



State Council of Educational Research and Training
Telangana, Hyderabad

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ENVIRONMENTAL STUDIES



FREE

WE - OUR ENVIRONMENT

CLASS-V



Published by
The Government of Telangana
Hyderabad

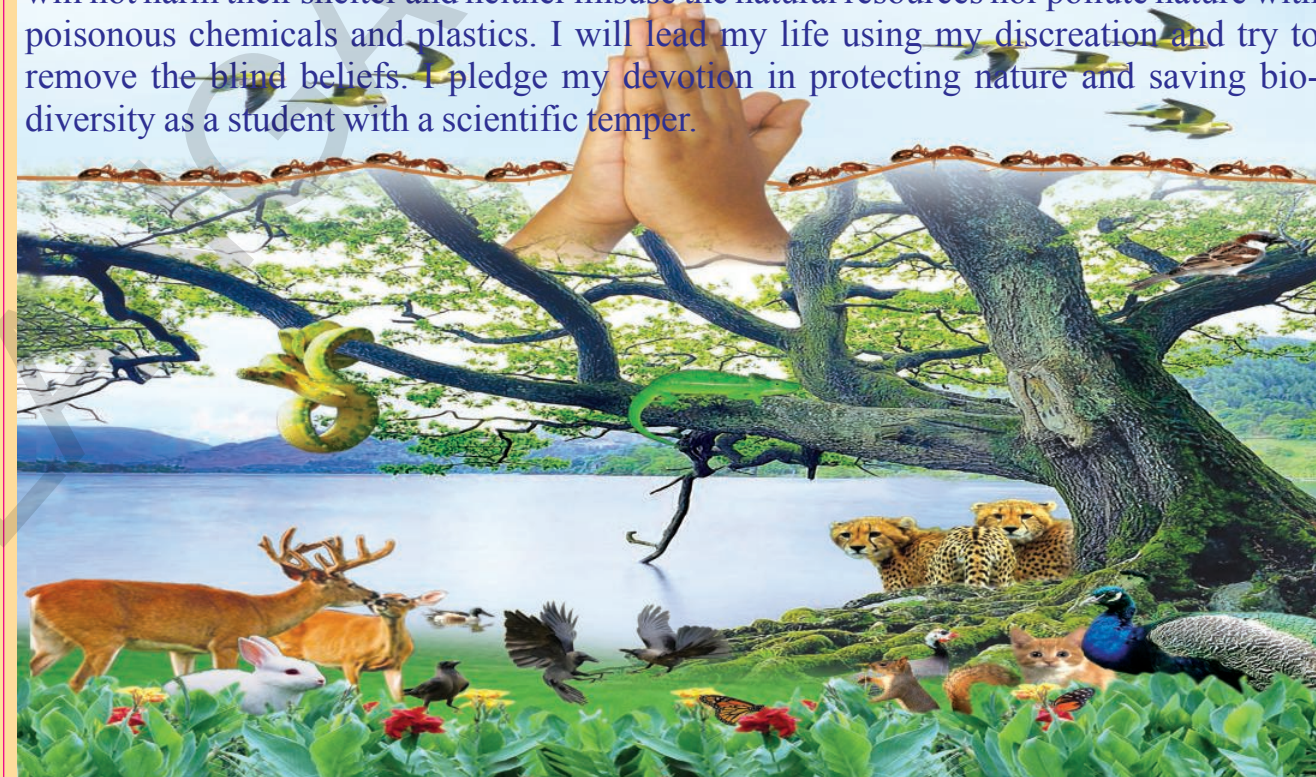
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Children! use this book in the following way

- ◆ This Book is written for you. Read all the lessons on your own.
- ◆ Do the things as told by your teacher.
- ◆ You have to work together with your friends to understand the concepts of the lessons. For this, discuss and work in groups.
- ◆ The lessons contain pictures. Observe them carefully. Read the questions given below the pictures. Discuss with your friends, teachers and know the answers.
- ◆ **'Discuss in Groups'** is an item that is present in all the lessons. Wherever you find this, form groups of four or five students, discuss and find out the answers.
- ◆ When you find **'Collect'**, visit the persons and places and collect the required information. Take the help of your teacher if required.
- ◆ You find **'Do This'** in some lessons. They are experiments. You should do these. Note down the results. Discuss in the class. Ask your teacher and clarify your doubts.
- ◆ You require the maps of Telangana State and its Districts and Mandals. Collect these from your teacher. Use the bigger maps available at your school.
- ◆ Answer the questions given under the title **'What have we learnt'** on your own. Do not refer the guides. Show the answers to your teachers. Do not purchase or use guides. You can never think on your own when you use the guides.
- ◆ Read all the sentences under the title **'I Can do this'** If you can do, put a '✓' mark. If you cannot do ask your teacher and get it taught again.
- ◆ During the class while you are working in groups or participating in any activity, if you feel you have not understood, ask your teachers and clarify your doubts.

Prayer of Nature

I salute the chirping birds for their wake up song, crores of trees for giving life saving oxygen and making the nature green. I recognize myself as only a part of nature. I bow and surrender myself to the Goddess of nature for guiding the beautiful way of life is the hard work of ants and on preaching the message of unity in the flock birds. Whether it is a squirrel or a cheetah, every creature has a right to live. So, I swear that I will not harm their shelter and neither misuse the natural resources nor pollute nature with poisonous chemicals and plastics. I will lead my life using my discretion and try to remove the blind beliefs. I pledge my devotion in protecting nature and saving biodiversity as a student with a scientific temper.



Government of Telangana

Department of Women Development & Child Welfare - Childline Foundation

When abused in or out of school.

To save the children from dangers and problems.

When the children are denied school and compelled to work.

When the family members or relatives misbehave.



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ENVIRONMENTAL STUDIES

CLASS - V

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PUBLISHED BY GOVERNMENT OF TELANGANA, HYDERABAD

***All FOR ONE
AND ONE FOR ALL***

***LESS POLLUTION
IS THE BEST SOLUTION***

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FOREWORD

All children should have an understanding of their society and environment. For this, they have to critically examine the surroundings. They should be able to understand and question the incidents that happen in their society. They should be able to mould themselves by understanding their near and distant surroundings. This is possible only by learning from the environment for the environment. The most important thing to do is to develop an attitude to protect and give equal importance to plants, birds, animals etc. The aim of Environmental Studies is to achieve these required skills, abilities and attitudes. The State Council for Educational Research and Training is developing Text Books on Environmental Studies by the title "**We-Our Environment**" at Primary level. The Class-III text book has been implemented from the academic year 2012-13. As an extension to this, the class 4 and 5 text books will come into practice from the Academic year 2013-14.

According to the needs of our state, the syllabus and text books are prepared by considering the syllabus and textual themes of National Council for Educational Research and Training (N.C.E.R.T.). The new textbooks are prepared according to the academic standards that have to be achieved as prescribed by the Right to Compulsory and Free Education Act, 2009. (R.T.E.-2009). The lessons are written on the themes - Family, Games, Animals, Plants, Society, Shelters, Food, Travel and History. Each lesson is written with interesting situations, incidents from daily life, thought provoking and reflecting activities and explorations. Without giving direct information in the lessons, more importance is given to make children collect information, do the things by themselves, observe pictures and understand different issues. To extend the knowledge of certain things, additional information is given under the caption, '**Do you know?**' For children's better learning, individual, group and whole class activities Projects and Experiments are incorporated. For the children, to estimate their learning, Exercises are included at the end of each lesson under the heading '**What have we learnt?**' These are given according to the academic standards. The exercise '**I can do this**' is given at the end of each lesson for the self-evaluation by children. All lessons contain photos and pictures which make children feel the real experiences of the concepts.

Instead of providing direct knowledge to children, the text book lays emphasis on construction of knowledge. Keeping this in view teachers have to construct knowledge by conducting activities. The exercises in the text book make children interact with the peer group. So, carrying out the exercises is a must. To meet this, teachers have to prepare the required Teaching - Learning material and strategies. The text book has to be considered a helping guide. Teachers have to make the teaching meaningful by adding modern technology to the experiences of the children and use the local environment as an important resource. Great effort has to be done to develop processing skills and positive attitude towards the nature among the children.

Congratulations to the teachers, lecturers, subject experts, artists, D.T.P. designers and members of text book development committee on preparing this text book. Special thanks to the subject experts and editorial board for their guidance in bringing out a beautiful and attractive book. We hope that this text book will definitely inculcate values, scientific temper, required attitudes, awareness towards Biodiversity and interest among the children.

Date : 30-11-2012
Place : Hyderabad

Director,
S.C.E.R.T,
Hyderabad

OUR NATIONAL ANTHEM

- *Rabindranath Tagore*

Jana gana mana adhinayaka Jaya he
Bharatha bhagya-vidhata
Punjab Sindh Gujaratha Maratha
Dravida Utkala Vanga.
Vindhya Himachala Jamuna Ganga
Uchchala Jaladhi taranga,
Tava shubha name jage
Tava shubha asisha mage
Gahe tava jaya gatha
Jana gana mangala-dayaka jaya he,
Bharatha bhagya –vidhatha,
Jaya he, jaya he, jaya he,
Jaya jaya jaya jaya he

PLEDGE

- *Pydimarri Venkata Subba Rao*

“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. I shall be kind to animals.

To my country and my people, I pledge my devotion.

In their well-being and prosperity alone lies my happiness.”

Suggestions to the Teachers

- ◆ Read the expected Academic Standards, Foreword and Index compulsorily before using the Text Book. 6 periods a week and 220 periods a year are to be allotted for Environmental Studies. There are 16 lessons on the whole. Lessons are framed in such a way that, they can be taught in 170 periods conveniently. Each lesson requires 11 periods on an average. Divide the total periods into 8 to 15 periods per lesson.
- ◆ As activities, project works, collections are part of the lessons, allot more time to these activities when compared to the explanation of concepts. Giving suggestions to children, involving them in the group activities, making them exhibit their preparations, correcting mistakes should be done during the class hours. Suggest children to take up project works, collections and explorations after the school hours. Children should be clearly explained exercises. They should be encouraged to write the answers on their own. Do not allow the students to copy the answers from the guides.
- ◆ The lessons commence with thought provoking pictures and situations. Questions are given related to these. These questions should be asked as a whole class activity. Answers told by the children should be written on the black board. By observing the previous knowledge and understanding of these items the key concepts should be introduced. For this, different activities by the titles - Individual activities, Whole class activities, Think and Say, Do this and Collect are given. By conducting these activities to the children simultaneously, the concepts should be made understood. Make the children to read the lessons. Know the understanding of the children by conducting the above various activities. The activity '**Think and say**' is given below the pictures or in between the lessons. This should be conducted as a whole class activity. It is a must that the children should be made to talk. They should be encouraged to freely express their experiences. You may ask your own questions in addition to the questions given in the text book. The teachers should sum-up the lesson at the end and make the children to understand the concepts completely.
- ◆ The activity '**Group Work**' is given in between the lessons. Suggestions should be given to the children before the commencement of activity. Teachers should see that the children discuss the questions among themselves and write the answers. The required reference books should be supplied to the children. Make the children to exhibit their answers in groups. Mistakes should be corrected.
- ◆ The activity '**Do this**' is included in the lessons. These are experiments. Explain the children about how to carry out the experiments and what materials are required. After the completion of experiment ask them to explain how and what did they do. These can be conducted as the individual or group activities.
- ◆ The activity '**Collect**' is given in the lessons. Children have to go to the society and their surroundings and collect information. Teacher has to guide them in what questions to be asked and how to collect information. Make them prepare the required information tables in the class itself. Ask them to exhibit the information collected in the class during a period. These should be conducted as group activities. See that two to three children participate together in each group.
- ◆ '**Key words**' are given at the end of each lesson. Allot a separate period and know the understanding of each word by all students. At the end of each lesson Exercises are given under the title '**What have we learnt?**' See that the children do all the competency based activities and questions on their own. Allot 6 periods for the 6 academic standards at an average of 1 period for one standard. The exercise '**I can do this**' at the end of each lesson is meant for self evaluation. Try to know whether all the children are able to do each and every item. Go to the next lesson after 80% of the children are able to do these items.
- ◆ Teaching learning strategies and the expected learning outcomes, have been developed class wise and subject-wise based on the syllabus and compiled in the form of a Hand book to guide the teachers and were supplied to all the schools. With the help of this Hand book the teachers are expected to conduct effective teaching learning processes and ensure that all the students attain the expected learning outcomes.

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Academic Standards that have to be achieved by the children through this text book

1. Conceptual understanding

- The children understand the key words, concepts and contents of the lessons. They will be able to give examples, reasons, classify and describe the contents of the lessons. E.g.: the life of farmers, bio-diversity, intensive agriculture, precautions to be taken in growing plants, uses of plants, energy giving substances, examples for the nutritious food, child rights, saving energy, classifications of energy resources, life style of people living in river basins, Solar system etc.

2. Questioning and hypothesis

- The children will be able to: ask the needy questions for collecting information. They will be able to imagine and hypothesis, experiments. E.g.: They will be able to question the farmers about crops, question about child rights, question doctors regarding protection of organs, guess the reasons for diseases, experiments on plants etc.

3. Experiments - field observations

- The children will be able to do the experiments related to food substances, plants etc. They collect the required material for conducting experiments. They imagine the results before the commencement of the experiments. They compare their hypotheses after the experimentation. Analyze the reasons. e.g. observing the moon, comparing etc.
- They will be able to explain the process of the experiment. They observe and know about child Rights, crops, different life styles, historical places and monuments, safety measures at different places etc. They develop the skills of observation and experimentation.

4. Information skills, projects

- The children tabulate the collect information. Read out and explain the information written in the information tables. Analyze the information tables. Make inferences.
- The children collect the information on animals, agriculture, crops, intake of nutritious substances, diseases, forest products, water resources, details of historical monuments, details of electricity consumption, time of Sun rise, Sun set etc. They participate in the project works.

5. Communication through mapping skills, drawing pictures and making models

- The children will be able to draw the pictures and explain about the working of human body systems, production of electricity, time line etc., also, they explain the things by making models.
- Point out different states, regions, borders etc; on the map of India, various crops and rivers on the map of T.S. , the continents, nations and seas on the world map. They learn all the mapping skills.

6. Appreciation, values and creating awareness towards bio-diversity

- Children show kindness towards birds and animals. Develop awareness towards environment and bio-diversity. Understand the preventive measures to protect water, plants and trees. Develop good habits related to bio-diversity.
- Understand and implement the measures to control the pollution. Implement the rules and regulations.
- The children understand the conservation of natural resources, saving energy, saving electricity, helping others etc. They exhibit their social awareness by writing slogans, posters and letters wherever they are needed. They participate in social service activities.
- They appreciate the goodness of others.

1



ANIMALS - THE BASE OF OUR LIFE

1.1. Observe the picture and discuss



- What do you see in the picture?
- Guess... Why was the animal with them?
- How are they different from us? Where did they live? What might have they eaten?

1.2. Our needs - Taming Animals

Our ancestors lived in forests. In the beginning, their primary food was animals and tubers. Later they learnt growing crops and doing different kinds of work. During the course of time, they started taming animals to fulfill their needs of food, security and transport. The present day domestic animals are their successors.

Think and say...

- ♦ Name the different animals that might have been tamed by our ancestors. Why did they do so?
- ♦ Why didn't they tame animals like tiger and lion? Guess...
- ♦ What animals are tamed by people now ? Why?

Since generations humans have been using animals to fulfill their various needs. The milk of cows and buffaloes is used as food. Similarly, bulls are used in agriculture. We use some other animals also for our needs. Have you ever seen a camel? They are found mostly in Rajasthan. It is a desert area. It is very difficult to walk across the sand in desert. The people living in deserts travel on camels.

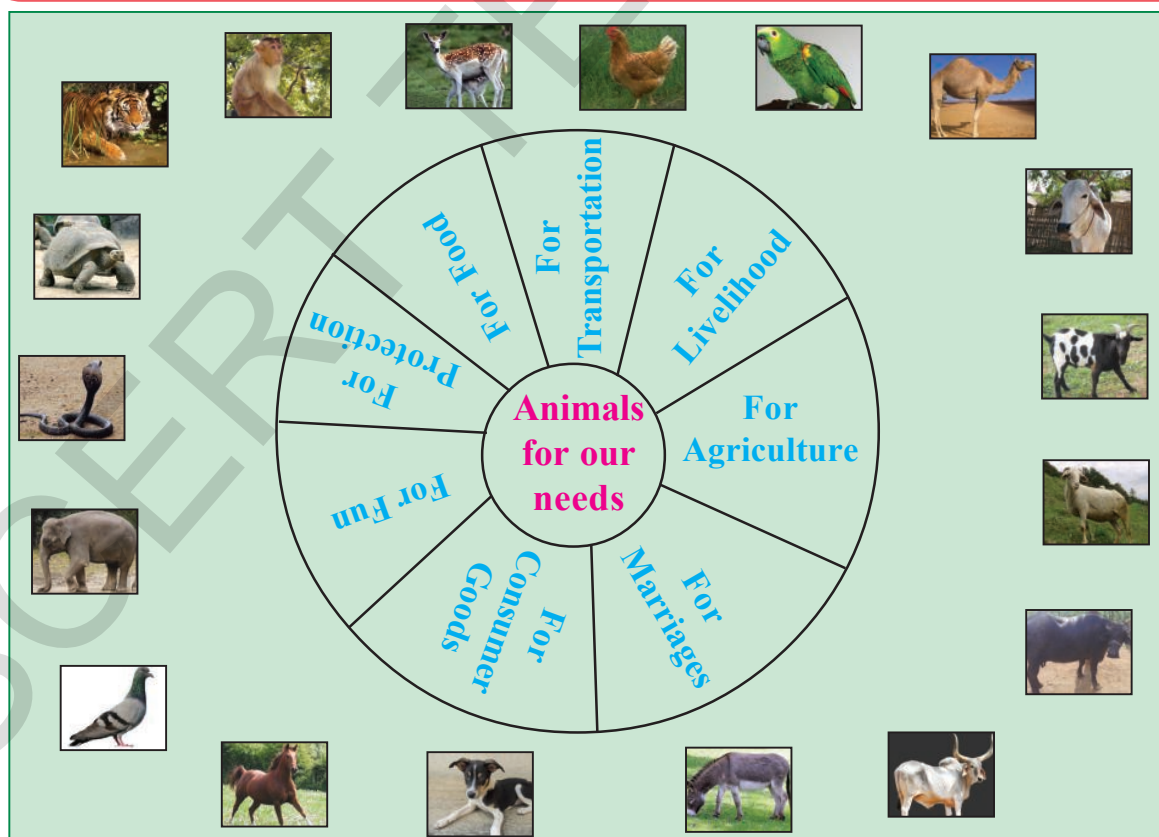


Some people from Rajasthan bring camels to our state and use them for 'fun-ride' for children and earn money for their livelihood.

Group work



- ◆ How do you feel when you ride on animals?
- ◆ Talk about the people who use animals for their livelihood.
- ◆ Observe the diagram given below. Match the name of the animals with the work they are used for.





1.3. Sheep is my wealth

We depend on different animals for our various needs. Let's see, what Lingaiah depends on?

This is Lingaiah. He rears sheep, in the uplands and hills of Palamuru. He has a flock of 40 sheep. He walks 30 kms everyday to graze his flock. Both his children study in a government school. He takes the sheep to the uplands early in the morning and returns home in the evening when it gets dark. A dog helps him in his work. He carries lunch in a cloth bag and has it in the afternoon. He also feeds the dog. He carries the lambs that can

not walk. He grazes his sheep on the hills, dunes apart from his own fields and also in the leased fields.

In summer, when grass is not available, shepherds migrate in groups of 10 to other places along with the sheep for about five months. They take a donkey with them to carry their luggage. They stay wherever they find grass. Usually, the grass is available near the banks of streams and near canals. Sometimes cheetahs and hyenas attack the sheep. Dogs protect them to some extent. There is fear of snakes during nights.

Some farmers ask the shepherds to leave their sheep in their fields during the night. If the flock of sheep stay in the fields during nights, their excreta becomes a manure and is useful for the crops. As farmers are benefitted they in turn give some money, rice and vegetables to the shepherds. In this way, they help each other.

Lingaiah doesn't keep any heavy luggage with him except a pair of leather chappals, a wollen rug, a hand stick and a dried bottlegourd water bottle with him. When he was away from family for months together, he would not get any information about their welfare. Once, when he was away, he did not even come to know about his father's death. So, he bought a mobile phone recently and he talks to his family over mobile every day.

Though he protects the sheep every moment, he sells the grown up sheep when he gets a good offer. But, he does not sell the lambs. He clears the debts with the money he gets and saves some money. When the sheep are being boarded in the lorries by the purchasers Lingaiah out bursts for them. But then he consoles himself and continues making another flock.

Lingaiah sold 22 sheep from his flock at Rs.5000/- each. He also got an income Rs.4000/- on selling the excreta of the sheep and Rs. 2500/- on selling wool. He spent Rs.68,000/- on the sheep for medicines, vaccination, fodder and transportation for the whole year. How much money is left with Lingaiah.

Let us check his income and the expenditure.

Income		Expenditure	
22 sheep x Rs.5000	= 1,10,000	22 lambs x Rs.1500	= 33,000
Money received by selling excreta	= 4,000	Expenditure on Medicines & Vaccination (30 x Rs.100 x 12 months)	= 12,000
by selling wool	= 2,500	Money spent on rent	= 12,000
Total Income	<u>1,16,500</u>	Money spent on Transportation etc.	= 5,000
		Interest on capital	= 6,000
		Total Expenditure	<u>68,000</u>
Balance sheet			
Total Income	= 1,16,500		
Total Expenditure	= 68,000		
Profit	= 48,500		

Group work

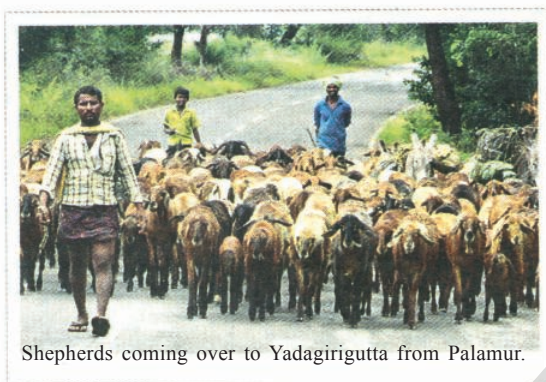


- ◆ How much money is left with Lingaiah after working hard for the whole year?
- ◆ Can he meet his basic needs with the amount left? How?
- ◆ How many hours does Lingaiah work in a day?
- ◆ Is Lingaiah getting the benefits he deserve, after so much of hard work?
- ◆ How are the sheep helpful to farmers?
- ◆ Is Lingaiah taking good care of his sheep? Write your opinion.
- ◆ Do you know any shepherds? How is their lifestyle?

1.4. Problems of sheep rearing

You have read about Lingaiah, the shepherd. Many people live by rearing sheep like Lingaiah. They face many problems in their lives. Venkataiah and Kishan of Mahaboobnagar also have taken up sheep rearing as a means of livelihood. They face many problems during famines. Let us know what is published about them in news papers!

Drought.....demands...to leave..



Shepherds coming over to Yadagirigutta from Palamuru.

(T Media, Yadagirigutta)

Once again the shepherds of Palamuru reached our district for shelter and to save their sheep as their district is suffering from acute drought conditions. The shepherds in large numbers from Kothapet, Narayanapet etc; reached Nalgonda to feed their sheep. They stay here only for six months. Their motto is to protect and save their sheep as they suffer from rains and lightening. They fight with the wolves for their sheep. They even sacrifice their lives and fight fiercely with foxes every day to save their sheep. Whenever there is a drought, it is quite natural that the sons of Palamuru to reach here.

The shepherds are worried a lot about not receiving rains. They say that they graze their sheep here for some time and return to their villages. They bring donkeys along with the sheep. They bring the cooking utensils, food and other products on donkeys and come here with their families. They even bring their school going children to look after the sheep. Each herd comprises of at least 400 sheep. The migrated shepherds graze the

- The sons of Palamuru reached the hills for cattle rearing.
- Grazing will now take place for six months.
- They left homes as the drought demands them to migrate.

sheep during the day time and make them take rest in five or six groups at a place during nights. When the sun rises they wake up, cook food and take the sheep for grazing wherever they find grass. As the rearing of sheep is decreased here, the

other region of shepherds are finding sufficient fodder here to feed their sheep. In the recent times, people living in the surroundings of Hyderabad started living by up agriculture or real estate business. Nowing this, the shepherds of Palamuru enquired the pros and cons and started coming over here.



A Donkey carrying the belongings of Shepherds

I came here due to drought!

We belong to Palamuru. We are suffering a lot because of drought. There is no scope for the sheep to be alive.



First, I came here, enquired the situation and brought my sheep. I stay here for six months. Till then I won't go home. If I want to go home someone should come to substitute me. Only then, I can go home my woes doubled when it rains. We have to stay all the night and look after the sheep.

- Venkataiah, shepherd, Palamuru

Threats are more from foxes

There is a chance of going homes when it rains. Foxes are always watching us. We lose our sheep if we are careless even for a single second. Sometimes foxes and wolves in pack of five to six numbers attack us. Our dogs save us at that time. Our sheep cannot live without dogs. The farmers of this area also show pity on our sheep. If we make the sheep sleep in their fields, they give us food in return.



- Kishan, Shepherd, Palamuru

Group work



- ◆ Why did the shepherds leave their districts?
- ◆ Describe the life style of the migrated shepherds.
- ◆ What did Venkataiah and Kishan say about their difficulties?
- ◆ Who helped them and how?

1.5. Friends of Farmers

Do you know that some small creatures also help farmers a lot?

I am an earthworm...



I eat the plant debris along with soil from fields. Soil becomes fertile with my excreta. I loosen the soil so that the roots of the plants get enough air. With this the plants grow well and the yield of the crop increases. But we are dying due to the excessive use of pesticides.

I am a spider...



I make a thread through a secretion from my abdominal gland. I knit a web with this thread. Have you ever seen my web? The insects and mosquitoes which harm the crops get stuck in my web. I eat them. Thus, I protect the crops from harmful insects. We are dying due to the excessive use of pesticides.

I am an ant...



I wander on the plants of the fields. I eat the smaller insects and their eggs lying on the plants. In this way, I help farmers avoid the use of pesticides.

I am a snake...



I help farmers by feeding on the rats that eat the grains and destroy the fields. Most of you are afraid of me and kill me wherever you see me. In fact, snakes like Cobra (Nagu Pamu) Viper, Sea snake, Russels Viper are poisonous, the other snakes are not poisonous. We try to protect ourselves from people who try to harm us. We are friends of farmers.

I am trichogramma...



The scientists from the Institution of Crops & Agricultural Research (I.C.A.R.) created me. My life span is only one week. I destroy the eggs of the enemy insects that infect the crops. Thus, I help farmers.

Collect & discuss...



- ♦ Visit an agricultural field. Observe the crops and the creatures living there. Learn how those creatures are useful to the plants.
- ♦ Discuss with the farmer and list out the names of the creatures which are helping him.

1.6. The Other Uses of Animals

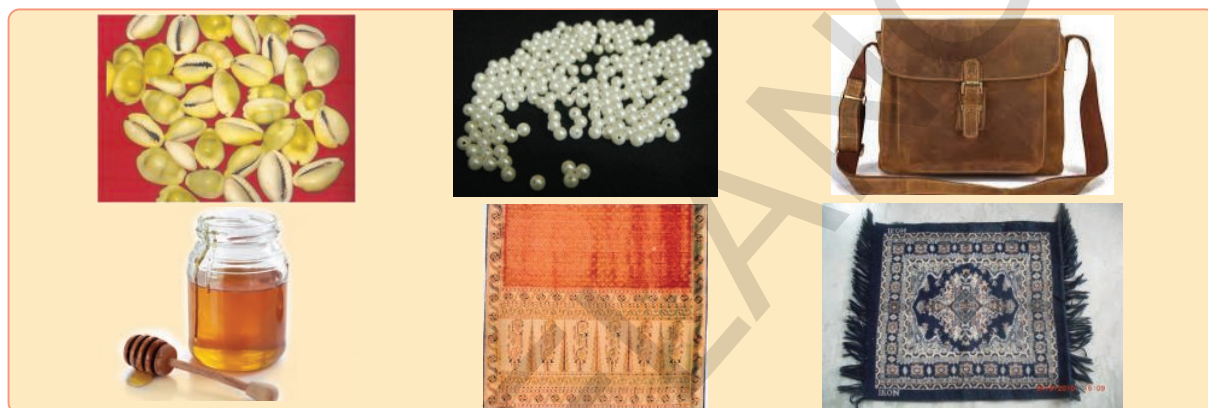
As you know we get milk, eggs, meat etc., from animals. We use animals for transport also. Think of the animals which are useful to us and how they are useful.

Look at this fan. Do you know how is it made? The tribal people make the fans with the fallen feathers of peacock and sell them in the fairs.

There are some industries which make buttons with the horns of oxes. They are exported to other countries also. We get many products from animals. Look at the pictures given below.



Fan made from Peacock feathers



Group work



- ◆ Have you seen the products shown in the pictures? Which animals are these products obtained from?
- ◆ How are these products used for various decorative purposes?
- ◆ You have understood that there are many uses of animals. But, are we useful to animals? How?

1.7. Needs and Difficulties of Animals

What is the difference between a stone and a living creature? Can a stone move and grow like us? Just like a stone, many things do not have life. We have life.

Think and say...

- ◆ Many things are required by living creatures like us. What are they?
- ◆ Which other living creatures are similar us? Do they have the same requirements? What are they?

We need air, water, food and shelter to live. Besides these, living together, love, affection, sympathy, kindness etc., are also important to us. Like us, animals too need all these things. These are the basic needs. Think, whether we must support animals in fulfilling their basic needs or not.

Do we have any compassion, kindness and sympathy towards animals in our surroundings? Think about it. Is it ok to hurt the animals? Are we taking care of animals when they are hurt or wounded, hungry, thirsty or suffering from cold, heat or rain? How do we feel when we are hurt or suffer like them? Look at the animals in the pictures given below. See how they are suffering?



Think and say...

- ♦ Did you see the animals in the pictures? How do you feel? Is it right to do this?
- ♦ Imagine the pain and inconvenience caused to the animals in the above pictures.
- ♦ How do you take care of your pet animals?

Shall we listen to the pain of Lakshmi and a few others?



Lakshmi is a monkey in a circus. The circus people caught her when she was young. She has been trained to jump through fire, walk on a rope, dance and ride the bicycle. The owner controls her with a pointed stick. Many people give her money out of sympathy. Can you imagine her feelings?

Imagine how Lakshmi feels:

I have to jump and play to earn money. Whether I like it or not, I am forced to perform in the circus. Even when I am hungry or suffer from pain they make me dance again and again. You all enjoy seeing me. But no one thinks about me. When I fall ill and suffer from fever also, they beat and force me to dance. There is nobody to listen to my woes. I don't have parents the way you have to protect me. Mine is a lonely life. Actually, where should I be? Whom should I live with?

Snake in a basket

I was captured and kept into a basket, I can't enjoy my freedom. I am suffering without food. I don't drink milk, but, my owner forcibly opens my mouth and pours milk. All this milk enters my lungs and I fall sick. Please make me free.



A Parrot in a cage

I was a free bird flying in the sky. But I was imprisoned in a cage to tell your horoscope. I want to come out of it. I want to fly freely in the sky. When will I be so lucky!

People are killing elephants for tusks. Tigers and deer are killed for their hides. Many other birds and animals are being hunted, captured and eaten.

