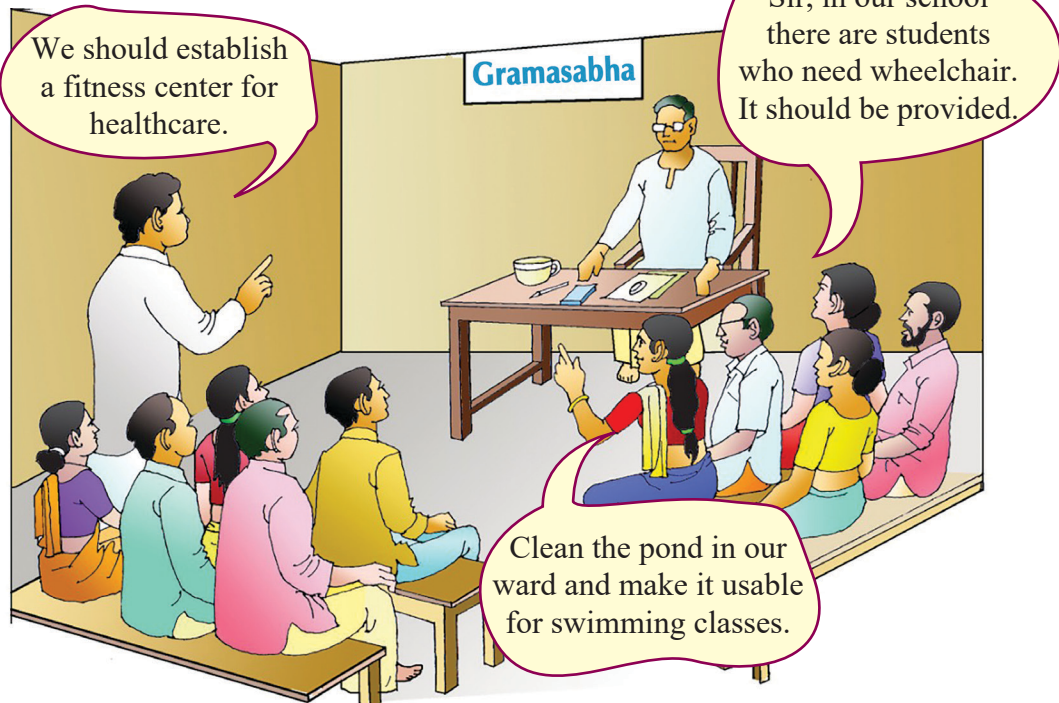
Find out the name of the administrative head of your Local Self-Government.

My Local Self-Government		Administrative Head
Village	Panchayat	
Town	Municipality	
City	Municipal Corporation	

Governance of panchayats, municipalities, and municipal corporations, are done by those who are elected from different wards through election. Observe the pictures related to election. Write what each picture represents.



Gramasabha / Wardsabha





Facilities such as lift, ramp and rail and special washrooms are needed in all schools and public places so that all differently abled individuals are provided with equal opportunities.

Haven't you noticed the history museum near the Panchayat Office?

What can we see in a History museum?

- Traditional household appliances, musical instruments
- Ornaments and clothes used in earlier times
- Coins and weapons of earlier times
- Pictures and details of historical struggles
-
-

Such museums help us to understand the history of a place.



Observe the picture.