Group work



- ◆ Are the animals and birds used for our entertainment happy? Think and say.
- ◆ Wild life is a valuable national wealth. Whose duty is it to conserve it? How? What should we do for the conservation of animals?
- ◆ Write a pledge to protect, to show kindness, affection and love towards animals and birds.

Collect and discuss...



- ◆ Collect information about how the rights of animals are being exploited in your area. Write the details in a tabular form and exhibit it in the class.
- ◆ Details to be collected : Name of animal, is it getting enough food? Does it have a hygienic shelter? How are its rights being exploited? How to protect its rights?

Do you know?

According to Schedule-1 of the Wild life Protection Act, 1971, hunting and selling wild animals is a crime. One who does so is sentenced for 3 to 7 years of imprisonment and a fine of rupees upto one lakh.

Collect and discuss...



- ♦ Visit cow shed during holidays. Observe the cows and their calves, spend some time with them and share your experiences in the classroom. Draw their pictures, write about them and exhibit on the wall magazine.

1.8. Decreasing animal population

The time, when there was no human on the earth, only one animal species per year used to become extinct. This is quite natural. But... nowadays, one species is disappearing every 20 minutes.

Tiger is our national animal. The Royal Bengal tigers are found mostly in India and Bangladesh. Once, there were thousands of tigers in the forests. At present their number has alarmingly decreased. It is a matter of worry that the number of Battameka pakshi, Kalivi kodi, Punganuru cow and many other animals are decreasing day by day. Unless we take measures to protect them, they are sure to become extinct soon.



Can you look for it?



The bird in the picture is a vulture. It is 2 feet tall. It is not being seen in our state for some years. If you see this in your area, you have to inform the biodiversity Society of Telangana immediately. It is interesting to know that the informers will be paid 2 lakh rupees as a reward.

Think and say...

- ◆ Which other animals like tigers and vultures are disappearing?
- ◆ What are the reasons for their disappearance?
- ◆ What should we do to protect them from becoming extinct?

1.9 Bio-diversity

Whose earth is this? Is it the property of only humans? No, the earth also belongs to the different species of trees, animals, birds, insects, fish etc. Nature provides sufficient food and water to all living things. Animals take food according to their requirement only. They don't grab and store from nature. But man is storing more than he requires. He is not considering others as equal to him. He wants everything for himself alone. He wants to enjoy the entire treasure of nature immediately. He doesn't want to leave anything for future. This is greed. Gautama Buddha said, "Wants and greed make our life miserable". All living creatures have an equal right to enjoy the natural resources on the earth. As pesticides, waste products and chemicals from factories pollute water in the rivers and water bodies many creatures that live in water die. Think... what problems are being faced by animals and birds due to plastics invented by man. Cattle die by eating plastic covers thrown by us. Human beings are the only reason for the entire pollution.

Group work



- ◆ What is meant by greed? What problems arise due to greed?
- ◆ What are the reasons for the regular disappearance of many animals?
- ◆ What are the reasons for the decrease in forests cover and living organisms? Who created this situation?

Bio-diversity - Things to do

- Trees should be grown in the backyards of houses, in the school premises.
- Trees should not be cut down.
- Animals and birds in our surroundings should be looked after with care, affection and love. We should feed them.
- Lakes, ponds, rivers which give shelter to many animals and fishes should not be polluted.
- We should not harm water animals by throwing plastic bags and other waste materials into the water bodies.
- Fuels like petrol, coal etc; and pesticides should not be used indiscriminately, as they pollute the environment.
- Any kind of action which harms living creatures should be avoided & discouraged.
- The habitats of animals should not be destroyed in the name of development. They should be protected.
- Form an Animal Protection Committee in your school. Take an oath to protect the environment and animals.
- Prepare an album on Animal World.
- Hunting wild animals is prohibited by law. Find out more about this from your elders and teachers and inform the particulars to all the village members and friends.
- Prepare a poster on how all animals and birds should be shown love and affection, provided with water and food. Paste the poster in school and in prominent places of the village.

Keywords

base of life
taming animals
livelihood
shepherd
famine
income and
expenditure

self-protection
friends of farmers
Agricultural Research
Council
pesticides
needs of animals
compassion towards
animals

protection of animals
Wild Life Protection
Act
hunting of animals
biodiversity
export
industries
self defense



What have we learnt?



1. Conceptual Understanding

- Name some animals which help us in earning a livelihood?
- Write about the daily activities of a shepherd.
- Write the names of any four endangered animals.
- What are the different needs for which we depend on animals?
- Why are earthworms, spiders, snakes etc., called Friends of Farmers?
- How can you say that animals also have needs like us?

2. Questioning - Hypothesis

All animals gathered and decided to take up the 'Movement on Protecting Animal Rights'. They passed a resolution to question the people who exploit their rights. Write, what questions the representatives of Animal Rights Society would ask people.

3. Experiments - Field Observations

- Visit a nearby agricultural field and list out the insects and animals that harm or help the farmers in the fields.
- Observe the animals in your area which are subjected to violence and write about them.

4. Information Skills, Projects

- Tabulate the information on uses of animals.

S.No	Name of the animal	How is it useful to us

5. Communication through Mapping Skills, Drawing Pictures and Making Models

- a) You have learnt about various animals in the lesson. Draw and colour your favourite animal pictures.

6. Appreciation, Values and creating Awareness towards bio-diversity

- a) How do you feel when you watch animals in the zoo?
- b) Oxen and bulls work hard the whole year to help in farming. What benefits do they expect in return? What should we learn from them?
- c) Write and exhibit slogans on love, affection and kindness towards animals.

I can do this

- | | |
|---|----------|
| 1. I can describe the uses of animals and life style of shepherds. | Yes / No |
| 2. I can question about the protection of animals. | Yes / No |
| 3. I can visit agricultural fields and collect the details of animals and insects that help us. | Yes / No |
| 4. I can collect, tabulate and exhibit the details and products of animal centres. | Yes / No |
| 5. I can draw the pictures of animals and describe them. | Yes / No |
| 6. I can write slogans on animal protection. | Yes / No |



2



AGRICULTURE - CROPS

2.1. Observe the pictures and discuss



- What are people in the picture doing? Which crop did they grow?
- State the different stages in the cultivation of the crop shown?
- Whose services are needed in the cultivation of this crop? What are the tools used for it?
- Where are the seedlings brought from? How are they processed?
- What is agriculture? What are required for agriculture?

You are aware that the process of growing crops is called agriculture. There are different stages involved in agriculture, right from the ploughing of land to the final harvesting of crop. We have to till the land, arrange for water sources and services of different people. We also need to use different farm equipments in the different stages of cultivation.

Group work



- ◆ What happens if farmers stop cultivation?
- ◆ Who are the people dependent on agriculture? How?
- ◆ What are the different crops grown in your village/city?
- ◆ Do your villagers consume the entire crop yield produced in your village?
- ◆ What do the farmers do with their yield?

We all get our food because of farmers growing crops. People living in villages and cities depend on farmers for their food needs. People in cities can get the required food items because farmers are growing crops and sending them to cities. If people in villages do not export their crops to other places, then people in cities do not get food to eat. There are efforts of many people behind the food we eat. We must visit the farmers nearby to know their hard work.

Collect and discuss...



- ◆ Visit nearby farm and get the following details.
 1. Name of the farmer :
 2. Name of the crop he/she is cultivating at present :
 3. What is the source of water?
 4. What are the different equipments/ tools they use?
 5. Where do they get the seedlings or seeds from?
 6. Name the different fertilisers they use.
 7. What do they do with the yield?
 8. How many acres are being cultivated and what is the net income?
 9. Women's role in agriculture.
- ◆ On the basis of the information collected by you, discuss in groups and display the information on charts.

2.2. Agricultural equipment/ tools

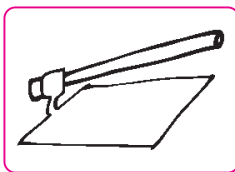
Equipment plays an important role in cultivation. Look at the pictures of some tools and machinery given below.



Plough



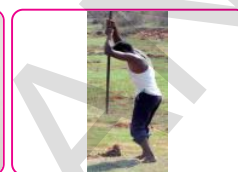
Harrow



Spade



Sickle



Crowbar



Plantation Machine



Harvesting Machine



Paddy Cutting Machine

Plough was used to till the field in the past. Now, tractors are used in land tilling. Now-a-days farm machinery is available for land preparation, planting of seedlings, weeding and harvesting. The use of machinery helps farmers in reducing manual labour and speeding up the process of cultivation.

Group work



- ♦ Is it good or bad to use machinery for cultivation? Give reasons.
- ♦ Draw the pictures of other tools that farmers use in cultivation.
- ♦ List out the equipment/ tools that farmers used in the past and those being used presently.

Name of the agricultural activity	Equipment/ tools	
	In the past	In the present
Ploughing	Plough	Tractor
Levelling		
Sowing seeds / planting seedlings		
Drawing water from borewell / well		
Weeding / Harvesting		

2.3. Seeds

Ramulu went to the market to buy cotton seeds. He saw people standing in queues in front of the shops to buy seeds. He also joined the one of the queues and purchased the seeds. He sowed them in his field. The crop was good but the yield was not.



Group work



- ◆ What could be the reason for Ramulu not getting a good yield?
- ◆ What is the reason for the crowding in the picture? Why did it happen?
- ◆ Why is there a shortage of seeds? What are the other problems that the farmers face?
- ◆ How did the farmers get the seeds in the past?
- ◆ Where do farmers of your village get seeds from?

Some of the seed companies are deceiving farmers by selling sub standard seeds which do not germinate or some times don't give a proper yield.

In olden days, farmers used to preserve certain good quality seeds from the yield to be used for the next crop. Today people are dependent on markets because High Yielding Varieties are available and discarded their traditional seed preservation practices. When all the farmers depend on market for the seeds, they are unable to get the required quantity of seeds. Farmers used to borrow seeds from their neighbours. After the yield, they used to return more seeds than they borrowed. This method is called "Nagulu".

Think and say...

- ◆ What can the farmers do to avoid dependence on the government or market for seeds?
- ◆ Name some varieties of rice you know
- ◆ Name the famous varieties of mango?

Do you know?

We had 5400 varieties of rice, 740 varieties of mango and 3500 varieties of brinjal in our state upto a few decades ago. As farmers discarded the traditional way of seed preservation and due to no market value, most of the traditional seeds have disappeared.

In our country "the National Bureau of Plant Genetics" collects and preserves genes of different plants.

2.4. Sustainable Farming

Mallesh is cultivating 10 acres of land. He is doing sustained farming without depending on others for seeds and fertilizers. He is cultivating mulberry in 5 acres, maize in half an acre and crops like ginger and turmeric in another half an acre as intercrops. He is growing green fodder in 3 acres. He is also cultivating vegetables like brinjal, tomato and flower varieties like, jasmine, marigold and roses in one acre. He is preparing compost and vermicompost with the help of earthworms. He is also preparing insecticides from neem oil and



Dairy Farm

such other products. He has raised his crop production by using organic fertilisers and organic insecticides. Panchagavya is a manure in a liquid form. It is not only a manure but also a pesticide. Panchagavya is prepared by using cow dung, urine, milk, curd, ghee, banana, coconut water and jaggery. All these are mixed with water and sprayed in the field. Along with panchagavya he is also using another manure called jivamruth, which is used as manure and also helps in increasing micro organisms that make the soil fertile. Jivamruth is made using cow dung, urine, soil, jaggery, pulses powder and water.

Further, he has a dairy farm with 10 cows, a poultry farm and also rears silk worms on his farm. In his poultry farm, he has been rearing layers for eggs and broilers for meat. There is a pond near the dairy farm in which he grows fish. He is also rearing ducks and country chickens in his farm. Mallesh's income has increased due to the cultivation of different crops in addition to dairy and poultry. Mallesh says that if we cultivate monocrops not only the fertility of the soil will reduce but also the yield. Due to his different practices, he earns more money, and also provides employment to others.

Do you know?

The growing of more than one crop in the same place and at the same time is called intercropping.



Poultry Farm

Group work



- ◆ How could Mallesh get more yield in his farm?
- ◆ What is he doing to protect the crops from insects?
- ◆ Why did he cultivate intercrops in his farm? Why did he rear ducks, poultry and cows in his farm?
- ◆ According to Mallesh, is farming a good or a bad profession? Why?
- ◆ What is your opinion on Mallesh's agricultural practices?

2.5. The Success Story of a Woman Farmer



Gangawar Manemma

Women also cultivate crops like men, do you know Gangawar Manemma, a successful human agriculturist. Now, read what she says about her farming.

My name is Gangawar Manemma. I belong to Gangawar village in Nyalkal Mandal of Sangareddy district. We have 3 acres of land. It is red soil and we left

it barren for many years. No crop grew in that land. When it rained we could grow jowar and millets. But my life changed ever since I joined the Deccan Development society (DDS) as a member.

We faced a lot of problems in buying seeds, cultivation and selling our farm products in the market. We could not understand anything about the process. We were always at loss growing some crop or the other. When we joined the society we could procure the required seeds for our crop. We minimised the expenditure in cultivation, preparing the manure required for our crops and yielded good quantity. Now we are following the conventional methods of cultivation. With limited water resources, we grow redgram, jowar, millets, greengram, horsegram, foxtail millet, mustard, sorghum, pigeonpea, cowpea, and groundnuts. These crops do not consume much water. We prepare bio fertilisers using cowdung, neem leaves and neem bark available in our fields. Due to these biofertilisers, we are able to reduce diseases and increase the soil fertility. We are able to produce food grains required for our family, in addition to preserving the seeds for the next crop. We are following the traditional methods in selection of seeds. We select the strong and well grown plants and preserve their seeds. We preserve the seeds by adding ash and neem leaves, so that they can be protected from insects. We follow mixed crop cultivation so that we can produce more and earn more. We exchange seeds with one another and treat our land as Mother Goddess. We spend most of our time in our farms rather than at home.

Like Manemma many people are now following the traditional way of farming by preserving their own seeds. The Deccan Development Society supports poor farmers in practising sustainable cultivation in the surroundings of Zaheerabad in Sangareddy district. They could revive a variety of traditional crops by following the conventional practices. Zaheerabad farmers say that biodiversity flourishes with the cultivation of millets.

Group work



- ◆ What good practices of cultivations did Manemma follow?
- ◆ Who helped Mannema? How did they help her?
- ◆ Should we appreciate Mannemma? Why?

2.6. Pesticides

Ramulu's daughter, Vasantha is in class-V. She went to the market along with her grandmother to buy fruits. Grandmother bought grapes for Vasantha. Vasantha started eating the grapes as soon as grandmother gave her. Grandma warned Vasantha not to eat any fruit without washing.

Think and answer

- ◆ Why should we wash fruits? What are the other items we should wash before eating?

Farmers spray pesticides to protect crops from insects and to get a good yield. Due to the over use of pesticides, the insects are becoming resistant. This also leads to food poisoning. Eating food items which are exposed to excess pesticides may cause cancer and other diseases.

Instead of using chemical pesticides it would be better to use biopesticides which are made of different organic materials like green chilli, garlic and neem oil, tobacco decoctions, vitex, panchagavya etc.



Use of chemical pesticides may increase the crop production for sometime but it kills useful insects along with the harmful ones. Soil fertility decreases gradually with the usage of chemical fertilizers and pesticides. It also increases soil and atmospheric pollution.

Think and say...

- ♦ What are the other disadvantages of using chemical pesticides?
- ♦ What are bio-pesticides? Why should we use them?

2.7. Kinds of Crops

Different kinds of crops are grown in our state. Rice, wheat, jowar, maize, pulses, oilseeds, vegetables and fruits are some of the crops grown. They are called 'food crops'. Cotton, jute and mirchi are also grown. They are called 'commercial or cash crops'.

Group work



- ♦ Prepare a list of crops that are grown in your village/around your city.
- ♦ What crops are not grown in your village? What food items do you get from other places? Why are such items not grown locally? Say and write the reasons.
- ♦ What is the time duration for various crops to grow and yield?

We can see the same crop in different varieties. In jowar, we see yellow and white variety. Similarly, there are many varieties in paddy, chilli and redgram. Read the following table.

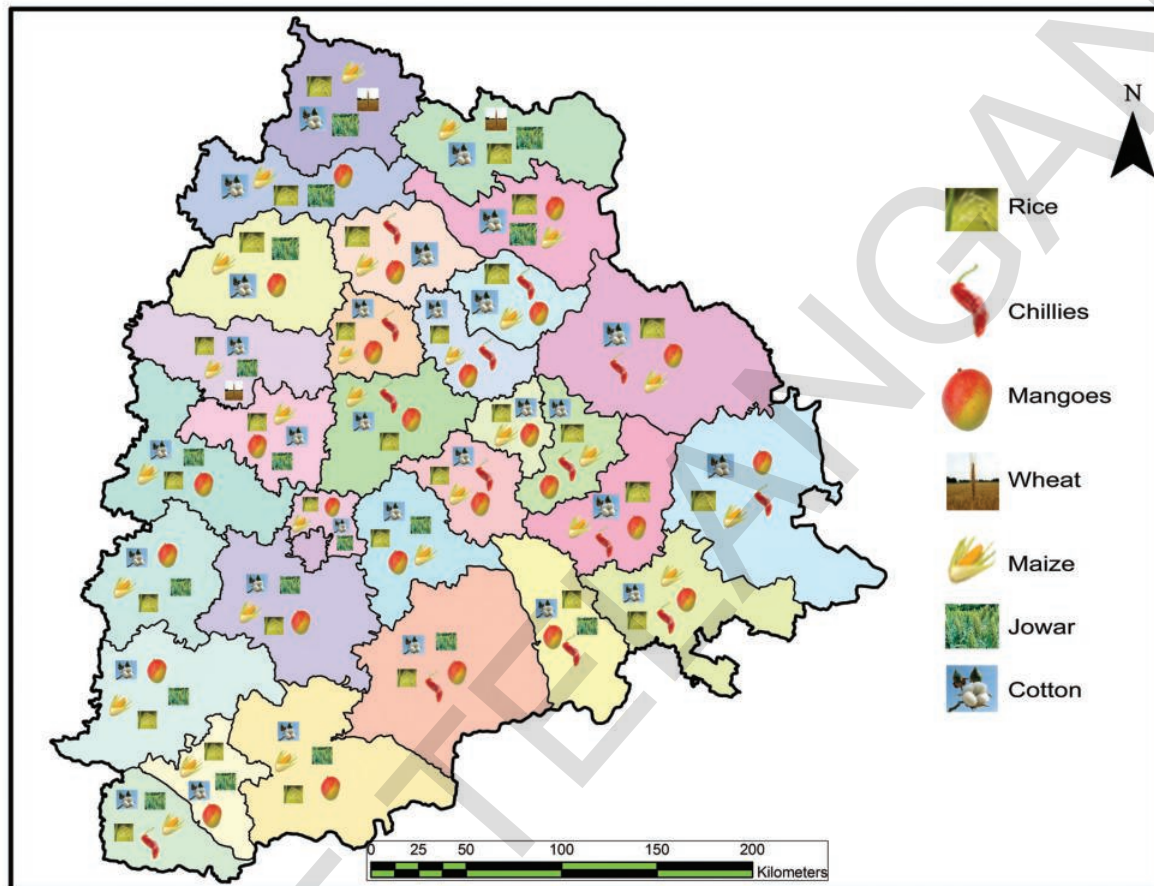
Sl.No.	Crop	Varieties
1	Paddy	IR20, Hamsa, Swarna, Masoori, Bangarutheega, Samba
2	Redgram	Redgram, Blackgram, Asha, Nadipi

Different crops need different climatic conditions to grow. The duration also differs from crop to crop. In some cases it takes two or three months, in others it takes 6 months. Rice, Jowar, groundnut take 4 months. Rice needs more water, where as jowar and groundnut need less water. Jowar and groundnut are rain fed crops. Crop period for redgram is 6 months. It is also a rainfed crop. What are the different crops grown in your village/around your city. Collect the details and fill the following table.

Sl.No.	Name of the crop	Crop period	Water facility/ rainfed crops / crops requiring more water

2.8. Places where different crops are cultivated in Telangana

You have read about the different crops that are grown in our state. The details of the different crops grown in different districts are given below.



Group work



- ◆ List out the district wise crops on the basis of the above map.

Sl.No.	Crops	District where the crops are grown
1.	Rice	
2.	Jowar	
3.	Cotton	
4.	Mirchi	
5.	Mango	
6.	Coconut	
7.	Wheat	
8.	Maize	

Keywords

agriculture

stages in cultivation

agricultural equipment

water facility

seeds

shortage of seeds

crop production

sustainable agriculture

poultry farm

dairy farm

agricultural practices

pesticides



What have we learnt?



1. Conceptual Understanding

- What is cultivation?
- What are the modern equipments that are used in cultivation?
- Give examples for crops that need less water.
- It's not good to use chemical fertilisers. Why?
- What are bio-fertilisers? Why should we use only them?
- What are the advantages of preserving seeds?
- Agriculture is a good profession. Justify.

2. Questioning and Hypothesis

- What questions would you ask a farmer to know details about a crop grown in your village?
- Frame few questions on the usage of machinery in farming.

3. Experiments - Field Observations

- Buy some fruits from the market. Wash the fruits in a bowl and observe the water. Tell your observation points.
- Sow the seeds of jowar, millets, red gram and ground nut in a broken pot / flowerpot. Observe the growth of the plants. Find out the height of each plant and write in your notebook.

4. Information Skills, Projects

- Meet farmers in your locality and collect the following information and fill the table

Sl.No.	Name of the farmer	Crops Grown	Fertilisers used	Chemicals sprayed	Farm equipment used	Farmers opinion on the crop

- What crops did they grow more?
 - What fertilisers did they use more?
 - Name the equipment used by more number of farmers.
 - Name the pesticides that are used less by farmers?
 - Collect the opinions of farmers on cultivation?
- b) Meet the farmers in your locality and prepare a report on the problems they are facing in agriculture.

5. Communication through Mapping Skills, Drawing Pictures and Making Models

Answer the following questions on crops with reference to the T.S map.

- What are the crops mentioned in the map?
- Name the crop which is cultivated in more districts. Name the crop which is cultivated in few districts
- Which district cultivates more varieties of crops? What are they?
- Identify the crops grown in your district.

6. Appreciation, Values and creating Awareness towards Bio-diversity

- a) Farmers labour is hidden in the food we eat. What is your opinion on this.
- b) How do you feel when you look at the green fields?
- c) Where do you want to spend more time - at school; at home; or in the green fields. Why?
- d) How would you contribute in keeping the earth green?

I can do this

- | | |
|--|----------|
| 1. I can explain the different stages in cultivation, the equipment, the pesticides and the seeds used in cultivation. | Yes / No |
| 2. I can explain what is ideal cultivation. | Yes / No |
| 3. I can collect information related to cultivation and write it down in tables. | Yes / No |
| 4. I can explain details of the crops grown with the help of our state map. | Yes / No |
| 5. I appreciate the hard work of farmers in cultivation. | Yes / No |

3



LET'S GROW TREES

3.1. Observe the picture and discuss



- What differences do you notice in the above two pictures?
- Which picture do you like? Why?
- Where do you find more greenery? Why?
- Can you guess why the second picture has changed ? Where do you find more animals? Why?
- Are there any places in your locality without trees? Why?
- What should we do to avoid the occurrence of such conditions?

We feel very happy and cheerful when there are plants and trees around us. Forests have many types of trees. Forests render greenery to the earth. Forests should occupy one-third (33%) of the earth's space. But this cover is decreasing day by day and it is only 21% at present. As the area occupied by the forests is decreasing, the number of birds and animals is also decreasing. The decrease in rainfall leads to decrease in ground water level and the rivers are getting dried up. The earth's outer surface is getting hotter. Ecological balance is being disturbed due to environmental pollution, because of human activities.

If these conditions continue, it may lead to the extinction of all the living organisms on the earth. In order to overcome this situation, we have to protect our environment. It is our duty to safeguard (protect) trees and forest wealth. We should protect forests and grow trees where ever possible. Let us know how to grow plants, and the favourable conditions essential for their growth.

3.2. Is light essential for the growth of a plant?

Do like this



- ◆ Take two potted plants. Keep one potted plant in a dark room and the other potted plant in the sunlight, (open place). Water these plants every day. Observe them for a week. Record your observations in the table given below.

Change observed in days	Plant in the dark room							Plant in the open place						
	1	2	3	4	5	6	7	1	2	3	4	5	6	7
Is it healthy?														
Height														
Other changes														

Group work



- ◆ Identify the difference in the growth of two plants and discuss in groups. Say the results ?
- ◆ Which plant is healthy? Why? What did you learn from this experiment?

3.3. Is fertile soil essential for the growth of a plant?

Do this

- ◆ Take two pots. Fill one of them with ordinary soil and the other with soil mixed with organic manure. Plant two similar healthy plants in them. Keep them in sun light. Water them everyday. Observe them for a week and tabulate your results.



Change observed in days	Plant in ordinary soil							Plant in fertile soil						
	1	2	3	4	5	6	7	1	2	3	4	5	6	7
Is it healthy?														
Height														
Other changes														

Group work



- ◆ Which plant has grown well? Why?
- ◆ What did you learn from this experiment?

3.4. Is water essential for the growth of a plant?

Do this



- ◆ Select two plants growing in a fertile soil. Pour water to one of the plants every day and ignore (do not pour water) the other. Observe them for a week and write down your results in the table given below.

Changes observed in days	Plant without water							Watered plant						
	1	2	3	4	5	6	7	1	2	3	4	5	6	7
Is it healthy?														
Height														
Other changes														

Group work



- ◆ What did you learn about the conditions essential for the growth of a plant from the above experiments?
- ◆ What are the other factors that you have observed in the above experiments?
- ◆ Exhibit the observations of the experiments, discuss about the results in your class room.

We have learnt from the above experiments that water, sunlight and fertile soil are essential for the growth of a plant. Let us know about the places favourable for the growth of plants.

3.5. Growing plants

Plants prepare (produce) food not only for themselves, but also for all the living beings (creatures). Therefore, the plants are called the 'Producers'.

Think and say...

- ◆ Which places are suitable for growing different types of plants? What are the precautions to be taken while planting trees? Why?

3.5.1. Which plants are to be planted and where?

- We should select a suitable place for planting a tree.
- Plant trees which are always green and give shade, like neem and Indian beech (Kanuga) in the school premises.
- Grow fruit bearing trees like lemon, mango, guava, cheeku, banana; flowering plants like temple tree, night jasmine (Parijatham), jasmine, nerium, nandivardanam and other trees like drumstick, curry leaf, coconut, neem and henna in the backyard of your house.
- Plant trees like neem, peepal, banyan and derris on both sides of road.
- Vegetables can be grown in pots on the terrace, in the balcony and in other places that receive sunlight.

Think and say...

- ♦ Which type of plants can be grown in parks?
- ♦ Which plants can be grown in the little place available in your house?

We can grow fresh vegetables and leafy vegetables with less expenditure. The vegetables grown in our house are tasty and of good quality. These vegetable gardens prevent pollution and bring a cheerful atmosphere to the city dwellers. Watering these plants ensures our physical exercise and also helps in protecting the environment. Green plants growing on the terrace help reduce the temperature in the cities. Roofs of the houses remains cool.

Advantages of trees

- | | |
|---|--|
| <ul style="list-style-type: none">• Give cool breezes, increase humidity in the air.• Give shade.• Give us the flowers and fruits.• Give fire wood.• Help in occurrence of rains. | <ul style="list-style-type: none">• Prevent floods and soil erosion.• Provide shelter to numerous living creatures.• Provide food to many living organisms.• Give out oxygen.• Bring greenery and joy.• Give health and wealth. |
|---|--|

Do you know?

Mango, tamarind, banyan and citrus trees grow very big. Can we grow them in pots? The art of growing such big, tall trees in pots is called "Bonsai" It is a traditional art of Japan.



3.5.2. Precautions to be taken while planting a tree

- Dig a pit, and divide the soil taken out from the pit into two parts.
 - a) Upper soil is fertile. Mix organic manure or neem powder to this soil. Fill the pit with this soil first when you plant a tree.
 - b) The soil deep inside the pit is not so fertile. After planting a tree, put in the pit as an upper layer.
- Plant the trees in places which are well exposed to sunlight. The plant does not grow well if planted in shade. We can grow plants which require less sunlight and can grow under the shade.
- A certain distance must be maintained between two plants. Both the plants become useless when planted close to each other.
- If the plant is bought from a nursery, it is kept in a polythene (plastic) cover. Tear the cover with a blade without disturbing the mud and plant it in the soil pit.
- Immediately after planting a tree, press the soil with the feet so that the roots do not come into contact with the air. Insert a stick into the soil to provide support to the plant.
- Water the plants sufficiently. Excess watering immediately after planting may lead to the death of the plant.

Think and Answer

- ♦ We have learnt about the precautions to be taken while planting trees. What protective measures are to be taken to grow plants well?

3.5.3. Plant Protection - Measures to be taken

- Use a locally available fence to provide protection to the plant.
- Termites do not infect a stick dipped in tar. Fix sticks dipped in tar on three sides of the plant. Now, wrap a net around them.



- To protect plants from animals, fix sticks dipped in tar on four sides of the plants and wrap either old cement bags or fertilizer bags around them. This is because the animals come near the plant only when they see the green leaves.
- When pests infect the plants, soak neem powder for five days in water and sprinkle water on the tree and the remaining powder on the visible side of the plant. This gives protection against the pests and the plant grows well.
- Try the following method, if it is not possible to water the plants daily. Take an empty two-litre water bottle and make a hole on its lid. Insert some cotton or a cotton cloth into this hole such that, only one drop of water falls from it. Cut the bottom of this bottle and fill it with water. Tie this bottle to the stick giving support to the plant. By adopting this method, we need not water the plant for a week.

3.6. Council for Green Revolution

We have learnt about planting trees and the protective measures to be taken. Where do we get these plants? Who will provide us? These issues bother us. Some people plant the locally available plants. Some people bring them from nurseries. The people belonging to the Council for Green Revolution are working through schools in the villages/cities to render (provide) the necessary help and provide plants to be grown in our schools.

Plant trees and develop relationship with them. It is our duty to protect the water, the air and the environment which are essential for our life. Our life depends on trees. The Council for Green Revolution reminds the adults and the children not only of planting and protecting plants but also need for a pollution free environment. The main aim of this organisation is to protect the environment. It has been formed only for this purpose. This organisation has laid a platform for every school by developing an understanding about the environment and make every students to participate in the Green Revolution. This organisation aims at planting one crore plants. It has supplied plants to 650 government schools so far. They have given five plants to each student. Thousands of teachers and students are made partners. Lakhs of plants are planted.

They impart knowledge to the students by asking them to read the environmental pledge, educate them on the precautions to be taken while planting the trees and their protection (safety measures).



Teachers, students & Mrs. Leela Laxma Reddy, President of Council for Green Revolution in a school premises planting the trees.

They are successfully organizing the programme by planting trees.

The organisation is fruitfully conducting the programme of planting trees by creating awareness among students regarding environmental pledge, precautions to be taken while planting trees, protective measures etc.

For the last two years, the Council for Green Revolution has been conducting 'Forest Motivating Movement' (Programme) as a part of plantation of one crore plants. Students and teachers from Mahaboobnagar, Nalgonda, Warangal and Ranga Reddy districts are carrying forward the movement. Medak district has started this movement. Two lakhs students have planted ten lakhs plants in one day. Students are made to take a pledge on environmental protection.

Greenery - Greenwood

Gaddampally, ZPHS is an ideal example for greenery and won the Green School award recently. This school is located at Telakapally mandal in Nagar Kurnool district. The school Headmaster, teachers and students together tried and made it a green school.

The Council for Green Revolution has extended their cooperation by supplying them 400 plants. Half of them were planted in the school and the rest in their houses. By giving responsibilities of the plant protection and growth to the students we are enabling them to love and enhance their attachment with the plants. They celebrated birthdays and tied Rakhi to the plants.

Environmental Pledge



- I will plant and grow trees as they give out oxygen which plays a vital role in the existence of the living organisms.
- I will motivate the people to plant trees as they bring rainfall.
- I will make all efforts to see that air, water and soil do not get polluted.
- I will let the people know the fact that the house which protects us from heat, cold and rain cannot be built (constructed) without trees.
- I will condemn cutting down of trees, exploiting forest wealth, factors causing pollution, interrupting nature. I will not allow such activities to take place anywhere.

On this occasion, I take oath to see that the people follow the above aspects and I too will obey them and set an ideal example.

- Children, you too take this pledge in your school.

Thus, to make the environment green in the school not only the Council for Green Revolution, but also other organisations like Vandemataram Foundation, the Forest Department, National Green Core etc., are putting their best efforts. If you want to plant trees in your school or in your village, consult Council for Green Revolution.

Certificate

Council for Green Revolution presents 'Love for the Forests' award and medal to the students who participate in 'Forest - Motivating Movement' for planting, growing and protecting the plants given to them and also help in protecting the environment.

Think...

- ♦ Is there any voluntary organisation in your locality working for the environment and greenery? What are its functions?

Do you know?

The National Green Core was established with the objectives of filling the school surroundings with greenery and protecting the environment. Enjoying the greenery with the learning experience, recognizing the hard work, identifying the environmental pollution, explaining about it, creating awareness towards the conservation of environment to the villagers etc. are its other goals. At present it is functioning in high schools of our state with various activities.

Do you know?

Many people migrate from the villages to towns and cities in search of livelihood (jobs). 67% of the population lives in towns. As the population is increasing in cities, the quantum of waste products and problems is also arising. Temperature is increasing along with pollution. So, plans are being made to convert the waste material of the living organisms into manure and use it as a fertilizer to grow vegetables. Crores of rupees is being spent to dispose the garbage in Hyderabad city alone. This problem can be solved by converting the organic garbage into organic manure. Department of Horticulture has planned and implemented the process of making compost from kitchen waste to use it as a manure for plants in pots on the terrace and balcony. Moreover, bags, polyethene covers, baskets, tubs, boxes, plastic plates, cement bags, ladders and old tyres are used in growing vegetables.

Group work



- ♦ What steps would you take to promote greenery in your school?
- ♦ What will you do to protect the plants you planted?
- ♦ Whose help would you take to plant the trees?

3.7. Vegetables in the backyard.

When chemical fertilisers and insecticides are used in order to increase the yield, it results in poisoning the vegetables. Poisonous chemicals are found in the tests conducted on vegetables growing in the sewage water in cities. Consuming such vegetables leads to diseases like diabetes, cancer, hypertension etc.

In the olden days, there used to be an open place (backyard) in the every house. They used to grow the necessary vegetables and leafy vegetables. Gradually joint families and the number of big houses decreased resulting in the formation of small families and smaller houses. As the land rates are increasing considerably, houses are constructed in smaller area. So, it is not possible to cultivate vegetables. Every body is depending on the market for procuring vegetables. Chemicals are used to store them for transportation to cities. Such vegetables are not tasty and cause diseases (show their effect on our health) too.

We can cultivate healthy vegetables on the terrace of our house. We can grow vegetables that are good for our health in our house itself without using chemical fertilisers and insecticides. Instead we can use organic manure and neem oil to grow the vegetables.

Do you know?

The U.N.O. has declared Neem Tree as the Tree of the Century.



Neem is the medicine for thousands of diseases.

Think and say...

- ◆ Where do you bring vegetables from?
- ◆ What do you do to grow vegetables in your house?

Keywords

producers	protection	Forest Motivating Movement
growing plants	places for plantation	Horticulture Department
sun light	plants protection	vegetables in the backyard
fertile soil	Environmental Pledge	Green Revolution
chemical fertilizers	organic manure	



What have we learnt?



1. Conceptual Understanding

- a) Why should we all take the Environmental Pledge?
- b) What are the conditions essential for the growth of a plant?
- c) What precautions are to be taken while planting trees?
- d) What measures are to be taken for the protection of plants?
- e) What are the differences between the vegetables cultivated in our house and those purchased from the market?

2. Questioning and Hypothesis

- What questions would you ask to know about the factors essential for the plants to germinate and grow crops?
- What questions would you ask if you want to grow vegetables in your school or at home?

3. Experiments - Field Observations

Observe and Discuss:

- Visit a nearby garden / nursery / park. Record the names of the plants which you see.

Flowering plants	Fruit bearing plants	Ornamental plants

- Plant two plants and observe their growth and record the changes in them.

4. Information Skills, Projects

Details about the plants planted in Gopalapuram during 2008 to 2012 are given in the following table. Observe them and answer the questions given below:

Year	Trees planted			Plants alive		
	In Schools	Road Side	In Forest Land	In Schools	Road Side	In Forest Land
2008	20	40	1050	15	18	860
2009	10	55	1200	8	16	1053
2010	18	35	2000	15	15	1758
2011	20	65	965	15	32	815
2012	25	45	1800	22	18	1763

- Where did they plant more trees?
- Where did less than half of the plants survive? What could be the reasons?
- How many plants were planted in the school in total? How many of them are survived?

- Which year did they plant more trees?
 - Which year did many plants survive? What could be the reason?
- a) Plant a tree and take care of it, record your observations daily.

Date on which the seed was sown : _____

Date on which the seed sprouted : _____

Size of the 15 day old plant, number of leaves : _____

Size of the 30 day old plant, number of leaves and branches : _____

Size of the 60 day old plant, number of leaves and branches : _____

5. Communication through Mapping Skills, Drawing Pictures and Making Models

- a) You are taking care of a plant you planted. Draw the pictures of the plant from the day it was sown to its 30th day in your note book.

First day of sprouting	15th Day	30th Day

6. Appreciation, Values and Creating Awareness Towards Bio-diversity

- a) Plants give us food, shelter and clothing. How should we deal with them?
- b) Collect songs about plants and exhibit them on the wall magazine. Sing them in Balasabha.
- c) We can split bamboo longitudinally. Make a list about the articles we can prepare by splitting bamboos. If bamboo did not have this special quality, what things would we miss? Think and write.
- d) How do you feel when you look at a beautiful flower / fruit / vegetable garden?

I can do this

- | | |
|--|----------|
| 1. I can explain the conditions necessary for the growth of a plant. | Yes / No |
| 2. I can demonstrate the experiment showing the growth of a plant. | Yes / No |
| 3. I can draw and explain the growth of a plant. | Yes / No |
| 4. I can explain the precautions to be taken while planting a tree. | Yes / No |
| 5. I can take measures to protect the plant and also plant trees at school and home. | Yes / No |

4



NUTRITIOUS FOOD



4.1. Varieties of food items

We get energy from the food we eat everyday. Food helps us to grow and maintain good health. Let us see what Navid, Aruna and Sagar eat daily.

Navid eats (takes) rice with pickle, chilli powder and oil. He rarely drinks milk, eats fruits, vegetables and leafy vegetables occasionally. Sometimes, he buys junk food from the shop and eats it.

Aruna likes to eat the food available in the market like chips, mixture, biscuits, ice-creams, bread-jam, noodles etc., everyday. She does not prefer eating rice, vegetables, fruits, leafy vegetables and pulses (dals).



Sagar eats different varieties of food such as vegetables, cereals, eggs, leafy vegetables, fruits etc. He eats home made ground nut laddus and gingelly (sesame) laddus. Besides these, he eats

sprouts (germinating seeds) and raw vegetables. Boiled or fried groundnuts, green grams, Bengal gram, jowar chapatis are taken as food in his house. Ragi malt is also used as food by them.

Group work



- ◆ Why do you think Navid eats food only with pickles?
- ◆ Are Aruna's food habits good? Why?
- ◆ Of the three children mentioned above, whose food habits are similar to you?
- ◆ Among the three, whose food habits do you think are correct? Why?

Our health depends upon the type of food we eat. Everyday, we should eat all types of food items. We should eat the food which helps us to grow, gives energy, and health and which helps develop immunity against diseases. Do you know the components present in the food we eat?

4.2. Energy giving Foods - Cereals, Millets

Paddy, wheat, jowar, maize, ragi, bajra, little millet (samalu), foxtail millet (Korralu) are called millets (chirudhanyalu). These food items give the necessary energy to our body. We need energy to grow, to work and also for our organs to function properly. The component which give energy are called carbohydrates or starch. 'Millets' contain more of starch. Nutrients like proteins, vitamins, mineral salts are also present in little quantity. Let us observe the following pictures of the millets and cereals which contain carbohydrates.



Group work



- ◆ Which of the above do you not know?
- ◆ What food items are prepared from the grains given in the picture?
- ◆ Which grains are eaten in your house?
- ◆ Why was the usage of ragi, jowar and other millets decreased?
- ◆ Why do we consume rice, wheat or jowar mostly?



Potato, sugar, jaggery, sweet potato, some varieties of fruits also contain nutrients that give us energy. Butter, ghee and oils contain more amount of fats. Fats also give us

energy. Excess fats are stored in our body. The energy stored in the form of fats gives us extra energy when needed by the body.

4.3. Food Substances Useful for Growth - Pulses, Milk, Eggs

Bengal gram, green gram, black gram, chick pea, peas, etc. are called pulses. Along with them, milk, eggs and meat help in our physical growth. We grow well if we eat all these.



Bengal gram



Green gram



Black gram



Red gram



Chick pea



Peas



Milk

Fish

Eggs

Meat

Group work

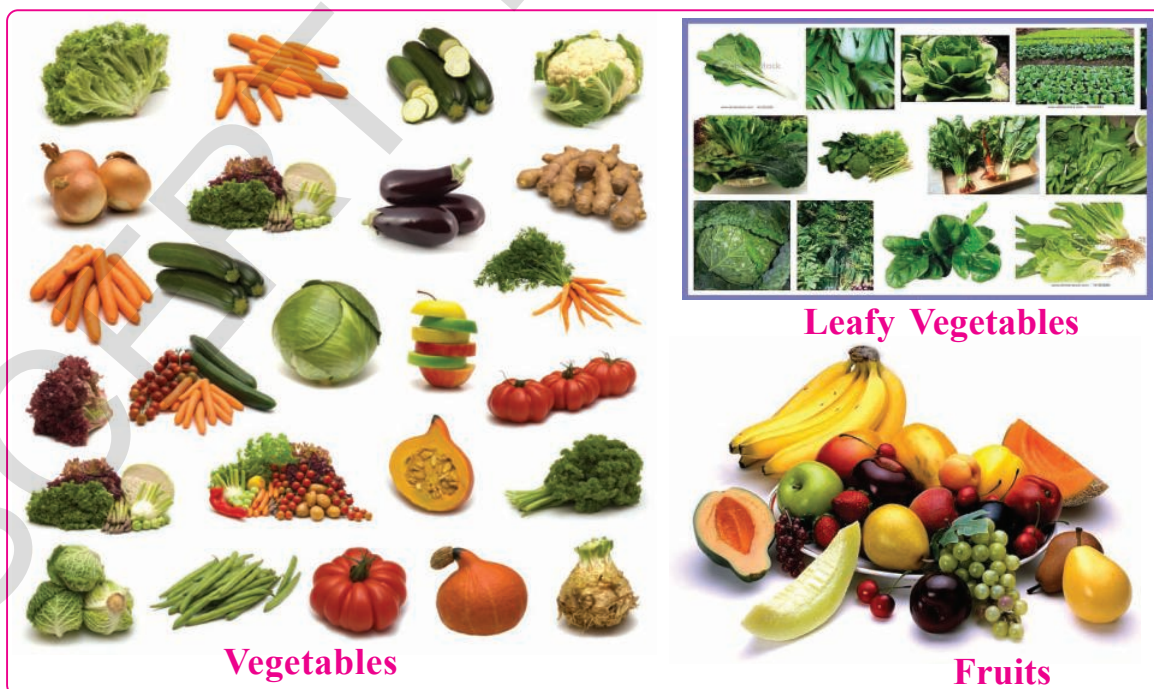


- ◆ What items from the previous page, do you know?
- ◆ What food items are prepared from them? Do you like them? Why?
- ◆ Which pulses (dals) are used in your house? What are prepared with them?
- ◆ Why can't every one take eggs, milk and curd as food daily. Why?

When some cells die they are replaced by new cells in our body. For example when we are injured, new cells are formed to heal the wound. Nutrients called 'Proteins' are essential to heal wounds. These proteins are found in pulses (dals). Apart from proteins, pulses also contain starch, vitamins and mineral salts in minute quantities. In foods like fish, eggs, meat and milk abundant proteins are available. Milk contains calcium which helps in the growth and strengthening of bones. Hence, we should see that our food includes pulses, milk and eggs.

4.4. Food that keeps us healthy - fruits, vegetables

Vitamins are necessary to make use of the carbohydrates and proteins taken by us. Mineral salts like iodine, phosphorus, calcium, iron combined with proteins form a part of our organs. Iron is found in the blood. Calcium and phosphorus are present in bones and teeth. Vitamins are found in sprouts (germinating seeds) and also in the fermented food items (idli, dosa,). Vitamins and mineral salts are necessary for our body and are found abundantly in fruits and vegetables.



Think and say...

- ◆ Which fruits and leafy vegetables did you eat during last week?
- ◆ What raw vegetables do you eat?
- ◆ Write the names of the fruits which you never ate?
- ◆ Write and discuss the reasons why you do not eat fruits, everyday ?
- ◆ Write the names of the fruits and vegetables available in your locality which you need not buy ?
- ◆ What food substances improve our resistance against diseases?

When compared to carbohydrates and proteins, vitamins and minerals are needed in a very small quantity for our body. They are essential to our body. We fall sick, if they are not taken enough in our food. They give us resistance to fight against the diseases.

4.5. Importance of food

4.5.1. Food - Health

Rashmi is 5 years old



Rashmi looks like a three - year old girl.

Her hands and legs are thin. Her stomach is swollen like a pot. She falls ill very often. She always looks tired. She cannot go to school regularly. She does not

have enough energy even to play.

Food

It is very difficult for her to get minimum meals.

Kailash is 7 years old

Kailash appears to be older than his age.

He is obese. It is difficult for him to run and walk. He can not do his routine work actively. He spends most of his time watching television.

Food

He does not prefer to eat home-made food like rice, vegetables, dals and chapati. He eats chips, burger, pizza and likes cool drinks.



Think and say...

- ◆ Why are Rashmi and Kailash unhealthy? What kind of food should they eat if they have to become healthy?

4.5.2. Nutritious Food

We have seen Rashmi and Kailash. Kailash does not like the food cooked at home. On the other hand, it is difficult for Rashmi to get food. More than half of the children across India do not get required nutritious food, necessary for their proper growth. Think, why is their condition so? These children are weak and frequently fall ill. Every child has a right to get the proper nutritious food. For this purpose, the government is implementing, 'Mid-day-meals' program in all the government schools providing nutritious food to all the school going children. Every child must have mid-day meals in the school. Government has given the 'menu' which contains the food items to be supplied daily. Parents and teachers should see that the lunch is provided as per menu.

Think and say...

- ♦ What food items are served for lunch in your school?
- ♦ Are you getting all types of food, with nutrients in your school?
- ♦ What is your opinion about the Mid-day-meals programme?

Group work



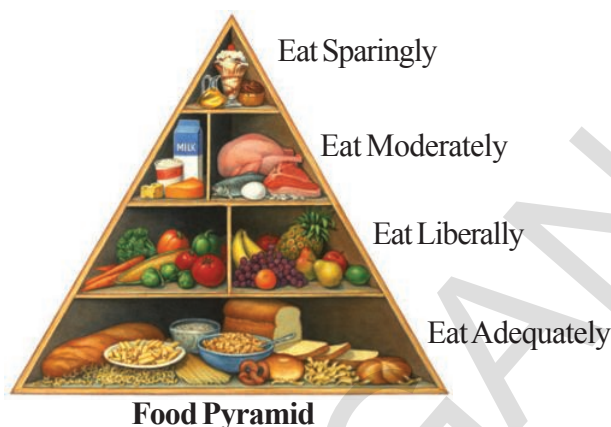
- ♦ Write about the food items you had last week at your home in the table given below.

Day	Food items taken in your house	Energy giving	Help in growth	Healthy food
Monday				
Tuesday				
Wednesday				
Thursday				
Friday				
Saturday				
Sunday				

- ♦ Which food items are served very often?
- ♦ Which food items have nutrients that give us energy, help in growth, make us healthy?
- ♦ Do you think that the food you have taken is nutritious? Why?

We feel hungry everyday. That means our body is reminding us that we need to take food. Our body needs carbohydrates, proteins, vitamins and mineral salts. We need to take food that contains all the nutrients. Such food or diet is called a balanced diet. We should eat food that contains various types of cereals, millets, pulses, vegetables and fruits everyday as each one is a source of different nutrients. The

food that is eaten is digested in the body. The useful part of the digested food reaches the blood. This digested food reaches all parts of our body through the blood. Hence, the body gets energy. This helps in body building (growth of the body) and also in maintaining good health. We become healthy. That is why, we should eat food that contains all the necessary nutrients.



Think and say...

- ♦ What happens if we do not eat all types of food?

Do you know?

A medium sized tomato contains 1.08 gms. of proteins, 1.5 gms. of fibre. Minerals like potassium, phosphorus, magnesium, sodium etc. are available abundantly. Along with these, Vitamin A, Vitamin B₂, B₆, Vitamin C, Vitamin E, Vitamin K and other Vitamins are



also present in plenty. It gives 22 calories of energy.

Our body and face, swell, if the nutrients required for the growth of the body are not taken. Children can not remain active in studies and also while playing games. They look tired. Their hair falls off.

Hands and legs become thin if we do not eat the food that gives us energy and helps in growth. Belly swells and ribs can be seen clearly.

Body growth and development is retarded if the necessary nutrients are not taken. Brain does not develop properly. Thus, physical and mental development is retarded. Neither we can study nor play well.

Some children throw away the pieces of vegetables and curry leaves from the curry or dal served to them. Most of the children prefer to eat their food with pickles brought from home. These children are thin and weak. Such children fall ill very often. They do not grow properly and remain short and weak.



Some children do not like to eat the food cooked at home. They eat junk food (unhealthy snacks) and they become obese. They suffer from health problems. A three - legged stool can not stand even, if one of its legs is broken or missing. In the same way, energy giving foods (carbohydrates, fats, oils), growth foods (proteins) and foods that help in maintaining good health (vitamins and minerals) must be present in the food we take. Lack of any of the above makes

people unhealthy.

4.5.2. What should we eat?

The food habits followed in our houses for years are good and helpful in maintaining our health. Now-a-days people are getting used to eat instant food. This leads to less intake of nutrition. Jowar corns (popcorns), boiled or fried Ulavalu (horsegram), bengal gram, round gram cowpea (bobbarlu), semi fried jowar spike, ground nuts are beneficial (helpful) for health. Like wise, ragi or jowar chapathis, hand-pounded rice, boiled jowar, laddus made of black gram, groundnuts gingelly, cooked ragi etc., contain good nutritive values. They are tasty too! We should take care that the food we eat is enriched with them. Intake of fresh and low cost leafy vegetables, vegetables and fruits is necessary for good physical and mental development.

Think and say...

- ♦ What type of food do you take very often ? Why ?
- ♦ What type of food do you take meagrely ? Why ?

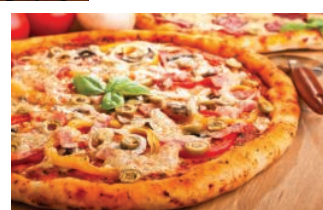
4.6. Junk food

While going home from school, children purchased some eatables from a shop. They purchased some other eatables from another shop and went home eating. Discuss about the eatables purchased and eaten by the children.

Group work



- ◆ Write the names of the junk food available in the shop.
- ◆ What do you like to buy and eat? Why do you like them?
- ◆ How many days can these items be stored for?



Think and say...

- ◆ List out the items which you do not know from the above picture ?
- ◆ Do you know the method of preparation of any of the above?
- ◆ How long can they be stored?
- ◆ Junk food, cool drinks are harmful to our body. Then why are they available in the market?
- ◆ Is junk food healthy?

Cool drinks are harmful to our body - Try to know how they spoil your health. It is healthy to drink lemon juice, butter milk, coconut water, fruit juices and milk.

Machines are used to prepare the items given in the above picture. In order to store them (preserve them) for longer duration, chemicals are used. They add salt, chilli powder and sugar to make them tasty. To make them attractive they add artificial colours. In the process, they lose their natural nutrients. These are wrapped

and packed in colourful packages. Many people like them as they are tasty, attractive and supplied in beautiful packets. We do not get the required nutrients from these junk foods. Generally, junk and fried foods contain high calories (carbohydrates) more salt and oil which harm our body. So, it is better to avoid them rather than suffer from health problems like obesity as faced by many people all over the world.

Keywords

nutritious food	traditional food	resistance
carbohydrates or starch	energy	children's right
proteins	growth	obesity
junk food	immunity	mid-day meal
	maintain good health	food pyramid



What have we learnt?



1. Conceptual Understanding

- What is meant by nutritious food? Why should we take nutritious food?
- Write two examples for each of the foods that give us energy, health and help in the growth of the body.
- What is the difference between carbohydrates and proteins?
- Why should we avoid eating junk food??

2. Questioning and Hypothesis

- Raju's mother prepared Vadas with bajra (Sajjalu). Raju wanted to know about bajra. What questions do you think he asked his mother?
- Kiran is lean (thin) and weak. He does not participate actively in games and studies, he falls ill very often. Why does this happen?

3. Experiments - Field Observations

- Learn about the preparation of fruit salad from your elders and write the method of its preparation.

4. Information Skills, Projects

- ♦ Ask 5 of your friends about the food they eat, what nutrients does it contain. Put a tick '✓' below

S.No.	Name of your friend	Food Taken	Nutritive substances received			
			Proteins	Carbohydrates	Fats	Vitamins
1.						
2.						
3.						
4.						
5.						

5. Communication through Mapping Skills, Drawing Pictures and Making Models

- Draw the diagrams of the food items from which we get proteins, carbohydrates and mineral salts.
- Draw a food pyramid

6. Appreciation, Values and Creating Awareness towards Bio-diversity

- Neelima went to the bakery with her uncle. He said that she could buy a burger or a pizza or a curry puff. But, Neelima said that they were not good for health and she did not want them. Write a few lines appreciating Neelima.
- Why should we preserve / protect all types of millets.

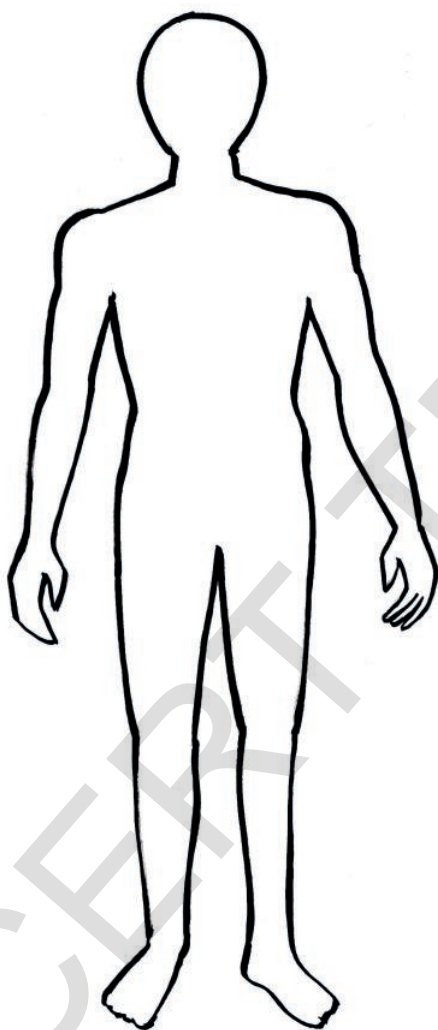
I can do this

- | | |
|---|----------|
| 1. I can explain the need for taking nutritious food. I know what nutrients are present in different food substances. | Yes / No |
| 2. I can question about food items. | Yes / No |
| 3. I can explain the method of preparation of fruit salad. | Yes / No |
| 4. I can talk about the food items taken by my friends and the nutritive substances present in them and I can also write and explain these facts in a tabular form. | Yes / No |
| 5. I can draw and explain the food pyramid. | Yes / No |
| 6. I can highlight the importance of millets and also give information about the harm caused by junk foods. | Yes / No |

OUR BODY PARTS - SENSE ORGANS

5.1. Our body - Parts

Navya is good at drawing pictures. She has drawn a picture of her friend Naveen. After observing the picture her friends said that she missed some of the parts. Observe the picture and draw the parts which Navya missed.



Name the parts of the body you have drawn and write their functions.

Parts of the body	Their function
_____	_____
_____	_____
_____	_____
_____	_____

The organs which are visible from outside the body are called the external organs. We perform many activities with the help of these organs at home and at school. Such as playing, writing, reading and also certain works at home.

We make use of more than one organ to perform various activities. For this we need coordination between the organs. Rani draws good pictures. What are the different organs helpful in drawing? Think.

It is due to the coordination between different organs seeing with the eyes, holding the pencil with fingers and moving hand for drawing the picture, are possible. Similarly, we do many works daily. Which organs in our body help us to do those works. Think.

Group work



- ♦ Write the names of the organs that help in performing different activities.

Activity	Organs that help
_____	_____
_____	_____
_____	_____

5.2. Sense organs

Sing this song :

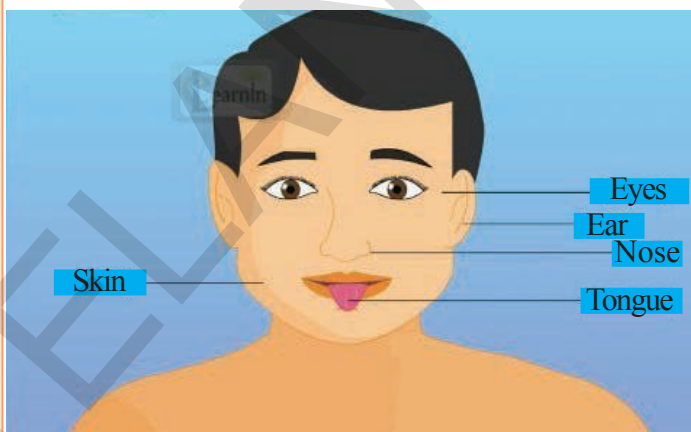
Eyes know the colour of the flowers.

Ears know the melody of the cuckoos.

Nose knows the fragrance of the jasmynes.

Tongue knows the taste of the mangoes.

Skin feels the warmth and cold of our body.



Sense Organs

What does above song tell us ?

Eyes, ears, nose, tongue and skin help us to know about our surroundings. They also help us to sense feelings. Hence, they are called as the sense organs.

Children! You all like riddles very much, Don't you? and Now, let us solve this riddle. They are two which lay side by side but never see each other. what are they?

Sl.No.	Sense Organs	Their function
1	Eyes	To See
2	Ears	_____
3	Nose	_____
4	Tongue	_____
5	Skin	_____

- Say some more such riddles.

5.3. Eyes

Can you reach school with closed eyes. Imagine Can you do your work without seeing? Why can't you do ?



Do this



- ◆ Close your eyes and draw a flower in your note book. Open your eyes and draw the flower again.

- ◆ Which one did you draw better?
- ◆ Can you do your work without seeing?

Now, you have understood the importance of eyes. What is meant by, "Sarvendriyanam Nayanam Pradhanam?" Why do we say this?

How can blind people do their work? How do you feel about them? How can we help the blind people ?

In Navya's school an eye camp was conducted called "Chinnari Choopu". In this programme, they organised eye check up and distributed spectacles to the needy children. They also explained the precautions to be taken to protect our eyes.

We are able to enjoy nature's beauty just because of eyes. Do you know the precautions to be taken, to protect our eyes?

Precautions to be taken to protect our eyes:

- Always read in sufficient light (neither very brighten nor dim). See that while reading, the distance between the book and your eyes is about 30 centimeters. (Measure the distance 30 cm. with a scale).
- Do not read while travelling in a bus or train and other vehicles.
- We must wash our eyes daily with cold water.
- Always watch the television with sufficient light in the room. We must not watch T.V. for too long and from very near. Care must be taken that the distance between the television and our eye must be not less than two and half metres (2.5 m).
- If you are not able to see the letters on the black board, you must inform your teachers.
- Do not rub your eyes.
- Do not use the hand kerchief and towels used by the persons suffering with eye infections like conjunctivities etc.
- Consult an eye specialist / doctor if irritation, redness, watering and burning sensation of eyes persists or while reading if you are not able to see the letters clearly and properly.

The doctor who treats the disorders and diseases of the eyes is known as ophthalmologist or eye specialist.

Group Work



- ♦ What do you do when dust enters your eyes?
- ♦ We must not look directly at the solar eclipse. Why? Find out the reason from your teacher.
- ♦ Say and write how can you help the people without sight?

Think, what help us to keep our eyes healthy.



5.4. Ears

All of us know that we hear different sounds with the help of our ears.

- Observe the shape of your friend's ears and draw.
- If some one whispers, we listen carefully keeping our hands at the back of our ear! Why?



Do this

Activity - 1

Get blind folded. Ask your friend to make some sounds with different things. Identify those different sounds and also the direction of the sound, from where it is produced.

Activity - 2

Close one of your ears and make some sound with your mouth and observe how it is heard? Now, close both the ears make a same sound. Listen to the same sound without closing your ears. Did you notice any difference?

Activity - 3

Ask one of your friends to make a sound by scratching the pencil at one corner of the bench and listen to the sound from the other corner. Let the sound be made again. Now listen to the same sound standing at the edge of the bench. What difference did you notice? When was the sound heard better?

Activity - 4

Prepare a phone using empty match boxes and thread and try to talk to your friends with it.

Do this

What is your range of audibility?

Make some sounds with pencil from a distance of 25 cms. Ask your friend to listen. Increase the distance step by step. Make a note in the given table. The distance at which the sound is audible is the audible range of the person. In this way note the audible range of the students of your class.

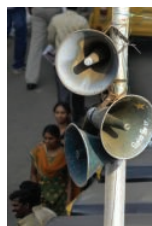
S.No.	Name of the student	Distance the sound is audible

Think and say

- ◆ Who are able to hear the sound from a long distance?
- ◆ Who are able to hear the sound only from a very short distance?
- ◆ What is the distance at which most of the pupils are able to hear?
- ◆ Compare the ranges of students all your classmates. If you notice a wide difference, do not forget to consult a doctor.

If a person can not hear by birth he cannot speak. As they can not hear the other person, they do not know what and how to speak. Hence, they can not speak. Sign language is used for such people i.e., for conveying information through symbols and gestures. Have you ever watched news for the hearing impaired on Doordarshan. If not, watch and talk about it.

Some sounds are pleasant to hear while the other sounds are harsh. Pleasant music and melodious songs make us feel happy. Listen to the soft and melodious songs for a span of 15 minutes. How do you feel? Sounds that exceed the audible range cause sound pollution.



Group work



- ◆ What are the other causes of sound pollution? Make a list.
- ◆ Discuss with your friends about the measures you take to reduce the sound pollution.

We are able to hear the pleasant sounds that make us feel happy with the help of our ears. Ears are very delicate organs. So, we must take special care to protect them.