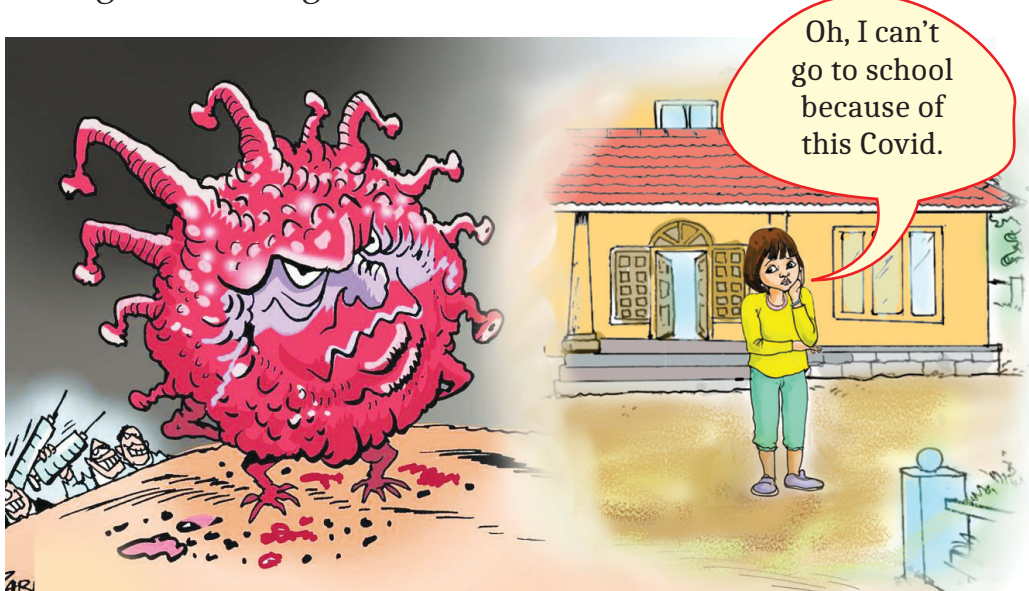


The picture is related to a struggle that took place in our country against the British.

Many people suffered under the cruel attacks of the British and many lost their lives while taking part in the freedom struggle. You may remember what we learnt earlier.

Have such incidents happened in your place? Discuss with elders and collect information.

Don't you remember the Covid Pandemic and lock down period, during which villages and cities were shut down?



Were there such pandemics in the past?

Pandemics like COVID have occurred in the past also. Many people have died due to cholera, plague, and smallpox.

Such pandemics, struggles, inventions as well as the disasters and changes that happened in a place over the time make the history of that place.

Collect data regarding the history of your place by discussing with elders . Prepare a note and present it in the class.

You can also collect

You can also make a collection of information and pictures related to history.

What are the things you can collect?

- Coins of earlier times
-
-
-
-
-

Set up a history museum in the school including your collections.





Let's Assess

- Find out whether the following facilities are available in your school.

School facilities	Yes/No
Strong and secure building	
Good kitchen	
Drinking water facility	
Transportation facility	
Play equipments	
Computer, internet	
Nutritious breakfast/ lunch	
Biodiversity Park	
Library	
Lab	
Play ground	
Environmental science corner	
Mathematics corner	