During festivals and functions, arranging loud speakers with high volume causes sound pollution to others. Blowing vehicle horns repeatedly causes inconvenience to others. Talking to others over cellphones for a long time has to be avoided. Using cell phones extensively is dangerous. Speaking on cell phones continuously damages the sensitive organs of the head. We should not speak loudly.

Precautions to be taken to protect our ears:

- Close your ears when you hear loud and harsh sounds.
- Take proper care to prevent water from entering the ears. Clean your ears with a clean cotton cloth.
- Do not use hairpins or match sticks to clean the ears.
- If there is pain in your ears or any other problem you must consult a doctor immediately.
- Do not put castor oil or any other oil in the ears.

The doctor who treats the problems of ears, nose and throat is called an ENT doctor or ENT Specialist

Think and say

- ◆ Which animal sounds can we understand?
- ◆ Which animals can understand the sounds made by us?
- ◆ Which animals can hear the sounds that are not audible to us?

Do you know

A bat is a nocturnal mammal (active during the night). It detects the obstacles on its way by its own sounds. It identifies objects/obstacles on its way, when sound waves produced by it reflect back and reach it. It changes its path based on the echo it receives from the objects/obstacles around it.

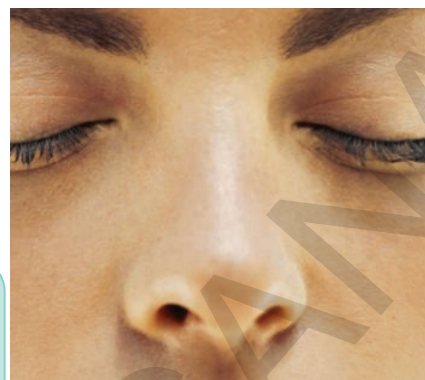


5.5. Nose

As you all know, the eyes help us to see and the ears help us to hear, in the same way, the nose helps us to smell. We can identify many things through smell.

Do this

- ◆ Blind fold your friend with a hand kerchief and ask him/her to identify the different items by smelling them.



Coriander leaves, curry leaves, onion, garlic, cloves, cardamom etc. have good and strong odour. We know their taste through smell. Close your nose and taste them one by one. Do you know the taste of these items? Is the nose used only to smell? Do you know what is the other use of nose? Try to close your nose for a while. Say what happened? You cannot live if you don't breathe. We breathe in and breathe out air through our nose. This is called Respiration. Breathing in air through nostrils into our lungs is known as "Inhalation", breathing out air is called "Exhalation".

Think and say

- ◆ We should not breathe in air with our mouth. Why?
- ◆ When we catch cold we can not identify the different smells. Why?
- ◆ How is the sense of smell useful to us? Why do we catch cold?
- ◆ What precautions do you take to prevent the spreading of cold from one person to another?

Group work



- ◆ Have you ever seen dogs sniffing? What are the other animals which smell? Discuss. How is the dogs' sense of smell useful to us?
- ◆ Butterflies sit on flowers, don't they? Imagine and say on what basis does it move from flower to flower. Colour or smell.
- ◆ What are the precautions to be taken to protect our nose?

We must always keep our nose clean. Do not insert slate pencils, pencils, pieces of chalk, sticks, fingers into your nostrils. Consult a doctor when small pebbles or things stuck in your nostrils and breathing becomes difficult or painful.

5.6. Tongue

Can you hold your tongue and speak? Try doing it. As you all know tongue helps us to speak, swallow food and identify the taste of food! There are taste buds on our tongue and they help us identify the tastes of the food.



Think and say

- ◆ When we eat food that is too hot or too cold, our tongue can not identify the taste. Why?
- ◆ What are the four different types of tastes you know ?

Do this



- ◆ Blind fold your friend. Give him a little salt, sugar, bitter gourd, lime juice and other different food items separately. Ask him to taste each one and identify them.
- ◆ You also identify in the same manner.
- ◆ Our mouth waters, when we think of or see some food items. Make a list of such food items.
- ◆ Stand in front of a mirror and stretch out your tongue. Draw the diagram of your tongue. Compare the figure drawn with your friend's diagram.
- ◆ Observe your friend's tongue with a magnifying glass. Note down your observations.

Group work



- ◆ Can we identify the taste of the food items by sense of smell? How can we identify? Discuss.
- ◆ When we catch cold and suffer from fever, we cannot identify the tastes. Why does this happen? Imagine.

We should keep our mouth clean. We should rinse our mouth before and after eating or else it will result in infection and bad breath. If we do not rinse, germs may attack and cavities develop in our teeth and thus teeth may decay and fall off. Hence, we should brush our teeth and also clean the tongue in the morning everyday and before going to bed.

5.7. Teeth

We identify the different tastes with our tongue. Do we take the help of tongue alone while taking in the food? Teeth are also used along with the tongue. We chew food with the help of our teeth. What happens when we chew the food! Think. We know the taste of food. When we chew the food with our teeth, it mixes with the saliva in our mouth and thus taste is known. People who lose their teeth, cannot chew the food. Hence they do not know the complete taste of food.

Do this



- ◆ Take a piece of any fruit and keep it on your tongue and tell its taste.
- ◆ Now take another piece of the same fruit and chew it well, now tell how it tastes?

Think and say

- ◆ What differences did you find before chewing and after chewing the fruit? Why?

When food is chewed, it breaks into small pieces and mixes thoroughly with saliva and thus gives us taste. Hence, we should take proper care to protect our teeth as they help in chewing and tasting food. Do you know how many teeth we have? Are all the teeth similar?

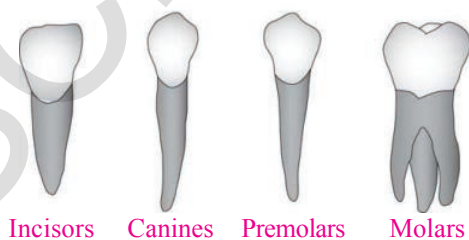
Do this

- ◆ Observe your teeth in a mirror or your friends teeth. Are all the teeth the same? Discuss.

There are four different types of teeth, for biting, tearing, chewing and grinding the chewed food.

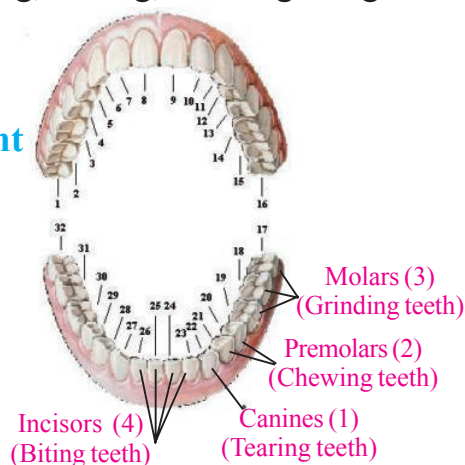
Observe the picture given below:

Type of Teeth



Incisors Canines Premolars Molars

Arrangement of Teeth



Group work



Observe the teeth in your friends mouth and discuss.

- ◆ How many teeth are there in your friends mouth?
- ◆ How many types of teeth are there ?
- ◆ How many teeth of each type are present.
- ◆ How many teeth of each type are present in your mouth?

Type of teeth	Upper Jaw	Lower Jaw	Total

You eat different kinds of food. Don't you! Observe and write in the table the types of teeth that help in eating different food items.

Teeth help us to bite and chew the food and speak clearly. The teeth that first appear in children are called 'Milk teeth'. They fall off at the age of 8 or 9 years. In their place new, strong and big teeth grow.

They are known as 'Permanent teeth'. If we lose these teeth we cannot get back the new ones. Hence, if we do not brush our teeth properly they decay and our mouth smells bad. If this happens, we cannot eat the food we like and we cannot chew properly.

Name of the food item	Type of teeth that used
Apple	
Sugar Cane	
Bengal Grams	
Mango	
Rice	
Peas	

Cleanliness of teeth:

Group work



- ◆ Why do teeth turn yellow?
- ◆ Observe your friend's teeth. Does anybody have yellow or black teeth?
- ◆ Whose teeth have cavities?
- ◆ Whose teeth have food particles stuck in between?
- ◆ Whose teeth have plaque deposits?
- ◆ Whose teeth are healthy and shiny?
- ◆ Why should we brush our teeth every morning and night?

After eating, bits of food particles remain stuck between the teeth and decays. If they remain on the tooth, bacteria grow and produce harmful acids. As a result of this, cavities are formed. The colour of the teeth changes to yellow and black. The gums swell and bleed resulting in tooth ache. Hence, we should brush our teeth properly twice a day.

How should we take care of our teeth?

- Rinse your mouth with water after eating. This helps in washing away the bits of food particles stuck on and between the teeth. Rinse twice or thrice a day.
- After brushing the teeth, rub the teeth and the gums with your finger and also rinse your mouth with water.
- Massage gums everyday. This makes teeth strong.
- Twigs of Achyranthus (Uttareni), Derris indica (Kanuga), Neem and Acacia (Babool) are used to brush teeth or use tooth paste / powder and tooth brush for cleaning.
- Brush the teeth of the upper jaw in downward motion and lower jaw in an upward motion.
- Brush the teeth from all sides, each and every teeth must be brushed properly and in a circular motion. If the teeth are not properly brushed, plaque deposits on the teeth and results in tooth decay. This causes tooth ache. In this case the dentist pulls out the decayed tooth. New tooth does not grow in its place. If we do not have teeth we cannot eat solid foods.



Do not use brick or coal powder, which are coarse and damage the gums & teeth. If we use them, the outer cover / layer of tooth enamel is damaged. When we eat too many sweets or too cold food items also the enamel is damaged. If the enamel is damaged, then we feel pain when we eat hot/cold food or water.

The doctor who treats the diseases of the teeth is called a "Dentist"

5.8. Skin

All the parts of our body are covered by the skin. Do you know what is the use of skin? Skin protects all parts of our body. It is the sense organ for touch. We can feel heat, cold, hardness, softness etc., through skin.

Do this



- ◆ Ask your friend to close his eyes. Touch his / her different parts with a pencil like the lips, the forehead, the palm and ask him or her to say which part is more sensitive.
- ◆ Is the thickness of the skin same throughout our body? Which parts have thick skin and where is it thin?
- ◆ Observe and identify the different parts where the skin is more thick and thin. List the following parts of the body with reference to thickness of skin in order from less thickness to more thickness. Forehead, sole, palm, eye lids, chin, waist, etc.

We shake hands when we meet our friends. At home and school or while travelling we hold many things. Due to this, micro organisms enter our palms. We should wash our hands properly with soap before eating, lest the dust and microbes enter our body through food. They cause ill health and diseases. Do not touch or eat food without washing hands with soap at school and at home. Wash your hands after using the toilet.

Think

- ◆ Even after having bath in the morning, the skin becomes oily and sticky by evening. Why? Hence having a bath after coming from school or after playing is a must.

Precautions to be taken to protect our skin:

- Have a bath twice a day, every morning and evening with soap and water.
- While taking bath, rub the skin thoroughly. This helps in removing the dead cells and makes the skin shine.
- Apply vaseline or moisturiser on your body during winter. Cover your body fully with warm clothes.
- During summer, wear loose cotton clothes and drink plenty of water.
- Drinking lot of water helps in replenishing water lost through sweat. Sweating releases the wastes and it is sent out through skin freely. Skin also becomes smooth.

The doctor who treats the diseases related to skin is called a "Dermatologist" (Skin specialist)

Group Work



- ◆ Discuss and write about different skin diseases.
- ◆ What do you do to keep your skin clean?
- ◆ Discuss, what we should do if the skin is injured.

Do you know?

Skin is the largest organ in the human body. It covers an area of 1 1/2 Sq.metres and weighs 4 kilograms. If skin is not kept clean, skin diseases may occur. Most of the skin diseases are contagious.

Skin is affected first by the changes in the surroundings. If we protect our skin, the skin protects us. Skin protects the internal organs from outside the environment. Skin senses heat, cold and pain. Skin touch helps us to know whether it is bad or good.

Finger prints are formed due to the ridges and grooves present in the skin of the fingers. Take your finger prints and that of your friends on a white paper and observe them. Are they similar? No two persons in the world will have the same finger prints and lines on the palm.

Eyes, ears, nose, tongue and skin are the five sense organs of our body and you have learnt about their importance and the care to be taken to keep them healthy. Sensory organs help us to know everything.

There are some children in our school whose sense organs do not function properly. Isn't it? They too have the Right to get Education. Everyone must learn to help each other. Discuss and say what facilities must be provided in our schools for the children with such special needs. We can organise health check ups in our schools. Every one must get checked up on that day. Doctors will refer to super speciality or multi speciality hospitals, if needed. Govt. is providing aids for the hearing impaired and sight impaired children free of cost. If these children are present in our class we should do the needful to help them.

Keywords

body	protection of eyes	sense of touch
sense organs	sounds / noises	inhalation,
organs	range of audibility	exhalation
external organs	sound pollution	respiration
co-ordination	skin	teeth
between the organs	enamel	taste buds
saliva		



What have we learnt?



1. Conceptual Understanding

- Name the external and internal organs of our body.
- We say that eyes are the most important organs of our body? Why?
- Write the names of the organs used to perform the following activities.

Throwing a ball	Smelling flowers	Stitching a button	Listening to music

- Why do we call only the eyes, ears, nose, tongue and skin as sense organs.
- What are the uses of teeth? What precautions are to be taken to protect our teeth?

2. Questioning and Hypothesis

- What questions would you ask a doctor to know about the protection of eyes, nose and ears?
- Balaji's eye sight has decreased? Why do you think this happened?

3. Experiments - Field Observations

- Close your eyes. Identify and write about the different things by touching them with your hand.
- Close your eyes. Name the different vegetables, leafy vegetables and pulses by using the sense of smell or touch. Try this and see.
- Visit a place nearby where meat is sold, and observe the internal organs of the animals.

4. Information Skills, Projects

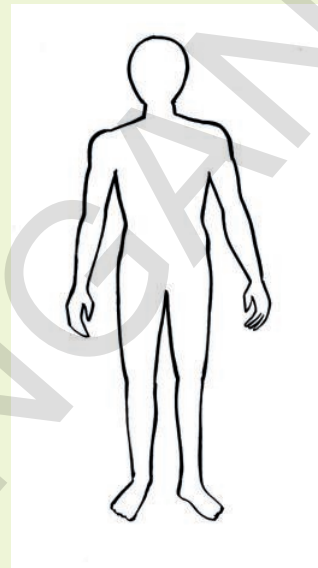
- Meet the ANM / health workers and find out the details of the people in the village/area who are infected with diseases related to eyes, ears, skin and tongue. Try to know the reasons and note them down.

Sl.No.	Organ	Name of the Disease	No. of people effected	Reason

- b) Observe the ears of ten children of your class / school students. Are the ears in the same shape? Are there any differences. Tabulate and say.

5. Communication through Mapping Skills, Drawing Pictures and Making Models

- Draw a diagram of the eye and colour it.
- Draw a diagram of the head and name the sense organs.
- Draw the different sense organs in the given picture and label them.
- Draw the arrangement of teeth in our mouth and identify the types of teeth.
- Make a human model using clay.



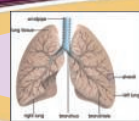
6. Appreciation, Values and creating Awareness towards Bio-diversity

- Now-a-days most people suffering from eye problems at an early age. But some people are able to see even at the age of 70! How is this possible?
- How should we behave with the people with special needs? What kind of help should be given to them?
- Who according to you is a healthy person?
- How can you say that our body is a wonderful machine?

I can do this

- | | |
|--|----------|
| 1. I can explain about the sense organs and the precautions to be taken to protect them. | Yes / No |
| 2. I can ask questions on the importance of sense organs. | Yes / No |
| 3. I can say what things can be identified by the sense of smell and touch. | Yes / No |
| 4. I can draw the sense organs and explain about them. | Yes / No |
| 5. I can help the people with special needs. | Yes / No |
| 6. I can explain about the types of teeth and the care to be taken. | Yes / No |

6



OUR BODY - ITS INTERNAL ORGAN SYSTEM

We have learnt about the external organs of the body in the earlier lesson. Many organs are present inside our body. Let us name the different organ systems and learn about their functions.

Certain observations:

1. Why should we breathe? Why is oxygen required?
2. Which part of the body moves when we inhale and exhale ?
3. How & why does blood run all over body?
4. What makes our body to stand erect and stiff?
5. What happens to the food we eat? How do we get energy to do work?
6. How are wastes removed from our body?

6.1. The Respiratory System - Lungs

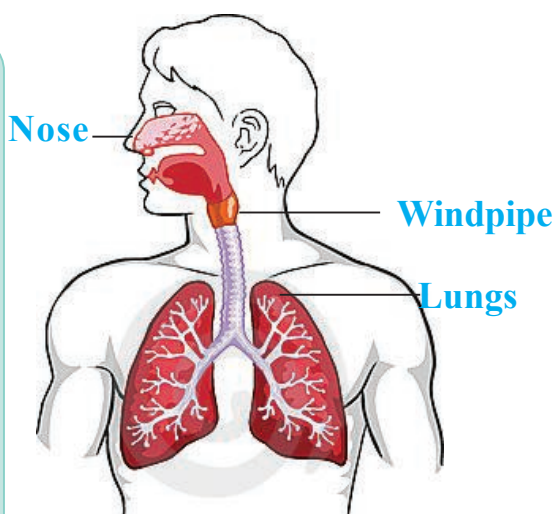
Close your nose for few seconds and see what happens.

We need air to live. As you know, we breathe in and breathe out air through our nose. Do you know, where this inhaled air goes?

Lungs absorb oxygen from the air we breathe in. Nose, wind pipe and lungs are the important organs of the respiratory system. The air we breathe in enters the wind pipe, the wind pipe divides itself into two, and opens into the lungs. The walls of the nostrils are wet and have tiny hair which stop the dust and dirt particles from entering the body.

Do This

- ◆ Using a measuring tape, measure the circumference of your friends chest when they breathe in and breathe out. Note the details in a tabular form.
- ◆ Place your hand on your chest and count how many times you inhale and exhale air in one minute.
- ◆ Compare your observations with those of your friends.
- ◆ Observe the lungs of a goat or sheep in a butcher's shop and write down your observations.



Respiratory System - Lungs

The air we breathe in enters the two spongy saclike structures called lungs in our chest region. The lungs are made up of many tiny structures (alveoli). These structures help in the exchange of oxygen and carbondioxide. On the walls of the alveoli there are many minute blood capillaries. These help in absorbing the oxygen from the air we breathe in and supply it to all the parts of the body through blood. The doctor who treats the diseases of the lungs is called a "Pulmonologist".

Group work



- ◆ We should cover our nose with a hand kerchief when exposed to dust, dirt and smoke. Why?
- ◆ What should we do to get fresh air ?
- ◆ What should we do to inhale more air?

In 'Yoga' and meditation emphasis is laid on breathing. This help us remain healthy.

6.2. The Circulatory System - Heart

Lubdub, Lubdub, Lubdub

Listen, Listen, Listen

While we walk, while we stand

While we are asleep, while we run

Then, now, always

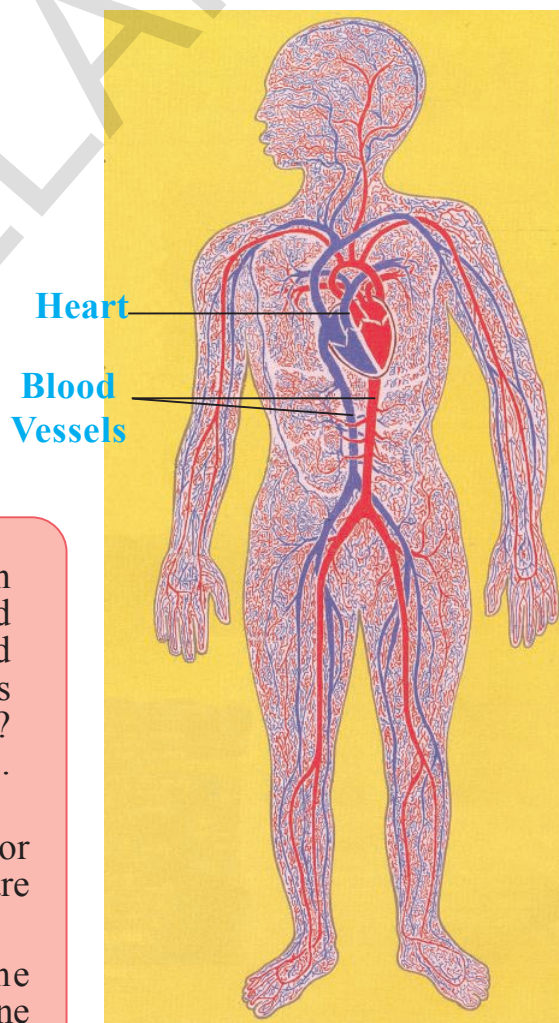
Lubdub, Lubdub, Lubdub

Listen, Listen, Listen

Group work



- ◆ Place one of your ears on your friends chest and listen to the sound carefully. Where does this sound come from? Discuss with your friends. Name that organ.
- ◆ Which instrument does the doctor use to listen to the heart beat? Prepare a model of the stethoscope?
- ◆ Using a stop-watch, count the number of times the heart beats in one minute.



Circulatory System

Heart supplies blood to all parts of the body. Blood transports oxygen and a variety of materials obtained from the food we eat to each and every part of the body. The food we eat is **sent into the blood and through blood vessels it is sent to different parts of the body and thus helps give us energy to perform our activities**. Blood helps us to regulate the body temperature and to fight against the disease causing germs. Blood is a fluid tissue made of plasma. It contains three types of blood cells. They are Red Blood Corpuscles (RBC), White Blood Corpuscles (WBC), and Blood Platelets. Red Blood Cells carry oxygen to all the cells of our body.



White Blood Cells fight against the disease causing germs. Blood platelets help in coagulation of blood. The doctor who treats the diseases of the heart is called a "Cardiologist" or "Heart specialist".

Do you Know?

The size of one's heart is the same as one's own fist. $\frac{2}{3}$ rds of the heart (two-third) is on the left side of chest and $\frac{1}{3}$ rd (one-third) is on the right side. The heart pumps blood to different parts of the body.

Think and say

- ♦ Why is the heart considered the most vital organ of our body?

We will be healthy when the blood is supplied to all parts of the body properly. We should eat healthy food to have sufficient blood in our body. Peanut bar / ground nut bar, gingelly bar (Til), eggs, milk, leafy vegetables etc. must be taken to increase the quantity of blood in our body.

6.3. The Skeletal System

Press your body with your hand at different places. Which places feel hard? Why? Think.

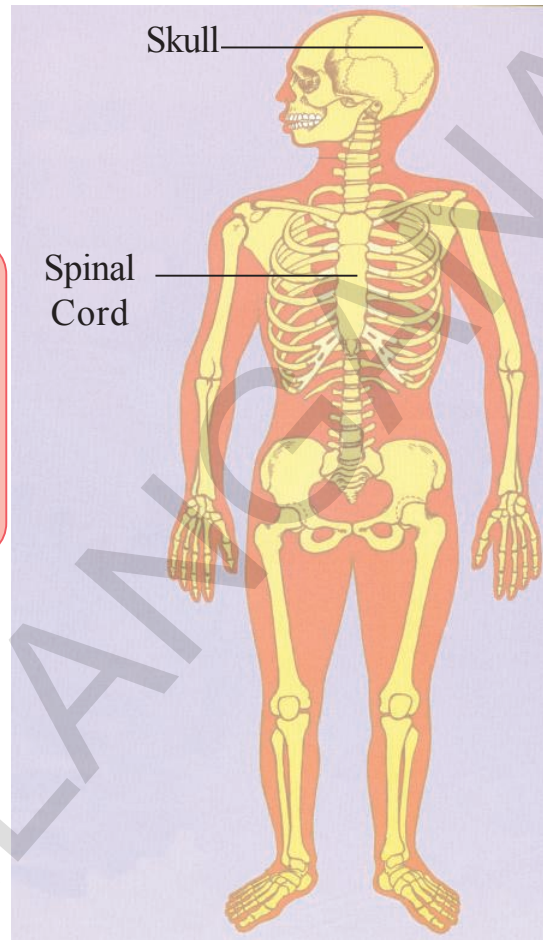
Group work



- ◆ Observe some x-ray photographs and identify the part to which they belong. Draw the diagrams.

- ◆ How do bones help us?

There are many types of bones in our skeletal system. There are 206 bones in our body. Some bones are small, some are big, some are wide, some are sharp, some are curved with different shapes and sizes in different parts of the body. The skeleton gives shape and support to our body. It protects the important organs of the body. The bony frame work in the head is called the "Skull". This protects the brain. Back bone is made up of 33 vertebrae from neck to waist and is present on the dorsal side of the body. This helps the body to stand erect. It has "spinal cord" within it. Calcium helps in keeping the bones strong. We can have strong bones and muscles if we play, walk, run etc. Milk and milk products and leafy vegetables are rich in calcium. We should maintain correct erect posture while sitting and walking. The doctor who treats diseases of the bones is called a "Orthopaedician". The bones give shape to the body. We get vitamin 'D' when we are exposed to sunlight. Vitamin 'D' helps bones and skin in remaining healthy.



Think and say

- ◆ Move the head, hands, legs, knees, elbows in different directions. Are we able to move all the parts in the same way? Why? Think. Discuss with your friends.
- ◆ Which parts of the body move in one direction only? Try and see.
- ◆ Joints help in moving and bending the bones. Identify the places where joints are located. Imagine and say, how the body, would be without bones.

If the bones grow, we grow in height. For strong bones we should take milk, eggs and leafy vegetables. Working, playing and staying out in the sunlight is good for healthy and strong bones.

6.4. The Digestive System

Where does the chewed and swallowed food go?

You might have observed that our stomach seems to be bulged when we drink water or eat food. In the picture given below, the path of the chewed food and the water drunk is shown.

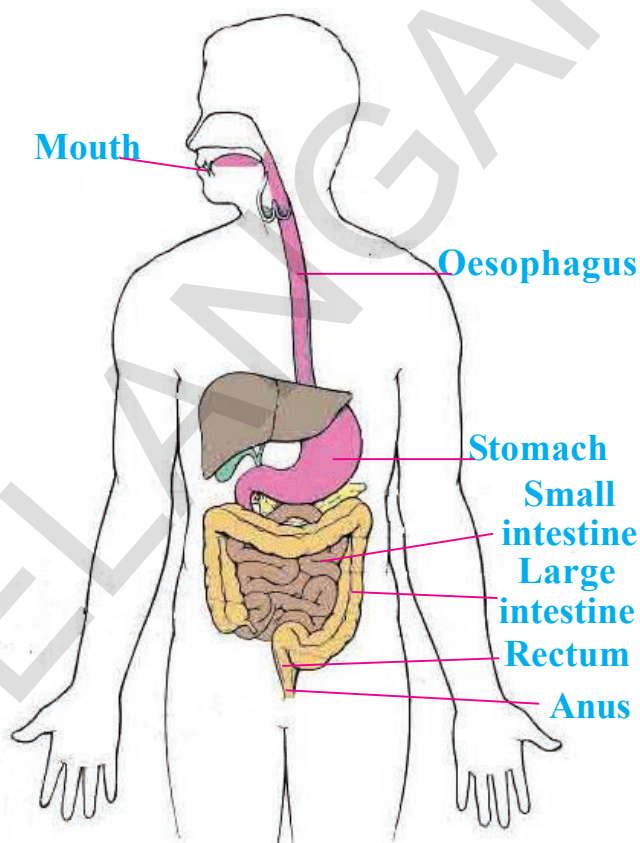
The food we eat changes its form in our mouth. The food supplied to different parts of the body is not in the same form as we eat. It changes to different forms. The solid and liquid foods change into simple substances and finally get absorbed into the blood. This process of changing starts from the mouth. The absorbed food is utilised by the body and the remaining waste materials are sent out of the body in the form of faeces and urine.

Window of the stomach (Dr.Beamont's Experiment):

In 1822, Dr.Beamont had to treat a soldier named Martin who was injured by a bullet in the stomach. Martin was 18 years old at that time. Martin was healthy before the injury Dr.Beamont dressed the wound and treated him. The wound healed after one and half years. But there appeared a large hole in the stomach. The aperture was covered by a loose layer of skin. We could look into the stomach by pressing this layer. The doctor not only used to look into the stomach through this hole but also used to take out the fluid from the stomach with the help of a tube. With this, the doctor got an opportunity for his experiments. Dr.Beamont experimented on Martin's stomach for about nine years!

At that time Scientists did not know how food got digested. How do the digestive juices in the stomach help in digestion? Do they just soften the food or associated with this process? Are they helpful in any other way? No one knew if there were any other organs.

Dr.Beamont took out a small quantity of fluid from Martin's stomach and put it into a glass jar, to find out if the food kept in a glass jar digests by itself or does this



fluid bring any change in the food? He wanted to test this. For this he performed an experiment. He took a small amount of digestive juice from Martin with the help of a tube and placed twenty pieces of fish in a glass jar filled with 10ml. of digestive juice at 8.30 am in the morning. He kept the glass jar at the same temperature that is maintained by the stomach i.e. at about 30°C. Then he examined the pieces of fish at 2.0' clock in the afternoon. They had dissolved.

Dr.Beamont did this experiment with different food items. He used the same food given to Martin and kept it in the glass jar filled with digestive juice. He gave Martin food at the same time and put the food into the glass jar kept out side the body. He compared the time taken by the food to digest. He tabulated his observations.

Let us observe a part of Dr.Beamont Observations given below:

Sl.No.	Food Item	Time taken for digestion	
		Stomach	Glassjar with digestive juices
1.	Raw milk	2 hrs. 15 min.	4 hrs. 45 min.
2.	Boiled milk	2 hrs.	4 hrs. 15 min.
3.	Boiled eggs	3 hrs. 30 min.	8 hrs.
4.	Half boiled eggs	3 hrs.	76 hrs. 30 min.
5.	Skimmed egg	2 hrs.	4 hrs. 15 min.
6.	Unboiled egg	1 hr. 30 min.	4 hrs.

- *Now, say what is the function of our stomach?*

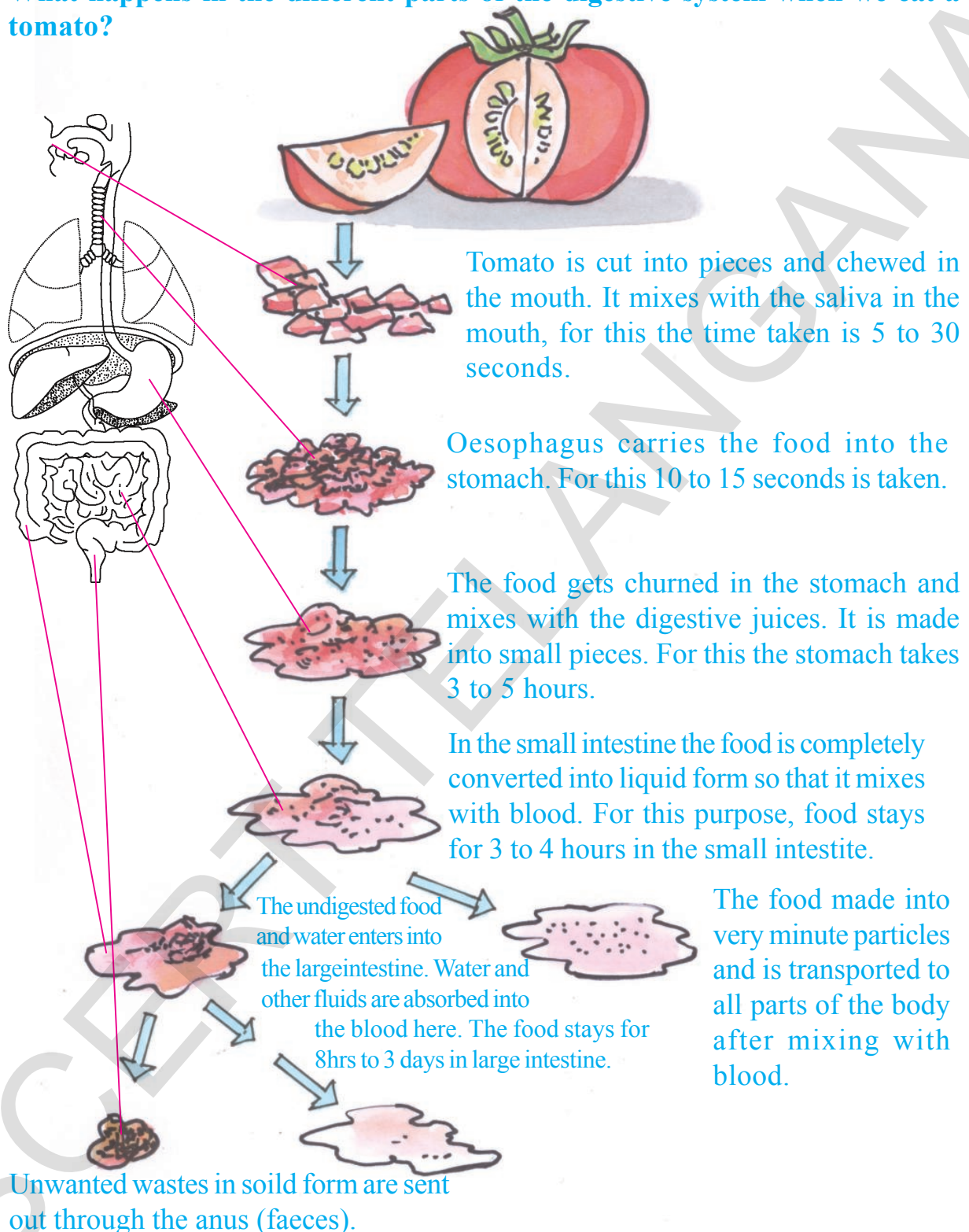
Dr.Beamont discovered many secrets of the digestive system by conducting many experiments. He found that food is digested quickly in the stomach than when placed out side the body. Did you observe the same thing in the table given above?

Our stomach churns the food items and digests the food. Beamont found that when Martin was unhappy, the process of digestion was slow. He also found that the digestive juices present in stomach are acidic in nature. Have you ever heard people complaining of "acidity" or burning sensation in the stomach or chest region when they do not eat food properly or food is not digested ?

Thanks to Dr.Beamonts experiments, the process of digestion has been understood. After his experiments, scientists conducted many other experiments, without waiting for patients with bullet injury or people with hole in the stomach. These scientists observed the internal organs using other scientific methods.

Did you enjoy the story of Martin? Can we call this the story of our stomach? What do you say?

What happens in the different parts of the digestive system when we eat a tomato?



We should never over eat and 25% of the stomach must be kept empty. The wastes are sent out easily from the digestive tract, if we drink enough water. The doctor who treats diseases of digestive system is called a '**Gastroenterologist**'.

6.5. The Excretory System

Many life processes are carried out continuously in our body. During these processes many wastes / harmful substances are formed.

The unwanted wastes formed in this way from different processes are sent out.

Group work



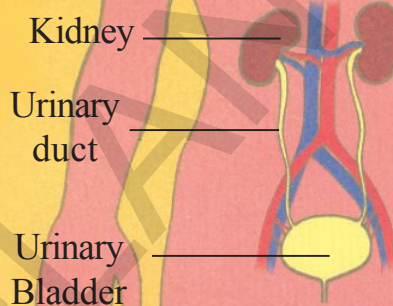
- ◆ Where are the wastes formed due to metabolism sent?
- ◆ When and from where does sweat come?

If the food we eat is digested we get energy. The food left after digestion is sent out in the form of 'faecal matter'.

Think and say

- ◆ What happens when we drink plenty of water? What happens if we don't drink water?

A pair of kidneys are situated at the back in the waist region. One on either side of the vertebral column, (the back bone) in our body. They filter the blood and separates impurities from it. These impurities are sent out in the form of urine. The skin is also an excretory organ. It sends out the wastes in the form of sweat.



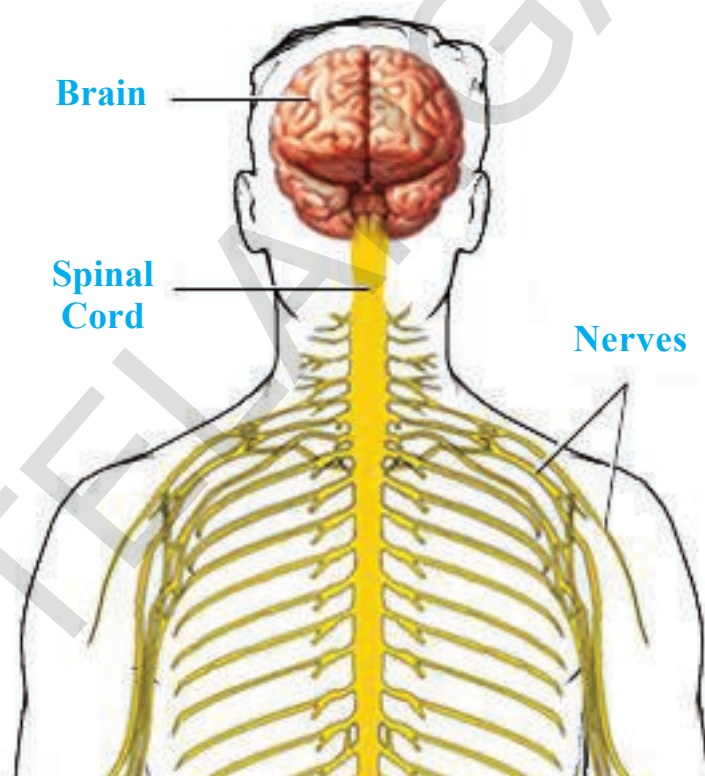
The doctor who treats the diseases related to the kidneys or renal system is called an 'Nephrologist'. The doctor who performs surgery related to the kidneys or renal system is called 'Urologist'.

6.6. The Nervous System

Group work



- ◆ How do you know that a thorn pricked your foot?
- ◆ How can you recall things that happened long ago?
- ◆ What do you do when you get hurt on foot? Who orders the parts of the body to do so?
- ◆ How do we know when we get a pain? Think.



Observe the pictures.

Each and every part of our body has nerves. They pass on the information obtained from the sense organs to the brain. The Brain analyzes the information and instructs the parts of the body through nerves. For example, when a dog barks at you, the brain co-ordinates with the different parts of the body and orders the nerves to take the necessary action. Brain functions properly when you take nutritious diet. The doctor who treats the diseases related to the nerves and brain is called a 'Neurologist'.

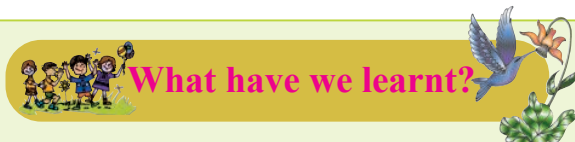
The external organs of the body and many internal organ systems see that life processes are carried out properly. For this, the body needs a balanced diet and a healthy life style. We need to follow healthy habits given below to have a healthy body.

Healthy habits:

- Wake up before sunrise.
- Exercise daily, play, run and spend sometime in the sunlight.
- Have meals on time.
- Eat clean and healthy food. See that the food you eat contains fruits, vegetables, leafy vegetables, pulses, etc.
- Milk, eggs, fruits are important for the growth and health of the body.
- Care must be taken to prevent diseases.
- Keep the surroundings clean and neat.
- Wash hands neatly with soap before eating and after using the toilet.
- Do not eat food in excess. Drink plenty of water.
- Do not eat too much pickles. Take less salt and chilli.
- Avoid eating burgers, pizzas, samosas etc., as they spoil our health.
- Do not buy and eat food sold on the road side.
- Do not take soft drinks (beverages), instead, drink coconut water, fresh fruit juices or butter milk which are good for health.

Keywords

organ systems of the body	respiratory system	bones
circulatory system	lungs	X-ray
heart	blood vessels	digestive system
Red Blood Corpuscles	respiratory organs	process of digestion
White Blood Corpuscles	oxygen	excretory system
Blood Platelets	wind pipe	nervous system
	skeletal system	nerves
	carbondioxide	brain
	kidneys	



1. Conceptual Understanding

- What are the different organ systems in our body?
- Name the organs of the digestive system?
- What are the functions of blood in our body?
- What function do the lungs perform?
- Write the stages in the process of digestion.
- What are the organs of the excretory system? What are their uses and functions?

2. Questioning and Hypothesis

- Raheem is suffering from stomach ache. What could be the reason? What questions might the doctor ask Raheem when consulted?
- Observe the pictures of heart, digestive system and nervous system. What questions would you ask to know about them? Discuss in the class?

3. Experiments - Field Observations

- Place your hand on the heart and listen to the heart beat carefully. Run for some time and listen again. Do you find any difference. Write the differences and give reasons.
- When does the heart beat increase? Observe and write.

4. Information Skills, Projects

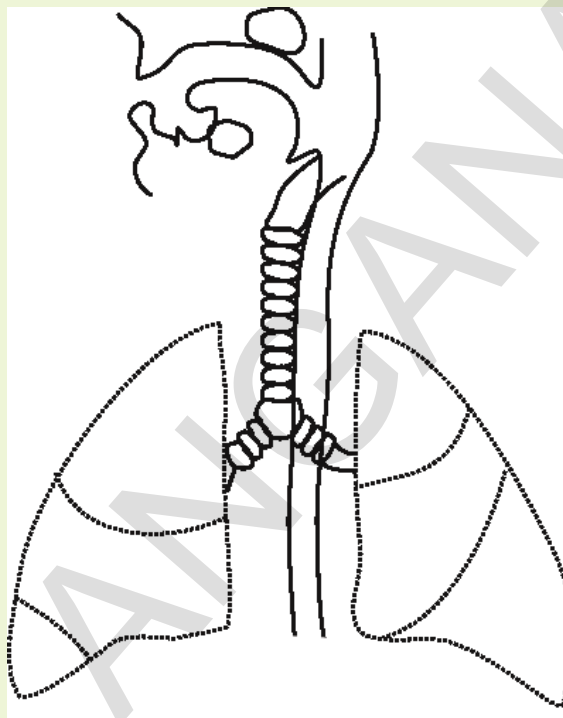
- Visit a doctor or health volunteer nearby. Find out the rate of heart beat for people of different age groups. Tabulate the information.

	Age	Rate of heart beat
Infants		
Children		
Adults		
Old people		
Athletes		

Whose rate of heart beat is more? Whose is less?

5. Communication through Mapping Skills, Drawing Pictures and Making Models

- a) Draw and colour the diagram of digestive system.
- b) Prepare a model of the excretory system.
- c) Make a model of stethoscope.
- d) Colour the picture of lungs in the given diagram ?

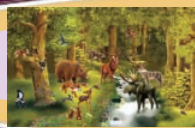


6. Appreciation, Values and creating Awareness towards Bio-diversity

- a) A blood donation camp is organised in Rangapuram village. We can save many lives by donating blood. Write slogans on blood donation.
- b) Human heart (in the size of one's own fist) pumps blood to different parts of the body, day and night. How do you appreciate the function of the heart?

I can do this

- | | |
|--|----------|
| 1. I can explain the different organ systems of our body. | Yes / No |
| 2. I can question, enquire about the different organ systems. | Yes / No |
| 3. I can draw diagrams of the kidneys and heart. | Yes / No |
| 4. I can tabulate the information regarding the rate of heart beat of different age groups by consulting a doctor or health volunteer. | Yes / No |
| 5. I can explain healthy habits and also follow them. | Yes / No |



FORESTS - TRIBALS



Every forest is a beautiful place on this earth. It is the habitat for different animals and plants. To know more about forests, let us talk to the people living in the forest.

7.1. Observe the picture and discuss



- Who are the people in this picture? What are they doing?
- Where do you think they live ?
- How is their dressing? Name this dance form?
- What is their life style?
- Differentiate between tribals and others. Do you know about them?

7.2. Life style of the Tribals

How beautiful the photo is! The girl standing at the left corner is none other than me. That photo was taken last month when I went to Bhadrachalam in Bhadrachalam district to participate in the State Level Science Fair. The people dancing in the photo are the tribals residing at Adilabad district. Their dance is called "Gussadi". It is the special dance form of Adilabad tribes.

Think and say

- ◆ Who are the tribals? Where do they live?
- ◆ What are the different types of tribes in your region?
- ◆ Do you know about their dance forms? Name them.
- ◆ Name the dance forms of your region.

On that day, cultural programmes were arranged in the evening. The tribals performed their traditional dance wearing traditional costumes. Everyone enjoyed it. As I was tired due to a long journey I wanted to retire early. So I went to my room to rest. Two more girls, 'Barjutayi' from Adilabad and 'Chomcharu' from Nagar Kurnool shared the room with me. During the introduction, I felt that their names were a little weird. I shared my feelings with them. Then Barjutayi told me that she came from Adilabad and belongs to a tribe called 'Gond'. She also said that not only their names but also their habits, clothing, customs, language and other life styles are also different from the other people. I was surprised to know all this. So, I asked her for some more information.



Barjutayi said that the Gonds are the tribals who live in the hilly region. They construct small huts and live in groups in the forests. They construct walls with stones and cover the surfaces with thick and smooth mud.

They place bamboo sticks and forest grass on the roof. Though it is a hut, separate rooms are provided for cooking, puja and for the ladies.

The women draw and paint beautiful pictures on the walls and the floor with the colours prepared from different plants.

They decorate the pujaroom with special interest. They consider their house as most sacred. Hence, they consider entering the house with footware as sin. They honour the guests with fruits and tobacco cigars available in the forests.

The Gonds collect the fruits, honey, tamarind etc; from the forest and live on them. Some Gonds are engaged in agriculture. After the harvest they celebrate a special festival and offer their first crop to their village diety 'AKIPEN' and only then use it.



**Pictures
on the
walls of
Gonds
houses**



Gond Men & Women

Group work

- ♦ Write the differences you have observed in the decor of Gond's house and your house.
- ♦ Say and write the similarities and differences between the hospitality offered by Gonds and your family.

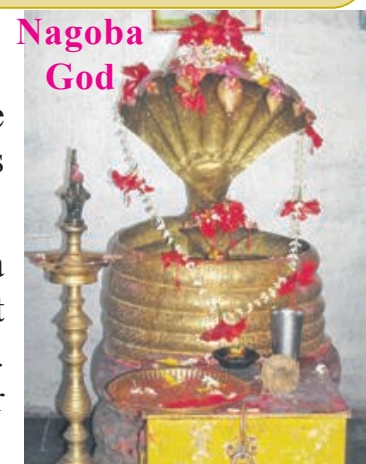
Think and say

- ♦ Do you have the custom of offering grains to the Gods or to the fields in your region?

7.3. The Nagoba fair

"Oh! I remember one thing", said Chomcharu. She said that she had heard about the Nagoba fair which is celebrated in a grand way by the Gonds.

"Yes", replied Barjutayi. A Nagoba fair is very a important fair of the Gondus. Nagoba temple is located at Kesapur village of Indravelli Mandal in Adilabad district. A five day fair is held every year and Gonds from other states also participate in this.



**Nagoba
God**

The important aspect of this fair is the Gond's traditional dance. Gonds decorated with peacock feathers perform the special dance called Gussadi. A large number of people other than Gonds come to watch the dance.



I was excited to know about these amazing things and thought as if I were in a new world. Would the life style of all the people living in forests be the same?

Think and say

- ◆ What are the difficulties faced by the people while visiting the fair?
- ◆ What type of cheating do they face ?
- ◆ Write the precautions that should be taken while visiting fairs.



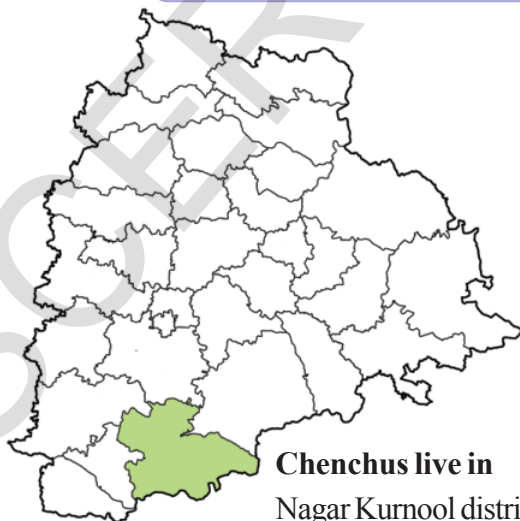
7.4. Life style of the Chenchus

I enquired Chomcharu, whether they have the same customs as of the Gonds. She said "No, our traditions, customs, clothing and language are different".



We belong to the tribe called "Chenchu". The Chenchu people live in Nallamala forests of Telangana State. They are mainly found in the Nagar Kurnool District. They speak Chenchu which is similar to Telugu.

- Mention some of the languages you know. Which of them are tribal languages?



Chenchus live in
Nagar Kurnool district



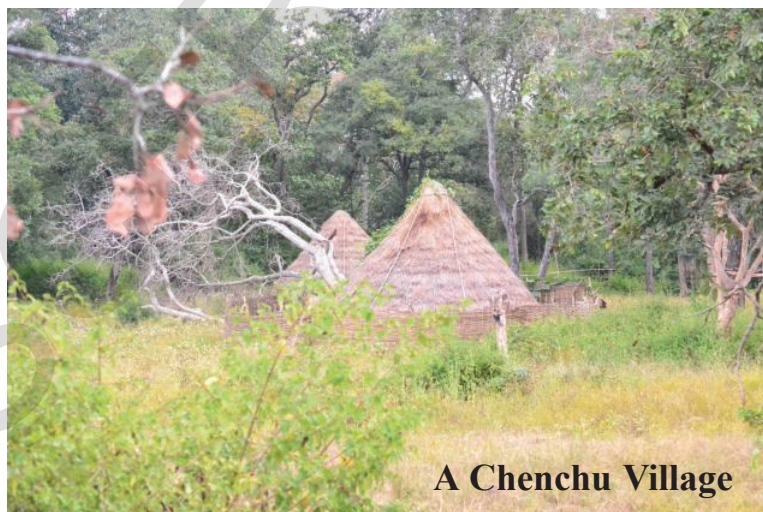
Chenchu's food is quite different from our food. They depend mainly on forest for their food. That is why, they worship the forest as 'Adavi Thalli'. They collect different fruits like custard apple, mango, jaamun etc., different roots and tamarind from forests and take them as food. Chenchus are experts in collecting honey. My father hunts the forest pigs, deer etc., with the help of small arrows and knives and share the meat with all. But, we never hunt small animals and birds like rabbits and sparrows.

The food items collected from forests are sold at the weekly fair and the required grains like jowar, ragi etc., are purchased. They prepare Sankati with jowar, ragi and eat them. Some people, especially the pregnant women eat tamarind along with the ash of the tamarind seed as food. It is their belief that this gives more strength. Chenchus are not interested in money, savings and other things. They depend on the forest every day for their life.

Think and say

- ♦ What are the reasons for Chenchu's different food habits?
- ♦ Ask your elders to know more about the custom of worshipping trees in your area. Also know about the importance of the trees and make a note in your book.

Chenchus and their relatives live together at a place by constructing huts. These are called 'Pentas'. Some pentas together are known as villages. Each village has a head. He is called the 'Head man'. (Pedda Manishi). He looks after the village and ensures that all follow the customs and traditions. All the people respect and follow the directions given by the head man. All programmes of the village are conducted under the guidance of the pedda manishi. The main deities are lord 'Lingaiah' and Goddess 'Chenchu Lakshmi'. They perform pujas in the month of Magha and children, elders and all the people participate actively in these pujas.



A Chenchu Village

A Chenchu Home



7.5. Life Style of the Bond Tribe

During my conversation with the girls, I said that most of the tribes belonging to Gonds and Chenchus live in forests. An old man who was sitting a little distance from us heard our conversation and said that not only these, but many other tribes also live in the Araku area, the main tribe among them is 'Bonda', a tribe which lives unconnected with the outer world and quite unaware of money.

We were all surprised to hear that people living without any connections and knowledge about the outside world? Three of us asked the old man in chorus to tell us more about the Bondas.

Bonda tribals live in the dense forests and hills of the Aruku valley in Vishakapatnam. They also live in the dense forest of Malkangiri in Odissa. They are also known as Bondo and Poroju. The language spoken by them is also unique. It is called 'Remo' in Odissa.

They don't like to mingle with the people of towns. That is why, they rarely come out of the forest.



Bonda girl

Do you know?

In our country the population of Bonda tribe is only 12,000.

Think and say

- ♦ What could be the reasons for the Bonda tribals not willing to come out into the outer world?



Bonda Fair



They attend the weekly fair 'Hatha.

They do not allow new comers to enter their villages. If any body enters, they try to kill them with poisonous arrows. They depend on hunting for their food. They collect the forest products and also do Jhum type of agriculture. Only men go for hunting and woman participate in agriculture. They select some place in the forest, cut the trees and clear the land to make it convenient for cultivation. After growing two or three crops there, they leave it and go for another land. This type of agriculture is called 'Jhum Farming'.



Bonda Women

"Children, I will tell you another interesting thing about these people." Listen.

The Bonda women attend the weekly fair and exchange the forest produces collected by them with others and take the required materials from them in exchange. This system is called 'BINIMAY PRODHA' or Barter System.

Their way of dressing is also unique. They cover their bodies with a cloth made from jute.

Bonda women have great skills in making this cloth. First they soak the jute plants in the water of streams and lakes nearby for 2 to 3 days. Then they weed out thread from them and dry them for three days under the sun. They collect different colours from the forest and mix these with the thread and make the clothes on a handloom. (Maggamu). They stitch tiny and beautiful mirrors on these clothes.

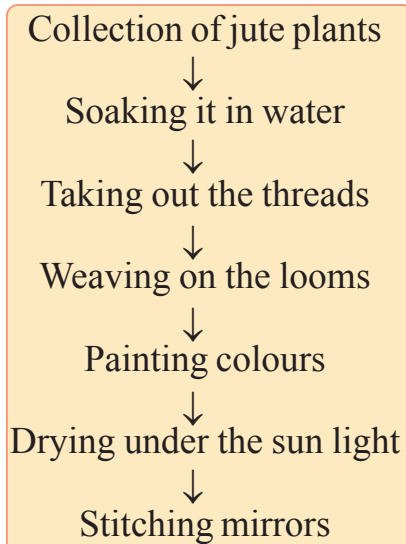
Group work



- ◆ You have seen the picture of Bonda women. Write about their dressing.
- ◆ What differences have you noticed in their clothings and ornaments of women at your place and the Bonda Women?

I still had not come out of my astonishment. It was difficult for me to believe that there are still people living away from the outer world who do not use money to lead their lives, even in the 21st century.

As it had become dark we all retired to our rooms. I prepared a flow chart on how the Bonda's made their clothes. It is given below.



Do you know?

People exchanged the goods to satisfy their needs in the past.
Ex: Giving 1kg. of tamarind in exchange for 3 kgs. of rice.

Did you observe the happenings in the fair that you visited? Write the differences between Bonda's fair and the fair you visited.

Think and say

- ◆ Why did it surprise the girl? Think...

7.6. Depletion of forests

Forests are useful to us in many ways. Many plants, animals and tribals depend on them. Forests are the natural habitats for thousands of plant and animal species. Trees in the forests release, 'Oxygen'. Forests improve rainfall.

Earlier the whole world was full of green plants. Forests are depleting (decreasing) day by day due to the cutting down of trees for use in villages, towns, dams, industries, roads, railways, fire wood, furniture and for many other needs of mankind.

Bio-diversity is being destroyed due to the indiscriminate destruction of forests for our needs. Pollution is increasing. Due to global warming, the rains have reduced resulting in droughts. Soil erosion has increased. Thus, there is a growing threat to the land and it may soon become a desert.

Do you know?

Paper is made from bamboo, Eucalyptus, Subabul etc. To meet our needs thousands of trees are cut every day. Saving paper is nothing but, protecting trees. So, write on both the sides of the paper. Sell unwanted books and news papers for recycling. Also use pencils till its end.

Group Work



- ◆ You know about the uses of forests. What would happen if there were no forests?
- ◆ Does your district have a forest? Where is it ?
- ◆ Which districts of our state have forests?
- ◆ What should be done to protect the forests from depleting?
- ◆ What are the different tribes in the forests of your district?

There are forests in the districts of Adilabad, Nirmal, Komram Bheem, Manchiryal, Peddapally, Jayashankar, Mahabubabad, Bhadradri and Nagar Kurnool of Telangana. Earlier the forests were dense and wide, but now their area is decreasing. Different types of tribes live in the forests of our State. The tribes Gonds, Kolami, Pradhan and Thoti live in Adilabad, Nirmal, Komram Bheem and Manchiryal districts. The Koya tribals and Konda Redlu live in Bhadradri district of Telangana. The Banjara tribe live in Mahabubabad and in other districts. Many changes have occurred in the life styles of the tribals when compared to the past.

Think and say

- ◆ What are the difficulties faced by the tribals due to lack of transport facilities?
- ◆ What measures should be taken to help the tribals?
- ◆ How are others benefitted by the tribals?

Do you know?

The forests occupy 6,92,027 sq.kms (21.5%) of land area in our country. Madhya Pradesh occupies first place in terms of forests with 77,000 sq.kms. In our State, forests occupy 46,389 sq.kms (16.89%) of total land. In Telangana, Jayashankar district occupies first place under the forest area.

Do you know?

Carbon-dioxide levels have increased in the atmosphere due to the destruction of trees. Due to this, the earth gets heated. This is called 'Global Warming'. This results in less rain fall.

Tribals are progressively developing with education. The tribal villages are in dense forests and transport facilities have not yet fully developed. When compared to people of other regions the tribals have yet to develop.



Children planting trees near the village on the occasion of 'Vana Mahotsav'

What should we do to conserve the forests? Think.

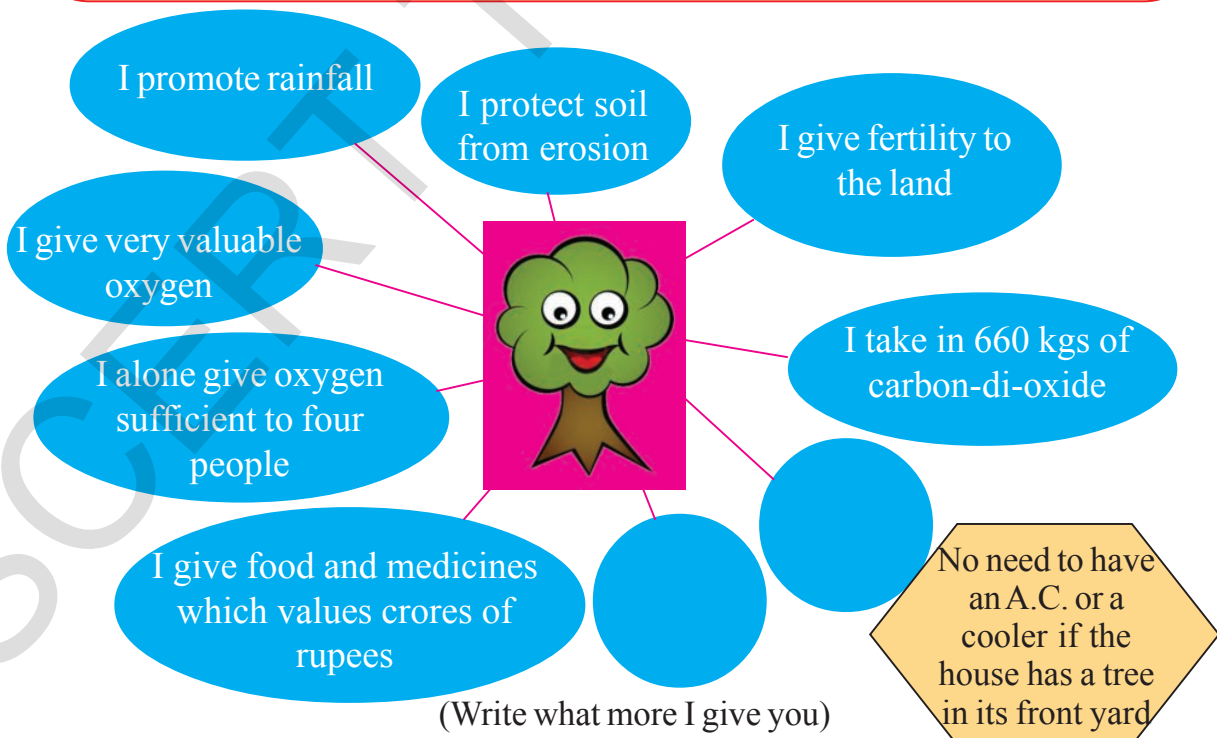
Look at the picture. Tell what the children are doing?

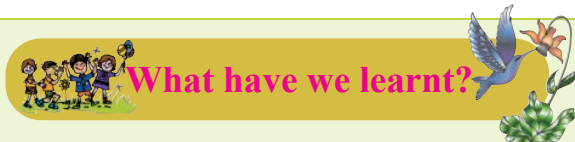
Why are the children planting the saplings?

We all should plant trees. We should plant them in the available space and protect them. For every tree that you cut, plant another two.

Key words

forests	science exhibition	people other than tribes
tribals	decoration of the house	jhum farming
life style	village god	forest products
cultural programmes	fair	forest conservation





1. Conceptual Understanding

- Tribals mostly live in the forests. Why?
- Tribals mostly use natural products. Why?
- We should protect the forests. How and why?
- Write the differences between the food taken by the Chenchus and you.
- Write your opinion on fairs.
- Name some of the products that we get from the forests.
- Differentiate between our agriculture and Jhumming. (Jhum farming)
- Forests have more animals. Why?
- Is bio-diversity more in forests or in agricultural fields? Why?

2. Questioning and Hypothesis

- We need money to buy things. How can we sell and buy things without using money? Guess and write.
- Grandfather living in a tribal area visited Pramod's residence. To know more about the people of that area, what questions would you ask Pramod's grandfather?

3. Experiments - Field Observations

- Tribals make colours with the leaves and seeds available in their surroundings. You also prepare and write down the colours you made from leaves, flowers and seeds available in your area.
- Tribals make their houses look beautiful with mud and rangoli. What do you use at your home? What materials do you use for rangoli? Observe and write.
- You have seen the pictures drawn on the walls of the Gond's houses. Do the houses in your village/city also have similar pictures? Observe, write and draw the pictures and rangoli.

4. Information Skills, Projects

- ♦ Form into groups of four each. Select any five houses in your village. List the forest products used in these houses.
(Take the help of your teacher in preparing the required table.)

5. Communication through Mapping Skills, Drawing Pictures and Making Models

- Draw the map of Telangana and mark the forests and the districts where tribals live.
- You have seen the pictures of the tribals in the lesson. They prepare different decorative items with poosalu (plastic beads) and wear them. Can you make a garland with the available poosalu and threads?