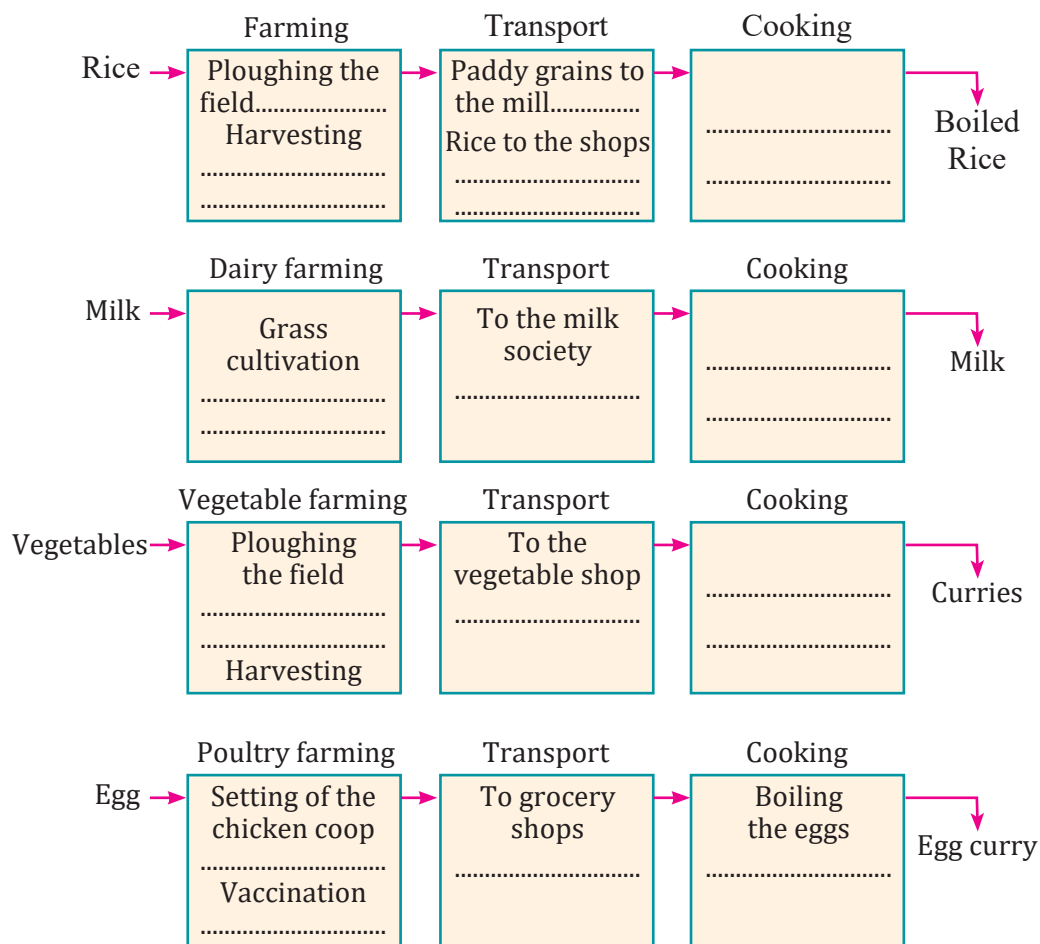


2. Put a tick mark (✓) in the right statement given below:

- My school has enough play equipments. Yes/No
- My school has water purification facility. Yes/No
- We make use of the Biodiversity Park in our school for doing experiments and observations. Yes/No
- The local self government has the power to impose fine on people who pollute rivers and ponds. Yes/No
- In the past, birds were used for sending messages. Yes/No
- With the invention of motor pumps it became easier to transport water from one place to another. Yes/No
- In the past, fewer people died from contagious diseases. Yes/No
- Invention of new devices and machines led to the creation of new types of jobs. Yes/No

3. There are different processes and steps in the preparation of food of us. Complete the concept map given below.





4. Complete the table.

Inventions/devices/vehicles	Uses
Train	More people can travel; large scale transportation of goods
Vaccine	
Aeroplane	
Refrigerator	
Thermal container	
Internet	





Extended Activities

1. By discussing with elders, make a note on the changes that happened over the time to the schools, roads and buildings in your locality.
2. Visit the panchayat office or municipal office near your school. Ask the staff and understand about the different activities of that office.
3.
 - a) What can be the modifications that can happen in future to the devices used currently?
 - b) After a few years, what changes may take place in the design of school bags? Prepare a creative note on this.



CONSTITUTION OF INDIA

Part IV A

FUNDAMENTAL DUTIES OF CITIZENS

ARTICLE 51 A

Fundamental Duties- It shall be the duty of every citizen of India:

- (a) to abide by the Constitution and respect its ideals and institutions, the National Flag and the National Anthem;
- (b) to cherish and follow the noble ideals which inspired our national struggle for freedom;
- (c) to uphold and protect the sovereignty, unity and integrity of India;
- (d) to defend the country and render national service when called upon to do so;
- (e) to promote harmony and the spirit of common brotherhood amongst all the people of India transcending religious, linguistic and regional or sectional diversities; to renounce practices derogatory to the dignity of women;
- (f) to value and preserve the rich heritage of our composite culture;
- (g) to protect and improve the natural environment including forests, lakes, rivers, wild life and to have compassion for living creatures;
- (h) to develop the scientific temper, humanism and the spirit of inquiry and reform;
- (i) to safeguard public property and to abjure violence;
- (j) to strive towards excellence in all spheres of individual and collective activity so that the nation constantly rises to higher levels of endeavour and achievements;
- (k) who is a parent or guardian to provide opportunities for education to his child or, as the case may be, ward between age of six and fourteen years.

CHILDREN'S RIGHTS

Dear Children,

*Wouldn't you like to know about your rights? Awareness about your rights will inspire and motivate you to ensure your protection and participation, thereby making social justice a reality. You may know that a commission for child rights is functioning in our state called the **Kerala State Commission for Protection of Child Rights**.*

Let's see what your rights are:

- Right to freedom of speech and expression.
- Right to life and liberty.
- Right to maximum survival and development.
- Right to be respected and accepted regardless of caste, creed and colour.
- Right to protection and care against physical, mental and sexual abuse.
- Right to participation.
- Protection from child labour and hazardous work.
- Protection against child marriage.
- Right to know one's culture and live accordingly.
- Protection against neglect.
- Right to free and compulsory education.
- Right to learn, rest and leisure.
- Right to parental and societal care, and protection.

Major Responsibilities

- Protect school and public facilities.
- Observe punctuality in learning and activities of the school.
- Accept and respect school authorities, teachers, parents and fellow students.
- Readiness to accept and respect others regardless of caste, creed or colour.



Contact Address:

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Website : www.kescpcr.kerala.gov.in

Child Helpline - 1098, Crime Stopper - 1090, Nirbhaya - 1800 425 1400

Kerala Police Helpline - 0471 - 3243000/44000/45000

Online R. T. E Monitoring : www.nireekshana.org.in