6. Appreciation, Values and creating Awareness towards Bio-diversity

- Write your feelings when you observe different scenes of the forests / nature.
- Tribals protect their surroundings with more care. How do you appreciate their life style?
- Chenchus worship the forest as their mother. What do you understand from this statement? Write down.
- Forests are the habitats of different animals and plants. We are destroying their habitat. What do you think about the animals and plant's life ?
- Which aspects of the tribals life do you like the most?

I can do this

- | | |
|--|----------|
| 1. I can describe the life style of the tribals. | Yes / No |
| 2. I can ask questions to know the life style of the tribals. | Yes / No |
| 3. I can recognize the Bio-diversity in the forests. | Yes / No |
| 4. I can collect the particulars of different forest products and tabulate them. | Yes / No |
| 5. I can point out the forests areas on the map of Telangana and show where the tribals dwell. | Yes / No |



8



RIVERS - MEANS OF LIVELIHOOD

8.1. Observe the picture and discuss



- What do you see in the picture? What are the people in the picture doing?
- Have you ever seen any such river? What are the uses of rivers?
- Why are boats there in the river ?
- What do the men in the boats do?
- Is river a means of livelihood? How?
- Are there people who depend only on rivers for their livelihood? What do they do?

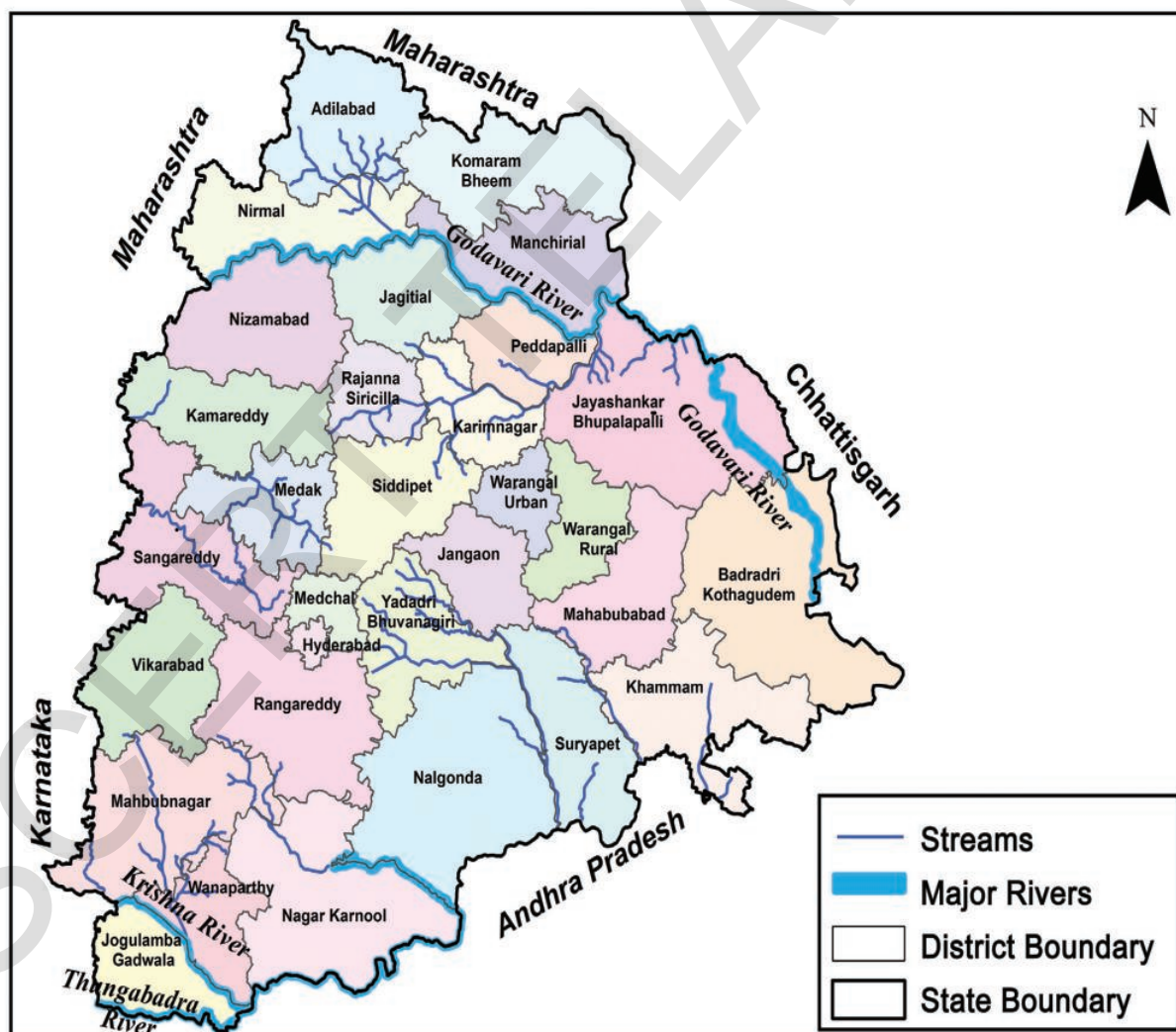
8.2. The River Godavari

You might have seen many rivers and enjoyed taking bath in them. Moreover, if it is summer, one never wants to come out of the water.

Is there any river near your place? Which river? Have you ever thought of it? Where does the river begin from? Which places does it flow through? What does it finally merge into? Where from the water comes into the river? Is water present throughout the year or does it get dried up?

Do any other rivers merge into it? Will it have the same depth throughout? What is the life style of the people living on the banks of the river? What is the relation they share with the river? Oops! Never ending questions! But they do generate curiosity and you wish to know more about rivers.

Let us find out the source of river Godavari and learn about the people living on its banks.



The river Godavari, originates in the hills of Brahmagiri of the Western Ghats at Triambakeshwar, in the district of Nasik in Maharashtra. It enters our state at Kandakurthi in Nizamabad District. To reach our State it travels 1465 kms. In Telangana, it flows through the districts of Nirmal, Nizamabad, Jagityal, Manchiryal, Peddapally, Jayashankar and Bhadradi. Its flow, separates the districts of Nirmal and Jagityal in Telangana. This river divides into three parts and finally meets the Bay of Bengal at Antarvedi, in East Godavari and Yanam. Look at the maps of India and Telangana in the Atlas and answer the questions given below.



The Godavari at Nasik

Group work



- ◆ Where does Godavari start from? Name the States through which it flows.
- ◆ Identify the districts of Telangana through which the river Godavari flows ?
- ◆ Name the districts which are on the banks of the river Godavari.
- ◆ Like Godavari, identify river Krishna on a map of Telangana.
- ◆ Identify the cities and the holy places present on either banks of the rivers mentioned.
- ◆ What are the districts through which the river Krishna flows?

8.3. Fishermen

Many people make a living by catching fish in Godavari. They use boats and catch a variety of fishes, crabs, lobsters. Fishing needs skill and hard work. They use different kinds of boats for fishing.



Traditional Boat



Motor Boat



A woman selling fishes

The river is a source of livelihood for the fishermen. They lead their lives by fishing. They make money for their families by catching and marketing fish. To catch the fish, they use both conventional boats and also motor boats. During floods, they lose the boats and their nets get damaged. We are able to include nutritious fish in our diet due to the efforts of these fishermen.

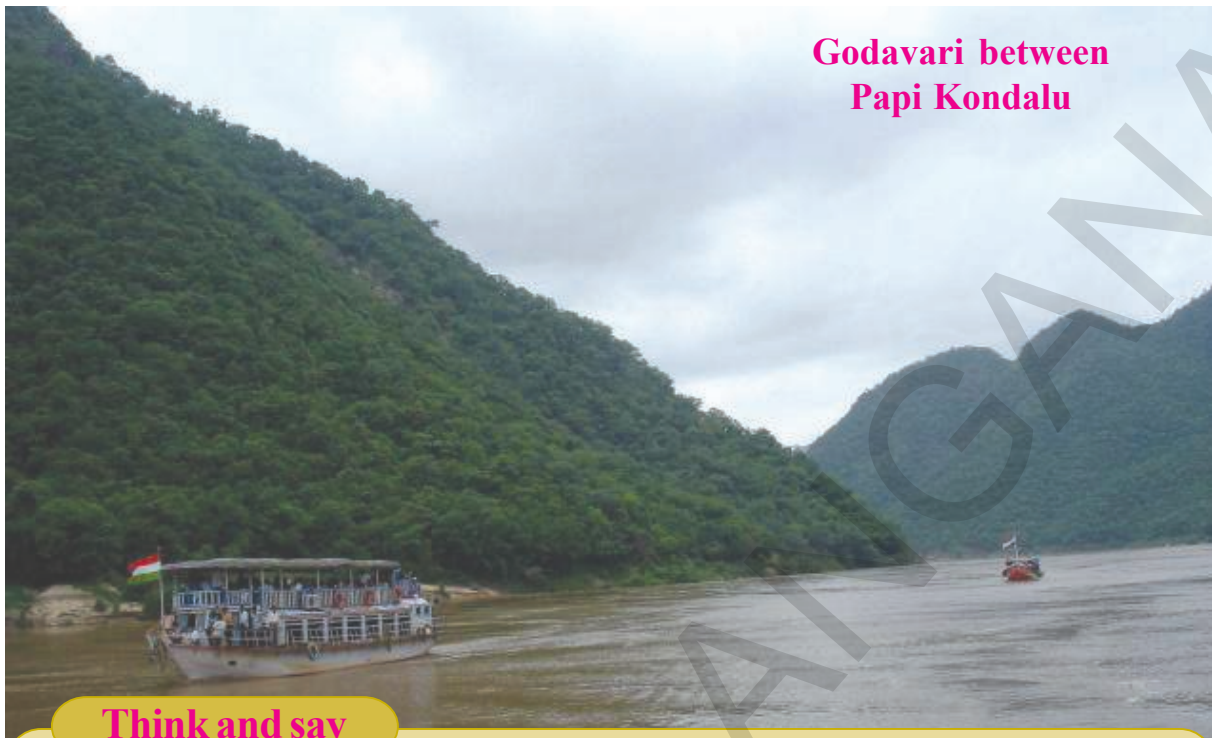
Group work



- ◆ Did you ever see any fisherman? What do they use to catch fish?
- ◆ Is it easy to catch fish? Why?
- ◆ What difficulties do the fishermen face in the following circumstances?
 - when floods occur.
 - during cyclones.
 - when rivers dry up.

8.4. Water transport

The river Godavari not only provides livelihood to fishermen but also to boatmen. They provide transport to the passengers and tourists and also show the beauty of river and its banks to the tourists. Many people take pleasure riding on ferries from Rajamundry to Bhadrachalam to Perantalapalli between the Papikondalu hills. Our State Tourism Department operates the launches for tourists. People living in villages on the river shore travel on boats. They cross the river on boats from docks on the shores of the Godavari.



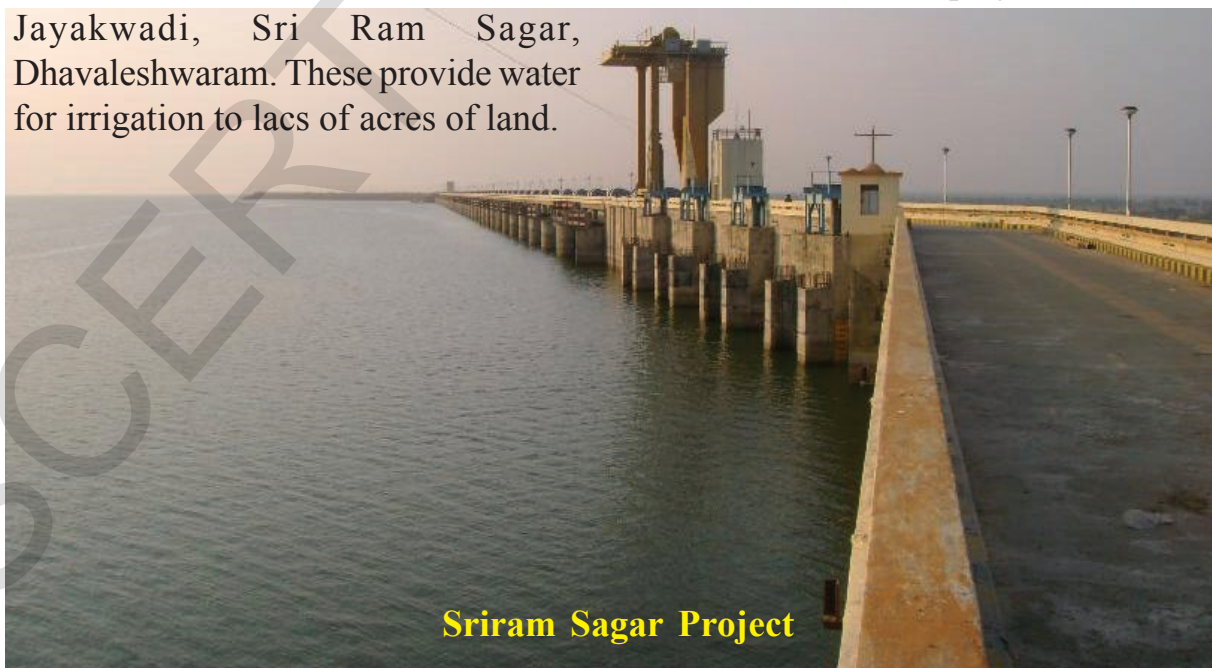
**Godavari between
Papi Kondalu**

Think and say

- ♦ Did you ever travel on a boat or a launch?
- ♦ Why do tourists get attracted to travel on the river?

8.5. Dams - Crops

The first dam built across river Godavari is at Gangapur. It supplies drinking water to the cities of Nasik and Triambakeshwar. The other projects on it are Jayakwadi, Sri Ram Sagar, Dhavaleshwaram. These provide water for irrigation to lacs of acres of land.



Sriram Sagar Project

Devadula Ethipothala Programme



The projects are not only used for irrigation and for providing drinking water to towns but also for preventing floods and for the generation of electricity. With the Devadula Ethipothala Programme in Jayashankar we are trying to supply

water to Warangal, Jayashankar and Mahabubabad Districts.

In Maharashtra and Telangana grow crops like sugar cane, paddy, cotton, tobacco, chilly and fruit orchards are cultivated by using the Godavari waters.

On the other hand, many people become homeless and the lakhs of acres of land is lost with the construction of the big dams and projects. Government tries its best to rehabilitate such people.

Group work



- ◆ What are the benefits of dams?
- ◆ We lose forests while constructing the dams. How to cope with this loss?
- ◆ With the construction of dams, a few villages are flooded, what are the difficulties faced by the people there? What steps should we take to support them?

Do you know?

The river basin area of the Godavari river and its irrigated area is 3,12,812 sq.km. This is 1/10th of the Indian sub continent land. This area is more than that of the countries like England and Ireland put together.

8.6. Rivers - Civilisation

It is observed that from ancient times humans have been living at the banks of the rivers. Rivers facilitated people to grow crops and settle in the banks. Due to availability of water for drinking and irrigation, development of civilization on the river banks was very natural. They become the natural resources for progress and livelihood. Many ancient cities and villages were located near the rivers. In these places, the people developed



Triambakeswara Temple in Maharashtra

culturally, economically and socially. Most of the human civilization, in the world, started on river banks. The archaeological excavations have revealed many buildings constructed along the rivers.

Basara Temple



The land along Godavari is the centre for spirituality and culture. The Kumbha Mela is organised at Nasik. Triambakeswar is one among the twelve important Jyothirlingas of Lord Shiva. In Nanded, the famous Sachkhand Gurudwara is located. The famous Saraswati temple, is located at Basara in Telangana.

Basara Gnana Saraswati Temple

Out of the two renowned Saraswati Temples in India, one is in Kashmir and the second is Basara Gnana Saraswati temple. It was built on the banks of river Godavari in Nirmal district of Telangana State during the period of Chalukyas. It is 205km away from Hyderabad and 35 km away from Nizamabad town. The important celebrations in the temple are Vasantha Panchami, Maha Shiva Rathri, Devi Nava Rathrulu, Vyasa Purnima, Aksharabyasam. Goddess Saraswathi is considered the deity of knowledge.



Bhadrachalam Temple on the bank of Godavari River

The temples like Laxmi Narasimha Swamy at Dharmapuri, Rama temple at Bhadrachalam and Goutamishwara at Manthani are the centres of religious importance. Once in every 12 years, the Pushkar Mela is organised on the banks of Godavari. It lasts for 12 days. It is considered to be auspicious to take a dip in Godavari during that time. Nirmal, which is famous for wooden toys, is situated on the Godavari bank it self. Nirmal, which is famous for wooden toys, is situated on the Godavari bank it self.

Think and say

- ◆ Why do most villages and cities emerge on the river banks ?
- ◆ Is there any development along the river side Pilgrim centres where the Pushkar Mela is organised once in every 12 years?
- ◆ Explain the relation between the rivers and culture of the people?

8.7. Industries - Pollution

Many industries depend on the waters of the Godavari. We are able to produce 2,600 megawatts of electricity through the Thermal Power station at Ramagundam. Paper mills are located at Bhadrachalam, Thermal power station is located at Kothagudem and natural gas power centre is at Vijjeshwaram. Nanded and Aurangabad which are on bank of river Godavari have also developed industrially. But, the wastes from the industries and the power stations are released into the river. This is causing damage to the water and to the living organisms and polluting the river water.



The sewage water from villages and cities on the banks of the river Godavari is discharged into the river resulting in the pollution of the river making its water unsuitable for drinking. The people who visit the rivers also cause the water pollution by throwing plastic bottles and covers in to the river. This leads to the excess growth of the water plant called Eichhornia which reduces the dissolved oxygen leading to the death of the water organisms, animals and plants.

Think and say

- ◆ Discuss the causes of water pollution. What are its consequences? How do we prevent it?

8.8. Drought, Floods



During scanty rains in the river basin, there is very little flow in the river Godavari. With this the water level in the reservoirs comes down. Such type of drought condition put the farmers and their families to adverse situations and heavy loss.

When there is heavy rainfall, there will be floods. Floods inundate the land near the river. The crops and the yield get swept by the water. When the water bodies like river and canals overflow then all the possible means of transport like the road, rail and water are disturbed. Human deaths also, occur. Due to floods lot of water is lost in to the ocean. Embankments have been built to avoid flooding water from rivers & canals. These embankments saved hundreds of villages from flood waters.

Water is a very important resource. What should we do in order to use the flood water effectively?

Keywords

livelihood surrounding river	Western Ghats	tributaries
industries	tourists	dams
fisherman	refugees	Ethipothaala programme
delta	paper industry	basin
thermal power station	human development	life resource
pollution	drought, floods	civilisation
spiritual centre	bund	aquatic life



What have we learnt?



1. Conceptual Understanding

- What are the uses of rivers?
- How are the fishermen affected by floods?
- Why did civilisations flourish along the river banks?
- How is the river Godavari useful to farmers?
- How do people depend on rivers for their living?

2. Questioning and Hypothesis

- Sindhuja travelled along river Godavari from Nasik to Antharvedi. To know about the river from her, write five questions you would like to ask her?
- What could be the reasons for the drying up of rivers? Think.

3. Experiments - Field Observations

- Visit a river or a canal or a lake near your place. Observe the various activities polluting the water. Explain the ill effects of those activities.

4. Information Skills, Projects

- Collect information on any industrial area or a temple near the rivers Krishna or Godavari and get information. Write about it and display in the classroom.

5. Communication through Mapping Skills, Drawing Pictures and Making Models

- Observe the map given here. Write the name of districts which are to the south of the river Godavari.
- Name the districts present on the banks of the river Krishna. Identify the districts which are to the north of the river.
- What are the districts / places, through which you pass, if you were to visit the Godavari river from your village/ city?



6. Appreciation, Values and creating Awareness towards Bio-diversity

- Collect the lyrics / song related either to the Godavari or any other river. and sing it.
- Write slogans on controlling the river pollution.
- Write a letter to your friend appreciating the benefits of the rivers.

I can do this

- I can explain the benefits of the rivers on culture, agriculture etc. Yes / No
- I can ask questions on rivers. Yes / No
- I can identify the river flowing through different regions on a map of our State. Yes / No
- I can explain the significance of the river Godavari. Yes / No
- I can collect information and talk about the industries and temples on the banks of the rivers. Yes / No



9.1. Wind

We have air all around us. It blows in our houses, open grounds, fields and every where. But we cannot see air. Moving air is called wind. Wind does many wonders. It brings rain, cold weather and warmth too.

Observe the figures given below and identify the direction of the the wind.



Group work



- ◆ In the same way draw more figures and ask your friend to identify the direction of the wind.

Due to gravitational force, rotation and revolution of the earth, the wind always blows from one place to another. The intensity of the wind varies from place to place. Air has pressure, weight and it occupies space (volume). These are the properties of air.

9.2. Atmosphere

Earth is covered with a blanket of air. This is called atmosphere. With the help of information on temperature, clouds and humidity, atmospheric conditions can be determined. Watch news on T.V. to know more about the weather. Is weather stable? Is it the same every day? Can you recall how was the weather one week ago? Was it hot or cold? Was it windy or cloudy? If we observe and record the weather daily, we can understand about it.

Symbols given below help us understand the atmosphere or weather report better.

1. Cloudy sky



2. Clear sky



3. Rains



4. Hail storm



5. Wind blowing from east to west



6. Wind blowing from west to east



7. Wind blowing from south to north



8. Wind blowing from north to south



9. Cold weather



10. Hot Sunny day.



Akash, Rafi, Jani, Mary, are studying in Vth standard. They noted the weather report for one week.

Day	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday
Weather	 	 	 	 	 	 	

Think and say

- ◆ Have you seen the weather report in the table given? How was the weather according to you?
- ◆ How many days was it cloudy and how many days was it cold during the last week?
- ◆ Which direction did the wind blow for most of the time last week?
- ◆ Was the weather cool on a cloudy day?
- ◆ Which day did it rain and what type of rain was it?
- ◆ Can we say that it will definitely rain on a cloudy day?
- ◆ According to the report, can you guess the season.

Do this



- ◆ You have seen in the above table how to write / represent weather report with symbols, haven't you ?

Note down the details of the weather from Monday to Sunday with symbols as shown in the table.

Atmospheric table

Divide the class into four groups. Ask the first group to note down the details of the first week, second group of the second week and so on. Note them down in a chart and display.

Week/ days	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday
1 st week							
2 nd week							
3 rd week							
4 th week							

Group work



Answer the following using the atmospheric table prepared by you:

- ◆ How many days were cloudy during the month?
- ◆ How many days did you see strong winds. What was the direction of the winds?
- ◆ How many days were sunny or cool?
- ◆ How many days did it rain during the month? What was the type of rainfall?
- ◆ According to the details observed, guess what could be the season?
- ◆ Was your guess correct?

9.3. Seasons

According to the climate you have experienced, a year is divided into three seasons. They are winter, summer and rainy seasons. Let us know about each of the seasons. Seasons occur due to the earth's rotation round the sun when the axis of the earth slightly leans.

9.3.1. Observe the picture and discuss

- What do you see in the picture?
- What are the people in the picture doing?
- Why are they doing so?
- What might be the season?



Group work



- ◆ How is weather during winter season?
- ◆ What do you do to protect yourself from the cold weather?
- ◆ What type of clothes do you wear during winter?
- ◆ Do animals feel cold? What do they do to protect themselves from cold? What can we do for them?

Winter season

Weather is cool in the winter season. We find that even coconut oil freezes, sun rise is delayed and sun sets sooner during winter. We like to sit in the sun during this season. Everyone wears colourful sweaters, rugs and shawls. People return home as the sun sets. We find comfort sitting in sun. Butterflies sit on flowers. Nightingales sing during winter. Mango trees start blooming. The flowers begin to bloom everywhere. Nature looks beautiful with all these things.

9.3.2. Observe the picture and discuss



- What are the people doing in the picture?
- Why are they doing so?
- What season is it?
- During which months does the summer fall?
- How is the weather during summer season?
- What type of clothes are worn during summer?
- Birds may not find water in summer, what do they do to quench their thirst? What can we do?

Summer season

Hot breeze blows during summer. Gradually the weather gets hotter. Severe hot breezes make the environment uncomfortable. Weather is hotter during the months of April, May and June. We like to swim or stay in the shade. We like to drink cold water and wear light cotton clothes. Mangoes and sugar palm fruits are available in this season. We enjoy eating them. If we go out in sun, there is a danger of sun stroke / fever etc. Still children love summer season. Do you know why?

9.3.3. Observe the picture and discuss

- What are there in the picture?
- What is the boy doing? Why?
- What is the season?
- How can we guess that it is going to rain?
- What do you do during the rainy season?



- How do you feel when it rains? What do you do?
- How is the weather during the rainy season? During which month does the rainy season begin?

Rainy season

Dense clouds, rains, thunder, lightening, rain water, paper boats, umbrellas, earthworms and raincoats are the things that come to your mind when you think of the rainy season. The sky becomes cloudy, there is thunder and lightening before rain. It is a joy to play, in the rain. Ditches are filled with water, children play with paper boats, peacocks dance, frogs croak, wells, lakes, rivers, canals are filled with water and grass grows. Rainy season extends from July to August, then rains stop gradually. The temperature decreases and winter begins. When rains are plenty, crops grow in plenty and everyone is happy.

Group work



- ◆ How is the weather in each season different from the other two.
- ◆ Observe the calendar and write the months in which three seasons occur.
- ◆ What type of clothes should be worn in each season?
- ◆ What are the vegetables and fruits available in different seasons?
- ◆ Which season do we plant trees? Why?
- ◆ What measures are to be taken during different seasons to remain safe and healthy? Why?

9.4. Layers of the Atmosphere

The air around us is called atmosphere. Air consists of many gases, dust particles, water vapour etc. Weather is predicted with information based on clouds, humidity, dryness, cold, heat, rainfall, etc.

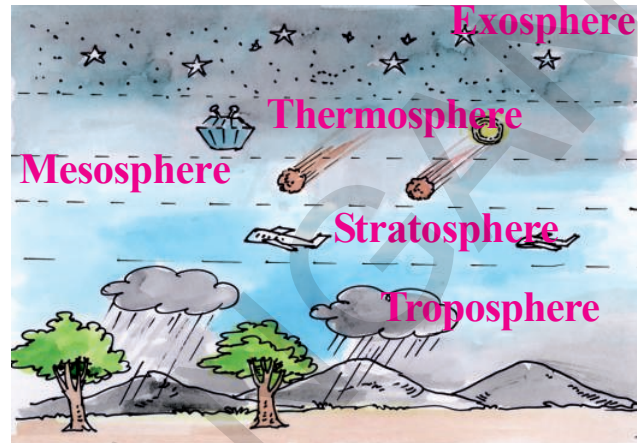
The layers of air around the earth is called atmosphere. Earth's atmosphere is classified into 5 layers based on the differences in temperature. They are (1) Troposphere, (2) Stratosphere (3) Mesosphere, (4) Thermosphere and (5) Exosphere

The layer nearest to the earth's surface is Troposphere. We live in troposphere and we breathe in the air of that layer. All aspects of atmosphere are present in this layer. As you go upwards the temperature in the layer decreases.

Weather is never stable. It goes on changing throughout the day. Sometimes the sky is cloudy, water vapour is high in the air, cool breezes blow and some times air is dry and hot breezes blow. For some days, it rains and on other days it is hot.

Atmosphere gets heated due to solar energy. But all parts on the earth surface do not receive the same amount of solar energy. Tropical regions receive more sunlight than the polar regions. Differences in temperature cause the winds flow and thus changes in atmosphere.

Sun's rays, wind, seas, rivers, trees, earth's surface, the terrain, altitude etc., are the causes for changes in the atmosphere.



Think and say

- ♦ Have you ever witnessed the sun rise and sunset? How did you feel? Write your experiences.

Do this



- ♦ Watch the news and read the news papers, find temperatures in the morning, afternoon, evening and at night. Collect information, discuss and display in your classroom.

9.5. Wind game

Satish came into the room making funny sounds. All the students surrounded him on hearing the sounds. Satish told them that he was making the sound with the help of a paper and they can also do so.

9.5.1. Can air produce sound?

Do this



Take a thick paper. Fold it into half and again into another half. Now you get three layers. This is paper whistle. Put this between your lips and blow air into it. Do you hear any sound? Think, from where does this sound come?

Think and say

- ◆ Who made the loudest and longest sound in your class?
- ◆ Can you make whistles with coconut leaves? Display them in your classrooms?

Do this



Tup... Tup!?

Take an empty milk or water cover or any plastic cover. Check whether it is empty or not? Flatten it by pressing it against a table. Wasn't it easy!

Now, blow air fully into the cover and tie its mouth tightly with a thread. Hold it in your hand and ask your friend to burst it by clapping. What happened?

Think and say

- ◆ Can you flatten an air filled cover? Why not?
- ◆ What happened when you burst the cover?
- ◆ Did you hear any sound? How is this sound produced?
- ◆ Was the cover torn? Why?
- ◆ Blow air into a balloon and prick it with a pin : What happened? Discuss after observing?

9.6. Musical instruments that work with the help of wind

Observe the following pictures and identify them



Think and say

- ◆ How do you play these instruments?
- ◆ How are they related / connected to air?
- ◆ Name some more musical instruments.

Do this



Take an empty glass and a coconut shell. Cover the open ends of both with a polythene cover and tie with a thread or rubber band. These are your drums. Now, hit the drums with a broom stick. Observe the variations in sound.

Think and say

- ◆ Does the sound change if the vessel is large?
- ◆ Does the thickness of the paper have any relation with the sound produced?

Mouth organ and Shehnai are played by blowing air into them. Variations in blowing emits different sounds. Coconut shell and the glass have air inside. Hence, they make sound when beaten with sticks. So we say that, air produces sound and occupies space.

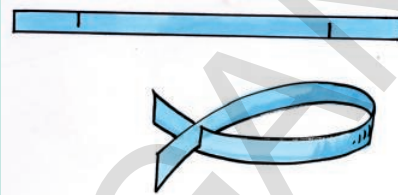
9.7. Air pressure

A moving fish

Do this



Take a 12 cm long and 1 cm wide paper. On both the edges leave a centimetre distance and cut the paper partially. Join both the cut ends as shown in the figure like a fish. Drop the fish from a certain height and observe. What has happened? Know, why has it happened?



What is the distance?

Children you play with ball, don't you? In the same way let us play other games.

Do this



Take a piece of newspaper. Draw a line in your classroom. Stand on the line and throw the paper. Measure the distance of the paper from the line. Write down in the table. Now make a loose ball with the paper, and throw. Note down the distance. Now make a tight ball and throw and note down the distance.

S.No.	Thrown Object	Distance (cm/m)
1	Paper	
2	Loosely bound paper	
3	Tightly bound paper	

Think and say

- ◆ Which object reached the longest distance?
- ◆ What could be the reason for the paper falling at a shorter distance?
- ◆ What could be the reason for tightly bound paper ball falling at a greater distance when thrown?

The paper has air around it. So, it could not travel a long distance. It fell very near. Air did not let the paper travel long distance. When the paper is bound loose, there is air in the folds of the paper which made the ball travel smaller distance. When the ball is bound tight it was able to push the air and reach a longer distance.

9.8. Parachute

Do this



Take a polythene cover. Cut it into a square. On four corners tie rope individually. And then tie the four threads collectively to a small stone as shown in the figure. Throw the cover high into the air. Observe the stone falling along with the cover.'



Think and answer

- ♦ What happens when the threads are not of the same size?
- ♦ When does the cover open - while being thrown up or while falling down?
- ♦ What is the reason for the cover to open up?



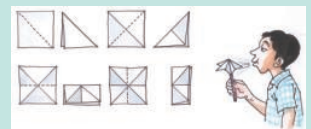
Observe the picture given. This is called a parachute. Parachute falls slowly to the ground because air stops it from falling freely. That is why, the person holding the parachute descends slowly to the ground. Aeroplanes and helicopters have parachutes. They are used in case of emergencies situations.

9.9. Power of air - Wind mill

Do this



Take a square shaped paper. Fold the paper into half and fold it further to make it square again. Now fold it vertically and horizontally. Now it looks like a flower. Place this on the tip of the pencil lead and blow air through your mouth. This acts like a windmill.



Group work



- ◆ Which direction does your wind mill rotate?
- ◆ Does it rotate in all directions?
- ◆ How long does it rotate?
- ◆ Why do wind mills and paper flowers rotate?
- ◆ What do you do to make the wind mill rotate continuously?
- ◆ You know how to prepare a paper flower. Observe how it moves.

Flowing air has power. It can move objects, that is why the paper flower and the wind mill rotate. This power of air is utilized in production of electricity with the help of wind mills. This is called wind electricity.



Do you know?

Air has many gases mainly, nitrogen, oxygen, carbondioxide, watervapour etc. They don't have any taste, odour or colour. In the same way air also has no smell, taste or colour. These gases are present in air in the form of minute particles. Nitrogen is present in higher quantity, followed by oxygen. Carbondioxide is present in a small quantity.

9.10. Why do we need air?

Think and say

- ◆ Close your mouth and nose for some time, and see what happens?
- ◆ How long can you stay like this? Why not for very long time?
- ◆ Take a balloon and blow air into it? Where does that air come from?

Air is necessary for the life of plants and animals

Air is necessary for plants and animals to live. They will die without air. Oxygen in the air helps organisms to live. Carbondioxide in the air is used in the preparation of food materials by plants. Plants release oxygen. Plants and animals take in oxygen and release carbondioxide. There is plenty of oxygen where there are plenty of trees. Oxygen dissolves in water. Water animals breathe oxygen dissolved in water.

Birds, animals, human beings etc., need air to live. Air is the elixir of life. Do you know what are the other uses of air? Do you know what is filled in the tyres of cars and buses?

Group work



- ◆ Which vehicle tyres are filled with air?
- ◆ What other objects do we fill air in?

9.11. Air pollution

Observe the picture and say

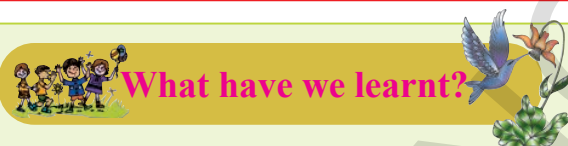


- What do you observe in the above picture?
- What happens due to that? What all mix with the air?
- What is air pollution? What should we do to stop air pollution?
- How do dust particles enter air?
- Let the sunlight fall in a room with the help of the reflection on a mirror or the surface of a steel plate. Observe the dust particles.

When we sweep the floor at home, when the roads are swept, when the vehicles move, the dust particles rise and mix with air. Smoke from kitchens, factories chimneys and burning wood pollute the air. Health is affected when we breathe polluted air. Some people smoke beedi, cigarette and release smoke into the air. By breathing this kind of air also we fall ill and get diseases. Not only people who smoke but people who breathe in that smoke also get diseases of the lungs, T.B., cancer etc. That is why, we should take precautions to prevent air pollution, it is our responsibility. We should plant more trees. We should strictly punish the industries that emit dangerous smoke/ gases.

Keywords

atmosphere	rainy season	pressure / force of
wind blow	clothes according to	of air
atmospheric table	the seasons	pollution
winter season	windmill	parachute
summer season	weight	clean air
	occupies space	



What have we learnt?

1. Conceptual Understanding

- How can you say that wind is blowing?
- How is weather in different seasons?
- What measures are to be taken during summer season?
- What type of clothes should be worn during the different seasons?
- Which season does the environment look green and beautiful? Why?
- Give examples to prove that air produces sound.
- Why does air get polluted?

2. Questioning and Hypothesis



- What is happening in the picture? Why is it happening? What happens next?
- Ask some more questions based on the picture?

3. Experiments - Field Observations

- Dip an empty bottle into the water? What happens? Why does it happen?
- Pour water on a brick? What do you notice? Why does it happen?

4. Information Skills, Projects

- ◆ Collect information about the things which work using air. Write their names and write two sentences on each as to how they are related with air.

5. Communication through Mapping Skills, Drawing Pictures and Making Models

- Write about the making of a parachute? Make a model and draw a picture of it?
- Make a flute out of hay stalk.
- Make a drum using empty tins, polythene covers and rubberbands.

6. Appreciation, Values and Creating Awareness towards Bio-diversity

- Name the instruments which produce similar sounds ? How do you feel on hearing them?
- Polluted environment is harmful to health? What can you do to have a healthy environment?
- There are many industries around Sultanpur which are emitting (giving out) harmful smoke. By breathing the smoke people are falling sick. Write a letter about this to the Pollution Control Board.
- To have fresh air each one should plant a tree. Prepare a poster to explain the necessity for planting trees and display in your class.

I can do this

- | | |
|---|----------|
| 1. I can explain the meaning of the terms - atmosphere, seasons, air, etc. | Yes / No |
| 2. I can demonstrate experiments related to air. | Yes / No |
| 3. I can collect information on objects that run with air and can explain about them. | Yes / No |
| 4. I can write a letter to Pollution Control Board for prevention of pollution. | Yes / No |
| 5. I can make a poster with a message about planting more trees to get fresh air. | Yes / No |
| 6. I can explain the properties of air. | Yes / No |



THE SUN AND THE PLANETS



As the weather was sultry in the night, Nithya and Radhika went to the terrace to sleep. Talking to each other, they looked at the magnificent night sky. "Oh! Look, how beautiful the sky is!" said Nithya.

Think and say

- ♦ Why did Nithya say that the sky was beautiful? Think.
- ♦ What do you see in the sky during night ?
- ♦ Are they visible during the day time ?
- ♦ What all do you see in the sky during day time?

Observe the following pictures



Picture-1



Picture-2

Group work



- ♦ Which picture depicts day time?
- ♦ Which one do you like more, the day or the night? Why?
- ♦ Apart from the sun, the moon and the stars, do you observe any other objects in the sky? Observe and tell.

10.1. The Solar system

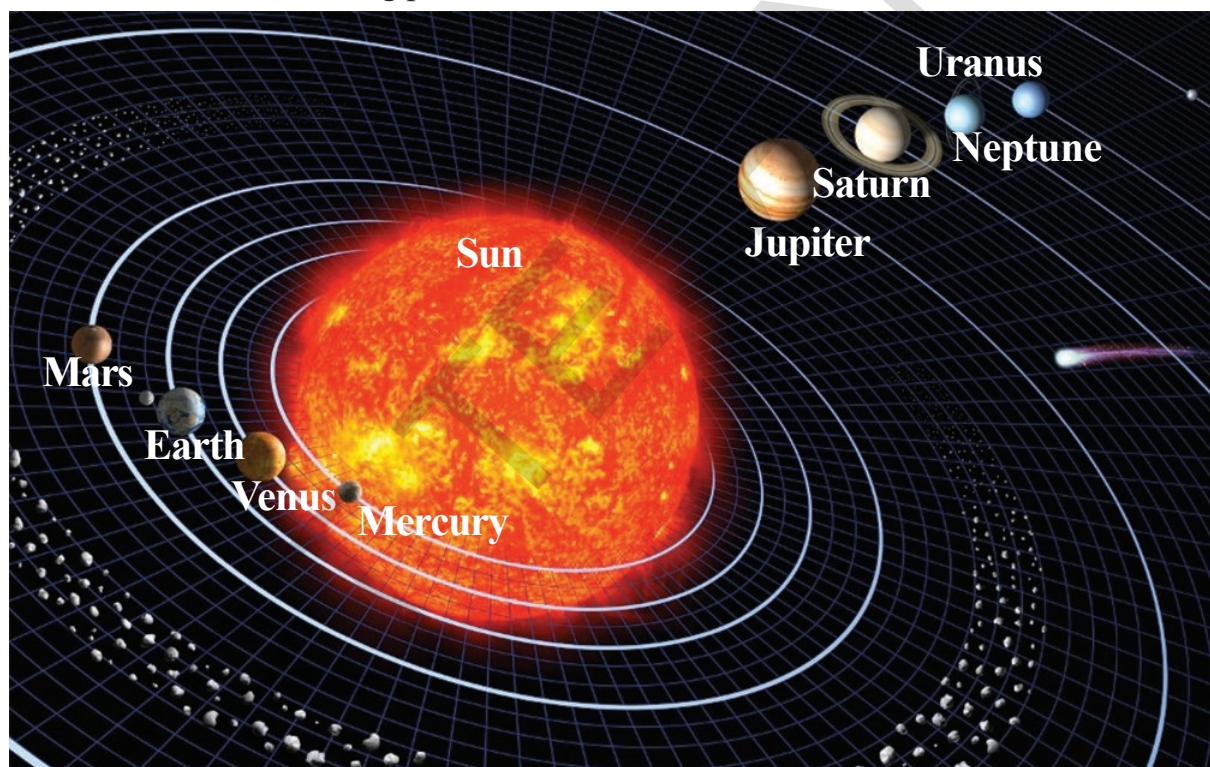
Besides clouds, the sun, the moon, and the stars, we have planets and the comets in the sky. Some of these can be seen easily but some cannot be seen. The stars which twinkle in the sky at night appear small because they are crores of kms., away from us. An aeroplane which can accommodate about 500 passengers, looks very small when it flies in the sky. Why? Think.

Do you know?

The sun is a star too. It is very near to the earth when compared to all the other stars in the sky. Hence, it appears very big. It constantly emits light and heat. The sun appears like a big burning ball of fire. The sun is the biggest star in the solar system. The sun's rays travel in all directions. It is the main source of energy in the solar system. Some portion of this energy in the form of light and heat reaches the earth's surface. The earth and the other seven planets revolve round the sun.

10.2. The Sun and the Eight Planets

Observe the following picture



Group work



- ◆ Which is the biggest object in the picture?
- ◆ When compared to the sun, what is the size of the earth? Which is the biggest planet?
- ◆ Which is the nearest planet to the sun?
- ◆ What is the position of the earth from the sun?
- ◆ Apart from the sun, what are the other shapes that you see in the picture? What are they called?

The objects that revolve round the sun are called the planets. The sun and the planets put together form the solar system. The Mercury, the Venus, the Earth, the Mars, the Jupiter, the Saturn, the Neptune, and the Uranus are the eight planets. These eight planets while rotating round themselves, revolve round the sun. Previously, we considered Pluto a planet. Hence, there are nine planets. But now, the scientists are not considering "Pluto" as a planet. The planets revolve round the sun in a particular path. This path is called an orbit.

Do like this



- ◆ Write the word 'sun' on one card and write the names of the eight planets on eight other cards.
- ◆ Place the cards on the table with their names facing down, and ask your friends to pick up one card each.
- ◆ Observe the pictures and arrange the cards that contain the names of the sun and the planets in their right order.

Think and say

- ◆ What is the position of Venus from the sun?
- ◆ Which is the biggest planet?
- ◆ Name the planets that lie on either side of the earth.
- ◆ Name the planet with rings around it?
- ◆ Name the farthest planet from the sun?
- ◆ Is Mercury hotter than the earth? Why?
- ◆ Which planet takes maximum time to revolve round the sun and which planet takes the least time?
- ◆ Whose orbit is bigger, the earth's or the Saturn's?

Do you know?

Don't look at the sun directly. It harms your eyes severely, if you do so.

10.3. Day, Night

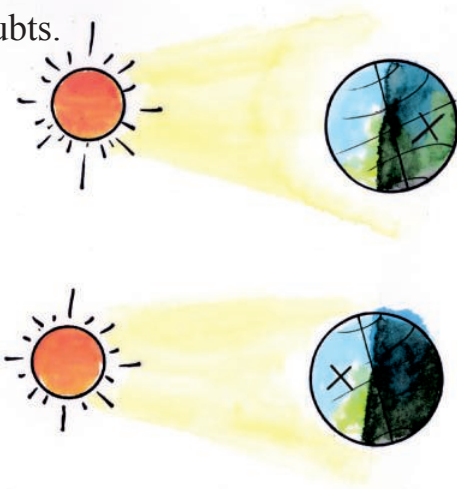
While looking at the sky, Nithya got some doubts.

- Why are nights dark?
- How are days and nights formed?

Look at the pictures given.

Think and say

- ◆ Observe the parts of the picture marked with 'x'.
- ◆ What difference do you observe in the part marked 'x'.



The earth is almost spherical in shape. Days and nights are occurred due to the rotation of the earth. The part of the earth which faces the sun is day and on the other side of the earth is night.

The movement of earth around its own axis is called "rotation". The earth not only rotates around itself, but also revolves round the sun. This is called "revolution".

The earth takes 24 hours to complete one rotation. The period of 24 hours is considered a day. The 24 hours in a day is divided roughly into 12 hours of day and 12 hours of night.

Think and discuss

- ♦ What is the position of the sun in the afternoon?
- ♦ It is very hot in the afternoon and comparatively in the morning and evening times. Why ?

The globe in your school is also in the shape of a sphere like the earth.

Do like this



With the help of your teacher, experiment in the dark room how days and nights are caused using a globe and a lighting candle. The side of the globe on which the light of the candle falls is day and its otherside is night. A torch can also be used instead of a candle.

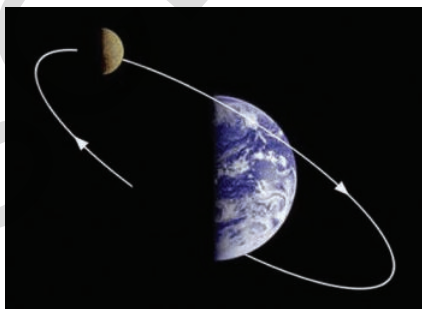
The sun rises in the east and sets in the west due to the rotation of the Earth. This can also be shown with the help of the globe and the torch. Focus the torch on the rotating globe for this activity.

Group work



- ♦ With the help of your teacher demonstrate the sun rise and the sun set using a globe.

10.4. The Earth - The Moon



The moon is the earth's natural satellite. A cosmic body which revolves round a planet is called a satellite. The moon revolves in a fixed circular orbit round the earth. It takes 28 days to complete one revolution around the earth. The moon is a non-luminous body and reflects the light of the sun

falling on its surface. When the moon rotates in its orbit, its illuminated half is towards the sun. The moon appears in different shapes as it rotates round in its orbit. Therefore, sometimes it appears small and sometimes big. Only on a full moon day we can see the entire moon, on other days only a part of it is visible. The moon takes 28 days to complete one rotation. Like the earth, the moon and the other planets also rotate round themselves. The moon revolves round the earth and the earth revolves round the sun.

Do like this



Observe the moon for one month and record your observations

- ◆ Was the moon round on all days?
- ◆ Which day does the moon appear as a full sphere?
- ◆ Why is the moon not visible on some days?
- ◆ Which day was the moon not seen at all?
- ◆ Name the festivals celebrated when the moon is seen in full and when it is not seen at all.

10.5. Shapes of the moon

When the moon is revolving round the earth it appears that the moon is changing its shape. It appears from the earth that moon takes its shape according to the changes in the absorption of sunlight by its surface.



Keywords

self luminous	comets	sunrise
stars	planets	sunset
orbit	satellites	revolution and rotation
cosmic objects	solar system	shapes of the moon



What have we learnt?



1. Conceptual Understanding

- Collect information about the solar system and write a note about it.
- Compare and contrast the objects that you observe in the sky during the day and during the night?
- Compare and contrast the sun and the moon?
- Compare and contrast the sunrise and the sunset?

2. Questioning and Hypotheses

- What happens if the earth does not rotate?
- What happens if there is no rainy season?
- What questions would you ask the people in the Meteorological Department to know about the atmosphere.

3. Experiments - Field Observations

- Take a bucket of water and stir it in a circular motion using your hand and observe how the water is moving.
- Observe the moon for a month every day, record your observations and discuss.

4. Information Skills, Projects

- Collect information regarding the time of sunrise and sunset for a week, and discuss the information gathered, with your classmates.
- Collect information on minimum and maximum temperatures for a week and discuss the information collected.
- Observe the sky for one week. Note down the number of days on which moon is seen in the sky and the duration for which it is visible? Draw the shapes in your notes.

5. Communication through Mapping Skills, Drawing Pictures and Making Models

- a) Draw a painting showing the sunrise.
- b) Prepare a model to show the night sky.
- c) Observe the moon for 15 days and make the different shapes of it using pieces of cardboard.
- d) Prepare a model of the solar system and display in the classroom.

6. Appreciation, Values and Creating Awareness towards Bio-diversity

- a) What kind of atmosphere at night makes you feel happy?
- b) What is the importance of sun in our lives?
- c) Why do some people worship the sun and the moon?
- d) Observe the sky at night and write your experiences.

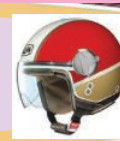
I can do this

- | | |
|---|----------|
| 1. I can explain about atmosphere? | Yes / No |
| 2. I can tell the reasons for changes in the atmosphere. | Yes / No |
| 3. I can draw a diagram and explain how days and nights occur. | Yes / No |
| 4. I can draw the shapes of clouds, sky, sun and moon. | Yes / No |
| 5. I can analyse the information collected regarding sunrise and sunset for a week. | Yes / No |
| 6. I can prepare a model of the solar system and display in the classroom. | Yes / No |
| 7. I can say why the nights are dark. | Yes / No |
| 8. I can explain about the rotation of the earth. | Yes / No |
| 9. I can explain about the importance of sun in human life. | Yes / No |

11



SAFETY AND FIRST AID



11.1. Observe the following pictures and discuss



- What do we see in the picture? What are they doing ?
- Where are the children sitting in the first picture? What can happen if they sit like that?
- Where are the children sitting in the second picture? What accident is likely to happen ?
- Where are the children playing in the third picture? What will happen to them?
- What do you understand from the above pictures? What should be done? What should be avoided ?

Sometimes, accidents occur by the activities we do. Sitting on the railings, playing on the roads or on bunds of tanks, getting down from a moving bus, many people travelling in one vehicle etc. The measures taken to avoid such accidents are called 'Safety Measures'. Safety measures are essential not only while playing or travelling but also at all places and all times.

11.2. When is safety needed?

Rishi and his father Murali got ready to go to the Jatar. They planned to go to the Jatar 50 km away on a two wheeler. They prepared food items for lunch and filled water in bottles. They switched off the electrical appliances, the gas cylinder, and closed all the doors and windows before locking the house. Murali wore helmet and started off. They followed the rules while travelling. He stopped at all red light signals and moved when the green light was on. He parked his vehicle in the parking zone and purchased some items in the market.

Think and say

- ◆ What did Murali do before he locked the house?
- ◆ Why did he do so? What could have happened if he had not done so ?
- ◆ What are the other precautions to be taken before you start to travel?
- ◆ When and where should the precautionary measures be taken?

We should take precautionary measures at all the places like factories, jataras, cinema halls, offices, in a journey as well as at home. Offices have arrangements to prevent fire accidents. More safety measures should be taken up at places where the risk of accidents is high.

We should follow safety measures even at home. Usually very small children, put whatever things they see, in their mouth. Parents take care that dangerous things are not within the reach of small children. Children get injured if they play with knives, screwdrivers, nails, pins, alpins etc. Similarly, children are prone to fire and water accidents. Electrical appliances and gas cylinders are dangerous to both elders as well as children, so, they should be handled carefully. Some times we hear in the news that children were killed as they fell in the sumps / tanks. What are the other ways in which the accidents occur at home? Think about the safety measures to be taken?

Group work



- ◆ What accidents are likely to happen at home? What safety measures can be taken up?
- ◆ What are the safety measures to be followed at school?
- ◆ What are the safety measures to be followed on the road?
- ◆ What accidents can happen when children are alone? What safety measures are to be taken?

There was a fire accident in a school in Tamilnadu. Many children were injured. Some of them died, then the Government thought of several precautions to be taken to prevent fire accidents or any other accidents. 1) Children should go to school in groups or must be accompanied by the elders. 2) They should not talk or go with strangers. 3) Some-times people who kidnap children give drugged biscuits or chocolates to the children. So, they should not take any food item from the strangers. 4) Children should never be left alone. 5) They should always have details of the house address, phone number etc. 6) In case they are alone, they should inform the parents, teachers or persons known to them. 7) If they do not have phone numbers they should take the help of the policeman or can ask the nearby shopkeeper to inform their parents.

In cities, children meet with accidents while crossing the road. See the adjacent picture. Think of what may happen. We should not cross the roads at such places. We must cross the road only at the Zebra Crossing or at traffic signals. While going in the city buses, we should get in or get down only when the bus stops completely.



11.3. Prevention of Accidents

Observe the pictures and discuss



Open borewell



Manhole kept open on a road



Talking on cellphone while driving



More people than the capacity of an auto



Travelling on a bus



Fire accidents in an apartment



Road accident

Group work



- ◆ You have seen the pictures. What kind of accidents might occur in the first five pictures? Why? What type of safety measures must be followed to avoid them
- ◆ Why do fire accidents occur? What care should be taken to prevent them?
- ◆ Why do road accidents occur? What care should be taken to prevent them?

Electrical appliances, blasting of gas cylinders cause fire accidents. Throwing burning cigarette or matchstick near petrol / diesel bunks, in grass lands or in forests cause fire accidents. We should not use lift in case of a fire accident. Fire engines control fire in case of a fire accident. But, we should take proper measures to prevent fire accidents.



A pipe must be fixed and closed with a lid after a borwell is dug. A danger sign must be placed there. There is a danger of children and elders falling into the open manholes. There are people who have lost their lives falling into the manholes, because, they could not see the open manholes when the roads were flooded with water during the rainy season. You should inform the Municipal Corporation Personnel if you find open manholes in the city. Sufficient care must be taken while travelling in autos, buses trains etc. we should neither travel more than the capacity nor sit on the top of the vehicles. Cellphones must not be used while driving. Road rules must be followed. People riding motorcycles must wear helmets. People travelling in the front of a car must wear seat belt. Overspeeding is one of the reasons for accidents. So, we should drive within the speed limit. We should not drive fast and try to over take vehicles.

11.4. What type of safety measures are needed in a crowded place?

Crowded places need more safety measures. There is a possibility of accidents in the places where thousands of people gather for jataras, pushkaras, meetings and celebrations. Hence, precautionary measures are to be taken up.

Group work



- ◆ What type of accidents can occur in crowded places?
- ◆ What precautionary measures should be taken up?
- ◆ Usually fire accidents occur in villages during summer. Why?

Safety measures in Jataras

- Safe drinking water, parking place, hygienic food materials, health camp, toilets, fire engines, police help centre and arrangements to avoid drowning, barricades and announcements regarding the above facilities/precautions.

Do you know?

Fire extinguisher in Cinema Halls :

In cinemahalls, offices and multistoried buildings, fire extinguishers are fixed to avoid fire accidents. The personnel are trained in using them.



11.5. Water Accidents

Some students went on a picnic to a sea shore. They played in the sand for a long time. Then they wanted to bathe in the water. They got into the water. Four students drowned. Many students and youngsters met with accidents due to their negligence.

Think and say

- ♦ Why do water accidents happen?
- ♦ Where and how do water accidents happen?
- ♦ What measures are to be taken to prevent the accidents?

Water and water resources have much importance in our life. We need to go to water resources very often. It is dangerous to get into the water without knowing how to swim. We should not get into the water without the knowledge of swimming. Even if we know swimming, we should not try to swim or cross rivers, lakes and seas without knowing their depth. Villages have big wells, where people bathe. It is dangerous for non swimmers to bathe in these wells. In some places, rivers and canals are crossed with the help of boats. Accidents may occur if more people get in to a boat. We must learn swimming to save our lives in such situations.

When we go for picnics to seashores, rivers, pushkaras etc., we should strictly follow the instructions given in those places.



11.6. Earthquake

Observe the picture and discuss



- What do you see in the picture? Why did the buildings collapse?
- Why has the earth cracked? Why did this happen?
- Do you know about such things? What loss do the people incur due to this?

When the earth shakes violently we call it earthquake. The tremors or vibrations of the earth are noted on a Richter scale. When the intensity of the vibrations crosses seven points on the scale, then earthquake occurs. The most severe earthquakes in India occurred, in Lathur district of Maharashtra in 1993 and in Bhuj near Kutch in Gujarat in 2001. Thousands were killed and many more lost their shelters due to these earthquakes. There was a huge loss of property. Government took up many welfare activities to help the victims. People of the country extended their cooperation through donations.

Things to be done during earth quakes.

- Do not move here and there, sit under the objects that do not move easily keeping your hands on your head and bending towards the floor.
- Be away from breakable things like mirrors, windows etc.
- People who live in multistoreyed buildings shouldn't use lift.
- When you are outside, stand away from the buildings bridges, trees etc.
- While you are travelling, drive your vehicles slowly away from the above said things.
- Try to help the injured.
- Observe whether there is any chances of trees being fallen or buildings and pillars are collapsed to be then do not go near them.
- Power or electric supply should be disconnected.

11.7. Floods

Observe the picture, think and say.



- What do you see in the picture? When do such things happen?
- Do you know about such happenings? What sort of problems do people face?
- What precautionary measures does the government take during those times?
- What safety measures should be taken during such events? How can we help

Sometimes, due to heavy rains water accumulates in rivers and canals and they begin to overflow. Houses, roads, trees and electric polls in the floods drowned or get carried away. Such a situation is called flood. People become shelterless because of floods. Things in the houses get drowned in the water. There will be no water to drink or food to eat. Children, old people and animals drown in water. Contagious diseases like cholera, malaria etc. spread. Neither clothes are available nor any shelter for protection. Severe losses were incurred due to the floods in in Diviseema in 1977, Mahabubnagar and Kurnool in 2009.

Things to be done at the time of Floods

- Follow the news bulletins or government warnings on radio and T.V.
- If you have to walk in the flooded areas, do so by checking the way with the help of a long stick.
- Stop power supply.
- Move to the camps arranged by the government as a part of relief measures. Important things like clothes, bedsheets must be taken along with you.
- Keep other essential things on attics or high and dry places in the houses.
- Take care of food and drinking water. Drink only chlorinated water.
- Do not ignore the flood warnings from the government from time to time.

Think and say

- ◆ How can we extend our co-operation to the people living in flood affected areas?

11.8. First Aid

Some time accidents may occur even after taking several precautionary measures. First aid must be provided in such a situation. Only those who know how to give first aid, must do it. The aid / help given to the patient or the victim before taking him/her to the doctor is called first aid. Apart from providing proper medical care it is essential to remove their fear and instill confidence in victims.

Do you know?

Medical personnel in 104 vehicle visit a village daily and conduct medical tests on the



villagers. They provide the required medicines free of cost and explain the care to be taken to protect our health. There is a doctor and other staff in the vehicle. They explain the precautionary measures to be taken for good health. If you dial 104, free medical suggestions are given. They are available at any time.

Group work



- ◆ Have you ever administered first aid? When and Where? How did you do it?
- ◆ Usually what sort of first aid is given in the event of any injuries in your school or at home.
- ◆ Have you seen a first aid box? Where? What does it contain?

First aid box

Every school must have a first aid box. What should be there in that box? First aid must be given immediately after the accidents. Care must be taken to see that all the necessary things are there in the box. Buses also have first aid boxes.



Have you ever observed?

People who give first aid must wash their hands and if possible, wear gloves before cleaning

the wounds. We should never directly apply antiseptic lotions like dettol on the wound.

They should be diluted with water and then used to clean the wounds. In case of sprains, ice must be applied wrapping it up in polythene cover. Do not apply ice directly.

Life saving principles

We should follow three life saving principles in first aid.

□ Life saving principle-1

Make the patient lie on the back. Loosen the clothes, and remove blocks in the air passage. Bend the head aside as per the situation.

□ Life saving principle-2

Check whether the person is breathing. Try to provide artificial respiration, except in case of poisoning, acid attack and vomitings.

□ Life saving principle-3

Observe the heart beat. If there is no response, press the chest with your palms.

Do you know?

The first hour after the accident is known as the golden hour because life can be saved by giving proper treatment in the first hour.

Do you know?

1. Flash flood of half a feet depth also can make a person fall.
2. One feet depth flood can make the vehicles like car fall.
3. Flash flood of 2 feet depth can sweep away vehicles like cars.

Think and answer

- ◆ What should be done in the case of sprains?
- ◆ What should be done in the case of fractures?
- ◆ What should be done in the case of burns?
- ◆ What should be done in the case of consuming poison?
- ◆ What should be done in the case of heart attack?

In case of sprains

Do not rub the ointment on the sprain. Let the sprained part rest. Apply ice wrapped in a thick cloth or polythene cover instead of applying directly on the sprained part. Bandage the wound with a crepe cloth which is available in medical shops. Remove the bandage at bed time. Keep the sprained part raised.

In case of burns

Keep the burnt part under the running cold water for 15-20 minutes. If the burns are too severe, ointment must be applied. Remember, never pinch the blisters. Never bandage it. Never rub. Never apply ice. Do not run when you catch fire. The air can increase the fire. It may be risky. Follow the SDR principle, STOP-DROP-ROLL.

In case of consumption of poison

Give plenty of water to the person to decrease the intensity / severity of the poison while taking him to the hospital. The essential thing is, the person should neither vomit nor fall unconscious.

In case of unconsciousness

The unconscious person should be made to lie on one side keeping the chin up while taking to the hospital. You should not take him / her lying down on his / her back as there is a the risk of the tongue blocking the respiration.

In case of heart attack

A pain in the chest is thought to be a heart attack. If a person feels pinpricking sensation in the chest and pain in any other part of the body, then we can consider it as heart attack. Intense sweating, nausea and chest pain indicate heart attack.

When there are no medicines available we should make the person sit, ask him to cough and take him to the hospital. Do not let him sleep, walk or stand.

In case of a fracture

See that the fractured part is not moved while taking the patient to the hospital.

Group work



- ◆ How do you recognise a person affected by paralysis ? What are the symptoms of paralysis ?
- ◆ What should be done in case of a dog bite?
- ◆ What first - aid should be given to the victim of a snake bite?
- ◆ What do you do in case of a sun stroke?
- ◆ What should be done when a chemical falls in eyes?

How to recognise paralysis?

If anyone is suffering with B.P. in your house and they complain of nausea or senselessness, ask that person to laugh. If the shape of the mouth appears odd and if it is crooked and he is unable to speak properly and is unable to raise his hand, then it can be considered as paralysis. We should take him to the hospital in the first hour (Golden hour).

In case of dog bite

Wash the bitten area (monkey's bite, dog's bite, cat's bite, etc) with soap. But do not cover the wound with cloth or bandage.

In case of snake bite

Most of the snakes are not poisonous. A person bitten by snake can collapse due to fear. We should take steps to reduce the person's fear. We should not move the bitten parts. We should see that the person does not become unconscious.

In case of sun stroke

Not everyone who moves in the sun will suffer from sun stroke. The symptoms of sunstroke are high temperature, nausea, vomitings and severe headache. A person with these symptoms should not be allowed to drink water. Wipe the person's body with a cloth dipped in the cold water (till the body regains normal temperature). Then we should give ORS solution or electral water.

In case of chemical falling in eyes:

If any chemical falls into our eyes while experimenting in the lab or in the house, we should keep the eyes under the running cool water for 15-20 minutes. But we should not rub the eyes even if there is severe burning sensation. We should bend our head to a side so that the affected eye is cleaned without causing any trouble to the unaffected eye.

In case of nausea (vomiting)

When we stand in assembly for a long time without having food sufficiently there are chances of us becoming unconscious due to exhaustion. In such a case, instead of slapping him, if you lift the legs up and bend the head sideways there is a possibility of that person gaining consciousness. Usually a person becomes unconscious because of less blood supply to the brain. By keeping the legs in a position higher than the head, the brain receives blood and the person may become normal.

In case of heart failure

Let us now learn about the most important aspect of first Aid. The CPR

There is a possibility of heart failure when a person suffers a severe heart attack, electric shock or any other reason. The first aid given in such case is called CPR. CPR means C- Cardio P- pulmonary R- Resuscitation and restart.

CPR is done by pressing (neither gently nor too heavily) with your palms at the spot 2-3 inches away from the place where the ribs end (chest bones). You should press 30 times taking care that your hand is straight while pressing. Then try to give oral respiration twice. Thus, we should try thrice in a minute till the heart beats again. Do not forget to close the nostrils and lift the chin during artificial respiration.



Group work



- ◆ What do you do if anything blocks the throat?
- ◆ When we are injured we bleed, how to stop excessive bleeding?
- ◆ What to do when the nose bleeds?
- ◆ What should we do in case of an electric shock?

In case of a block in the throat

Do not try to remove the thing blocking the throat with your hand. Ask the person to bend forward and hit 4-5 times on his back. Ask him to cough while hitting. If the thing doesn't come out then try to press the stomach and ask the person to cough. The thing blocking the throat may come out.

How to stop bleeding

If the bleeding is light, press the part hard and keep it in a position above the heart. In case of heavy bleeding though we follow the same procedure the bleeding may not stop. Hence the person should be taken to the hospital in the golden hour.

In case of bleeding nose

Never bend the head backwards in case of a bleeding nose. Bend the head forward and press the soft part of the nose for 10 minutes. Do not use cotton to stop the bleeding. Do not try to stop bleeding if the person is suffering from B.P. The bleeding stops itself after 5-10 drops as BP works as a safety valve in them.

In case of electric shock

In case of electric shock at home, switch off the connection and remove the plug. Then go to the person and lift his chin up so that the respiration begins. If this doesn't work give him artificial respiration. Sometimes there may be heart failure due to severe electric shock. This is called cardiac arrest. Give CPR to such persons.

Do you Know

As per the guidelines of the WHO we should not tie, cut or suck the blood in case of a snake or a scorpion bite. There is a possibility of blood circulation being blocked if you tie we should not cut the bitten part with a blade or a knife as it may lead to Tetanus. There is danger to the person who is sucking the blood from the bitten area. The poison may enter his body while sucking.

11.9. Who helps?

We should dial 108 in case of fire accident, road accident and natural calamities. This is a free service. If you dial 108, they will inform fire engines, the ambulance or the police as per the need or you can contact St. Johnson's ambulance. They help immediately. Everyone should take safety measures within one's reach to prevent accidents



and ill health. Give first aid when necessary. Use the facilities provided by government. Learn about first aid and use this knowledge as the situation demands.

Think and Say

- 1) What would you do when you come to know about an accident ?
- 2) Imagine that you happened to see an accident on your way to school. Nobody cares about the accident. What would you do?

We should not neglect the road accidents. Call 108 and inform them immediately. Inform the victim's relatives. Thus we may help in saving a life.

Key words

safety measures

bleeding

CPR

accidents

natural calamities

paralysis

earthquake

fire accidents

108 vehicle

floods

first aid

heart attack

sun stroke

life saving principles

poison



What we have learnt?



1. Conceptual Understanding

- a) Why should we take safety measures?
- b) When is first aid needed?
- c) What precautions should be taken while on a journey?
- d) Whom do you call if a house in your street is on fire? Why?

2. Questioning and Hypothesis

- a) What questions will you ask to know more about 108 services?
- b) What questions will you ask an electrician to know more about the care to be taken to avoid electric shocks.
- c) A fire engine arrived at Ramu's house. Guess why?
- d) What are the contents of a first aid box? Guess and confirm with a doctor.

3. Experiments - Field Observations

- a) Keep some slates one above the other. Construct a house on it with small card board pieces. Pull out a slate. Observe what happens and write.
- b) Analyse the reasons for any accident which took place in your locality.
- c) Visit an office, a cinema hall or an industry nearby. Observe the safety measures taken. Write about them.

4. Information Skills, Projects

- a) Collect the details of recent flood / cyclone / road accident / fire accident from the news papers. Make an album and display. Discuss the reasons and preventions in groups.

b) Collect the following details from health worker/hospital.

Accidents in a month	First aid given	Suggestions given after first aid	Present status of health

c) Collect the names of the officers and their cell numbers concerning emergency services i.e., 108, 104, fire engine, hospital, ambulance, electricity office, police station etc.

5. Communication through Mapping Skills, drawing pictures and making models

- ♦ Draw pictures of a fire engine and 108 vehicle.

6. Appreciation, Values and Creating Awareness towards Bio-diversity

- Why should we appreciate the services of 108 staff?
- What kind of help would be appreciated in case of natural calamities (floods, cyclone, fire accidents)? How can you help the victims?
- What is the need for first aid? What can you do if you learn it?
- Ramesh's grandfather was bitten by a snake. His father took him to a wizard (manthragadu). What would you do if you were in his place? Why?

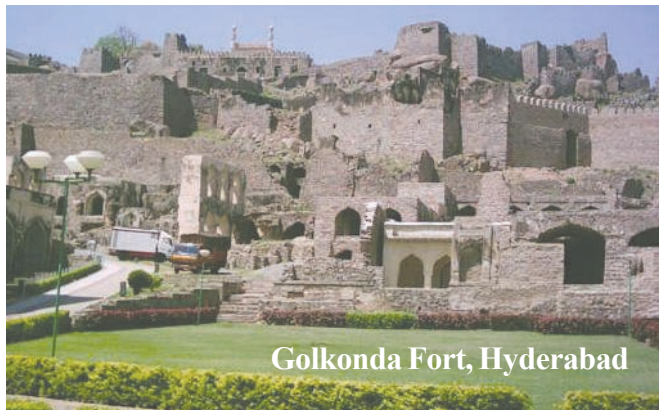
I can do this

- I can talk about safety measures. I can explain about safety measures at different places. Yes / No
- I can ask questions to know more about the details of 108 and 104 vehicles. Yes / No
- I can observe and record the details of an accident. Yes / No
- I can collect the details from health worker/hospital. I can collect the emergency services phone numbers. Yes / No
- I can help in case of a natural calamity. Yes / No



HISTORICAL SITES - WANAPARTI FORT

12.1. Observe the picture and discuss



Golkonda Fort, Hyderabad



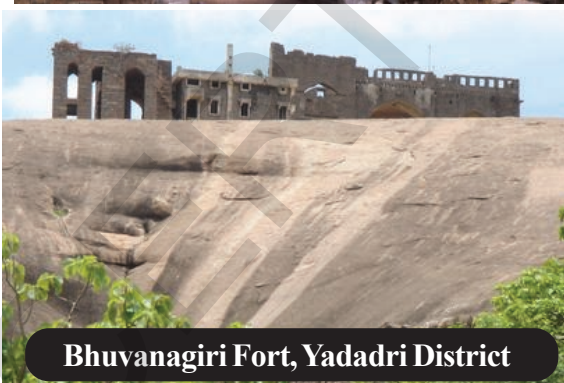
Orugallu Fort, Warangal



Devarakonda Fort, Nalgonda District



Domakonda Fort, Kamareddy District



Bhuvanagiri Fort, Yadadri District



Ramgiri Khila, Peddapalli District

- Do you know any of the above forts and where they are located? Do you have any such forts in your district?
- How do you feel, when you see the above pictures? Did you ever visit any such place?
- What information do we get either by visiting them or by reading about them?
- Identify the above forts / sites on a map of our state.

12.2. Wanaparti Fort

The house we live in, the clothes we wear, the food we eat, the traditions we follow, etc., reflect our culture. The facilities we are enjoying now were not there in the past. Similarly there will be many changes occurring in the time to come.



It is very interesting to know about the events and specialities of the past. It is called history. We can know the happenings of that time through the monuments on rocks or from books written (literature) during that period.

There are many forts symbolizing the history of Telangana State. Orugallu, Gadwal, Golconda, Rachakonda, Devarakonda, Bhuvanagiri, Domakonda, Wanaparti, etc., are very famous forts. Kings in those days used to construct forts

Collect...



- ♦ Find out from your elders the story behind the name of your village/city.
- ♦ Write the names of the historical monuments in and around your village/city

for protection from enemies or as a symbol of their victories. They stand as an evidence to the hundreds of year of history. Shall we know more about the kings who ruled us and the forts they built?

12.3. Wanaparti Fort - History

The fort seen in the picture is the Wanaparti Fort. It is in Wanaparti district of our State. Wanaparti is 140 Kms away from Hyderabad. There used to be many forests. Hence, the name Wanaparti (vanam – forest).



Where are the other forts? Who built them?

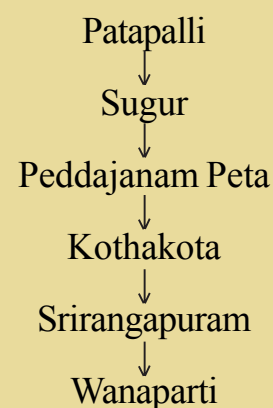
Monument	District	Built by
Orugallu	Warangal	The Kakatiyas
Gadwal	Jogulamba	Somanadri
Golconda	Hyderabad	Quli Qutub Shah
Rachakoonda	Nalgonda	Recharla Singama Nayaka
Domakonda	Kamareddy	The Kamineni Dynasty
Bhuvanagiri	Yadadri	Tribhuvana Malla Vikramaditya
Devarakonda	Nalgonda	Recharla PadmaNayaka
Khammam Qila	Khammam	The Kakatiyas
Medak Qila	Medak	Prathaparudra
Falaknuma	Hyderabad	Sir Viqar-Ul-Umra

The founder of Wanaparti estate was Janum Veera Krishna Reddy. He lived in Patapalli in 1510 A.D. Later, he built a fort in Sugur near Patapalli and shifted his residence to Sugur. It was named the Sugur Estate from then onwards. The Sugur Estate was a subordinate kingdom under Golkonda Sultans. During those days, Golkonda was ruled by Sultan Quli Qutub Shah. The Estate rulers were called Reddy Rajulu (Reddy Kings).



The capital of the estate was changed from Patapalli to Sugur, from there to Peddajanam Peta, then to Kothakota, later to Srirangapuram. RamaKrishna Rao, one of the Reddy lords shifted the capital from Srirangapuram to Wanaparti in 1807 A.D. Wanaparti continued to be its capital until it merged in the Indian Union.

Capitals of Wanaparti Estate



Think and say

- ♦ Why did the Kings in the past shifted the capital from one place to another?
- ♦ How many years back was the fort constructed ?

Out of fifteen generations that ruled The Wanaparti estate from 1510 A.D. to 1948 A.D., there were seventeen kings and six queens. The kings of this estate worked hard for the development of agriculture. They constructed 7 huge tanks in the villages that fall under the range of the estate. They were called 'Seven Seas' (Saptha Samudralu) They provided irrigation facilities to thousands of acres of land. Drinking water needs were also served by the tanks.



Do you know?

- After India became independent, Sardar Vallabha Bhai Patel merged all the estates in the Indian Union. The smaller estates in our state were also merged.
- The Nizam's estate was the last to be merged in the Indian Union.

Seven Seas (Sapta Samudras)

- | | |
|-------------------|------------------|
| 1. Sankara Sea | - Kanayapalli |
| 2. Ranga Sea | - Sri Rangapuram |
| 3. Veera Sea | - Thatipamula |
| 4. Mahabhupal Sea | - Pebberu |
| 5. Krishna Sea | - Sankiredypalli |
| 6. Gopala Sea | - Velturu |
| 7. Rama Sea | - Rayinpeta |

Think and say

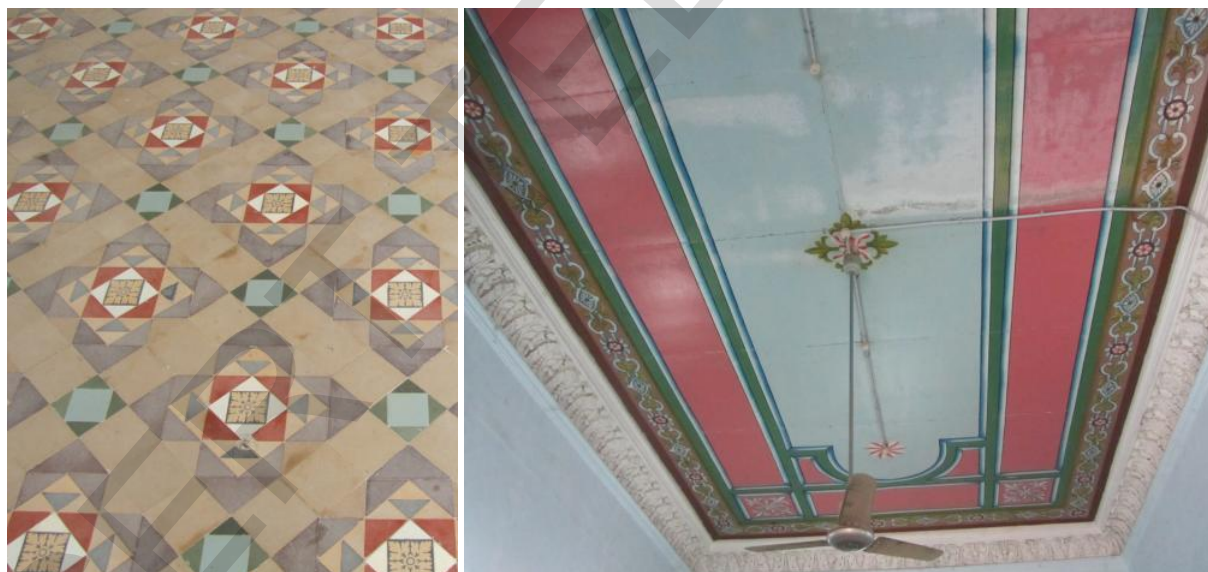
- ◆ Discuss in the class why were these called "the seven seas"?

Do you know?

- Raja Rameshwara Rao, one of the rulers of the Wanaparti Estate constructed Sarala Sagar after his mother Saraladevi. Its speciality is that the gates of this tank open by themselves once the tank is full. This is called 'syphon' system. It is the first of its kind in Asia.

12.4. Arts

The Reddy Kings had a good taste in arts. Many colourful designs are found on the walls and the roofs of the buildings constructed by them. Even today, those designs are intact. They brought men and material from Germany to make those designs. It reflects the artistic grandeur of those days. They encouraged music, dance and handicrafts as well.



Think and say

- ◆ Look at the roofs given above. What is the difference between the roofs in the forts and the roofs in our houses?
- ◆ Look at the pictures on the previous pages. How is their construction?
- ◆ What are the things used mostly in their construction?
- ◆ Why do you think they used those things?



Think and say

- ♦ Why did they build battlements in the fort?
- ♦ There are there holes in the battlement why?
- ♦ What is the use of fort wall?

12.5. Temples

The Vanaparti Kings built many temples. King Bahiri Gopala Rao visited the temples in Tirupati, Kanchi and Srirangapatnam and built Sri Ranganayaka Swamy temple in Sri Rangapuram. It stands as a proof to the wonderful sculpture during those days. This temple is called as Northern Sri Ranga Kshetra.



Think and say

- ♦ List out the 'do's' and 'don'ts' followed when we visit, ancient / old monuments
- ♦ What is the greatness of those ancient monuments?

Do this



- ◆ When you visit a monument or a temple observe the pictures on their roofs and the walls.
- ◆ Find out who built those monuments and what are those art forms known as?

Think and say

- ◆ What is the greatness of ancient temples?
- ◆ When compared with the temples of past what differences do you observe in the temples of present day?
- ◆ Some ancient temples are in a dilapidated condition, why are they so? What can we do to preserve them?

12.6 Literary Service

Among the Reddy Kings Bahiri Gopala Rao was a scholar in eight languages. Hence he was called “Ashta Bhasha Kovidulu” (expert in eight languages). Among the kings of the estate, many were not only patrons of literature but were poets themselves. Pavuram Rangacharyulu of this Estate, was the author of more than a hundred books. He participated in the literary discussions with Tirupati Venkata Kavulu. Kadukuntla Papa Shastri, author of Bhramarambika Samvadham, Anumula Venkata Subrahmanya Shastri, author of Sri Krishna Charitra Sangraham and Kavyagutcham were known as great poets of the Estate.

12.7 Administration

The kings of the estate used to measure the lands and then impose tax accordingly. They divided the estate into three parts. They are: 1) Sugur region 2) Vanaparti region 3) Keshampeta region. They possessed powerful army. Southern borders of Nizam’s kingdom were protected by this army.

Do you know?

- Sugur Sikkas : The Nizam King Sikandar Shah permitted Ramakrishna Rao to print coins independently. They were valid not only in the Vanaparti Estate but also in the Nizam’s kingdom. These were named as Sugur Sikkas (Sugur coins).

Keywords

monuments

taxes

battlements

fort

tower

hall (mandapam)

estate

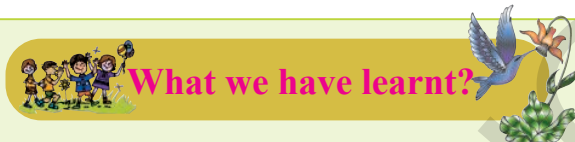
tanks

sugur sikkas

sea

history

handicrafts



What we have learnt?

1. Conceptual Understanding

- How did the Wanaparti Fort get its name?
- What are the seven seas? Why are they called so?
- Classify the lands in the range of the Wanaparti Estate?
- Describe the services rendered by the Wanaparti kings to literature?
- Why were forts built?

2. Questioning and Hypothesis

- ♦ Latha visited the Golconda Fort with her uncle. What questions she might have asked to know more about the fort?

3. Experiments - Field Observations

- Visit any building or ancient temple nearby, observe and write a note about it.
- The Archeological Department displays a board at the historical sites and temples. Read and explain such boards to your friends.

4. Information skills, Projects

- ♦ Collect information about the historical buildings or the old temples of your district, in detail and tabulate it.

5. Communication through Mapping Skills, Drawing Pictures and Making Models

- Draw the design of any roof.
- Point out Mahabubnagar and Wanaparti on a map of Telangana
- Make model of any fort using clay.
- You had a look at the forts in the beginning of the lesson. Mark them on a map of Telangana. Mark the districts, where the forts are built.

6. Appreciation, Values and Creating Awareness towards Bio-diversity

- What important aspects of Wanaparti Fort attracted you? Why?
- The construction of the fort involved the labour of many people. Write a note appreciating their hard work.
- Is it necessary to preserve historical buildings? Give reasons.
- State the precautions you take when you visit the historical places?
- How can we protect these places?
- Name the materials used in building the forts. Where do they get them from?

I can do this

- | | |
|---|----------|
| 1. I can explain about the importance of the ancient buildings and forts. | Yes / No |
| 2. I can ask questions to know more about the ancient buildings. | Yes / No |
| 3. I can seek and tabulate the information about these buildings. | Yes / No |
| 4. I can mark historical sites on a map of Telangana. | Yes / No |
| 5. I can prepare sketches of these places and can make models too. | Yes / No |
| 6. I can explain the necessity of preserving the historical buildings. | Yes / No |



13



ENERGY



13.1. Observe the pictures, think and say



- Name the vehicles in the picture. How do they run ?
- What is needed to pull cycles, rikshaws, bullock carts, etc.
- What is needed for operating cars, motorcycles, vans and autos?
- There are two trains in the picture. Which fuel does the first train run on? Which fuel does the second train run on?

Vehicles need fuels like petrol and diesel to run. Some vehicles like bullock carts and rikshaws do not need fuel. We pull them with energy obtained from eating food. Vehicles and machines work with the help of fuels like petrol, diesel and also with electricity and gas. The food we take gives us energy. Fuels provide energy to vehicles or machines. Energy is needed by humans and machines work and by vehicles to move.

13.2. What do these need?



Think and say

- ♦ What are the things in the picture above?
- ♦ What does a fan need to rotate?
- ♦ What does a torch need to light?
- ♦ How are chillies dried?
- ♦ What are the different stoves seen in the picture above? What is needed to light them?
- ♦ How does an iron box get heated?

Some gadgets need electricity, some depend on solar energy, and some others need fuels to get the energy needed for them to work. Energy is the basis for all operations, work and movements. Energy is used for many different purposes and in different forms.

Group work



- ♦ Write about some activities where you use energy?
- ♦ What are the forms of energy?
- ♦ Which energy resources do not deplete even after we use them?
- ♦ Which energy resources deplete when used continuously?

13.3. Energy Resources

Energy is obtained from different sources like the sun, wind, water, petrol, diesel, kerosene, gas and coal etc. Among these petrol, diesel, kerosene, gas, coal, water etc., deplete when used repeatedly. Resources like sun, wind will never get exhausted. The world needs energy for many things. It is needed for all kinds of work and for survival. The need for energy resources is increasing day by day with an increase in the energy consumption.

13.3.1. Non - Renewable Resources

Energy that comes from burning fuels is called fuel energy. Coal, kerosene, gas, petrol, diesel etc are fuels. The energy obtained by burning these fuels is used to generate electricity, in transportation, in operating the various machines in industries and cooking in the houses etc. These fuels are extracted from the earth. Trees and animals which remains buried for lakhs of years inside the earth ultimately transform into fossil fuels. We are using these fuels, (petrol, coal and natural gas) in such huge quantities that in a couple of hundred years they will get exhausted. It will take lakhs of years for these fuels to form.

Group work



- ◆ What can happen if coal reserves are used heavily? How do they deplete?
- ◆ What can we use in place of non-renewable fuels?
- ◆ What should we do to conserve non-renewable energy resources?

We should use the energy resources as carefully as possible. Instead of wood, natural gas must be used. Nowadays, gohar gas is produced from dung. We should save it also. We should save petrol and diesel as much as we can. Electricity also must be saved. We should not use electricity unnecessarily. Electricity saved is electricity produced. Reduce the use of fans, T.V.etc. Instead of using electrical appliances for household work we can do the work, ourselves manually and save fuel resources. In our state, electricity is mostly produced in hydroelectric stations or thermal power stations using coal and water as their basic resources. You can save these resources by saving electricity. It is our duty to conserve the non-renewable resources.

13.3.2. Renewable Resources

Fuels like coal, diesel, petrol, kerosene, gas etc., that are extracted from earth get exhausted as we use them. Sunlight, water and wind never get exhausted. These are called renewable resources. Let us know more about them.

13.4. Solar Energy

We use solar energy to dry clothes, grains and fish. Do you know that electricity can also be made using solar energy?

Do you know?

When sunrays fall on the solar cells they produce (current) electricity. We save the electricity in the battery and use when needed. Electricity produced during day time is stored in the batteries. This is used to light up the streets at night.

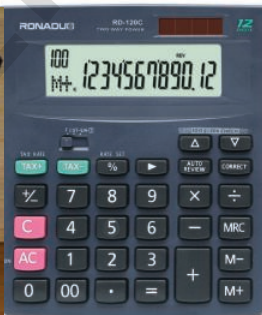


Solar street light

Following are the appliances that work with the help of solar energy. Observe.



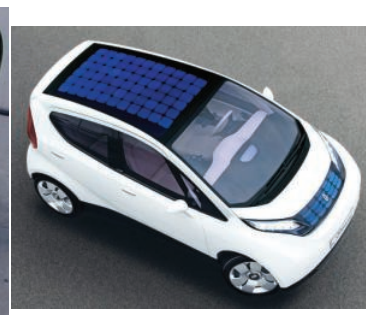
Emergency lamp



Calculator



Solar heater



Solar car

Group work



- ◆ How is solar energy used in daily life?
- ◆ Why should we use solar energy?
- ◆ Write about the appliances that use solar energy

In our country, Gujarat uses solar energy to the maximum extent. Schools and government offices in this state use electric appliances that use solar energy. Radio, television and computer etc., can also be operated using solar energy.

13.5. Wind Energy

Wind means air. Does wind have energy? How can you say? How is the energy generated by wind used in our daily life? Look at the adjacent picture. It is a dynamo. When the cycle moves the bulb glows. This implies that the fast moving cycle tyres generate energy. Do you know that wind has the capacity to move and rotate things?

Look at the picture below.



Think and say

- ◆ Can you see the very big fans in the picture?
- ◆ Do you know how they run? Where do you find them?
- ◆ What are the uses of these fans?

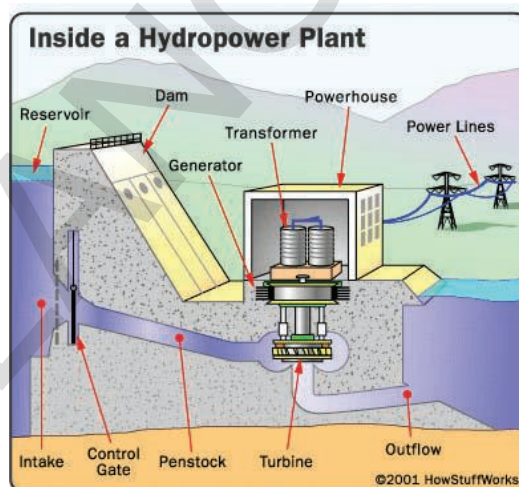
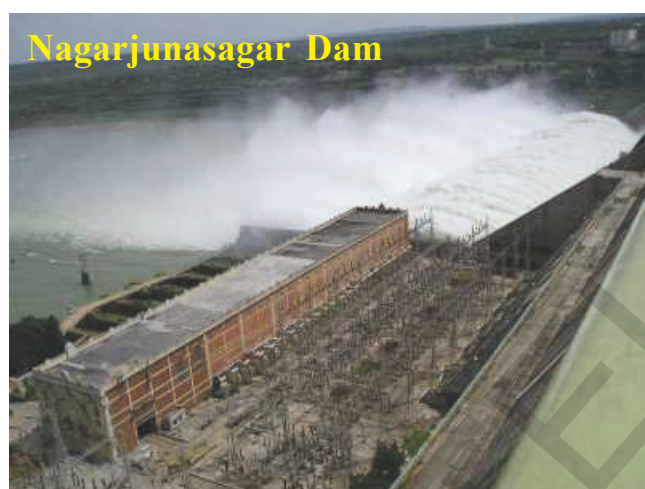
The large fans move when wind blows. When these fans move, electricity is generated due to the energy of the wind. These wind mills are arranged where the wind blows fairly well like on hills or on sea shores. The energy that is generated is called wind energy. Wind has the capacity to push things. Wind energy is used to rotate the fans, to pull out from water wells.

13.6. Water Energy

Think and say

- ◆ Does water have energy? How can you say?
- ◆ How do we use water energy in our daily life? Give examples.

Similar to sunlight and wind, water also has energy. Water is used in producing electricity (hydro electricity). Electricity is generated in the hydro electric projects by the rotation of turbines due to the water falling on them. Observe the picture of the Nagarjuna Sagar project given below.



The Nagarjuna Sagar Project in the Nalgonda district in Telangana and Srisaïlam project in the Kurnool district in Andhra Pradesh use stored water to generate electricity. Look at the second picture showing the generation of electricity using water. This is called hydro electricity. Water is sent through pipes called penstock to run the turbines. When these turbines rotate, electricity is generated. This electricity is supplied from power houses through transformers. The power stations where electricity is generated from water are called 'Hydro-electric power stations'. Electricity is generated even with water vapour that is produced when water is heated with coal. This is called thermal electricity.

Think and say

- ◆ Where are the Hydro electric power stations located in our state?
- ◆ Is electricity in the power stations generated throughout the year?
- ◆ Which month is the generation of electricity more? Why?
- ◆ What are the differences between hydro-electricity and thermal electricity? Which electricity is used more?

13.7. Energy Resources in future

Petrol and coal reserves are diminishing continuously, so we should learn to depend upon the energy resources that do not diminish even after repeated use. Effective methods to use solar energy, hydro energy, wind energy must be found out by experimenting. We should try and use them in future.

Observe the following table.

S.No.	Non- renewable reserves	Renewable reserves
1.	Petrol, diesel, kerosene, coal are the examples	Solar energy, wind energy, hydro energy are the examples
2.	Expensive	Cheap
3.	Pollutants	Non Pollutants
4.	Will not be available for a long time	Available forever
5.	Alternatives to these must be prepared	Instead of preparing other alternatives, it is best to use these in a proper way.

Think and answer

- ♦ From those given in the table above which resources should be used more? Why?
- ♦ Suggest some resources / energies in place of non Renewable resources.

13.8. Conservation of Energy Resources

Energy is needed for all activities. We should think of proper ways of utilising different energy resources in nature. We should try to conserve the energy resources and to reduce pollution. We should not waste fuels but save them for future. We should decrease the use of non-renewable resources and increase the use of renewable resources.

Think and answer

- ♦ What should we do to save fuels?
- ♦ What do you do to save electricity?

How to save fuels?

- Walk short distances on foot. It saves fuel and it is good for health.
- Use bicycles instead of cars, motorcycles and scooters. This is in practice in many of the European countries.
- Travel in public transport systems like buses and trains as far as possible. Do not use cars for one or two persons. This causes traffic congestion and pollution on roads.
- Avoid using electric lamps in the daytime. Open windows and doors to keep the house well lit and ventilated.
- Switch off all electrical appliances while going out of the house and at nights before sleeping. Do not keep the lights on in bathrooms and toilets when not required. Do not use geysers, electric cookers, microwave ovens, electric iron boxes, washing machines, grinders, etc except when required.
- Try natural methods for cooling. Use fans only when needed. There will not be any necessity of air conditioners, if you grow plants and trees around the house and in your surroundings.
- Do not burn coal or wood unnecessarily. Make compost of leaves and garbage. Do not pollute air by burning them.
- Do not waste water and keep on taking steps to conserve water.
- We get energy from food. Do not waste food. Do not over heat food because it requires more fuel and the nutritive values are also lost.

Keywords

energy

electricity

solar energy

wind energy

natural gas

hydro energy

fuel

hydro electricity

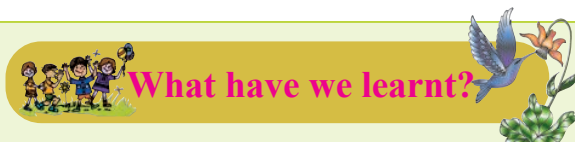
non renewable energy

renewable energy

fuel energy

wind electricity

energy resources



1. Conceptual Understanding

- What is fuel? Give examples.
- Give examples of the appliances that work using solar energy.
- What are renewable and non-renewable resources of Energy? Give examples.
- What do you do to save electricity?
- What are energy resources? Why should we conserve energy resources.

2. Questioning and Hypothesis

- Ask your parents how they save electricity?
- Power cuts are more now a days. Meet the electricity officer of your area. Ask him about the reasons for powercut.

3. Experiments - Field Observations

- How many units of electricity are spent in a month? Observe and write the number of units of electricity are consumed in your house. How much money is paid in a month towards electricity bill? Observe.

4. Information skills, Projects

- Visit four of your friends' houses. Find out, how much money is paid in a month towards electricity bill. How many units are consumed? What are the reasons? Collect the details and write down in the table.

Name of the friend	Units of Electricity consumed	Bill Amount	Reasons

- b) Make a table of the appliances in your house that work with different energy resources.

5. Communication through Mapping Skills, Drawing Pictures and Making Models

- a) Draw a picture showing the production of hydro electricity and explain the process.
- b) Draw wind mills that generate wind electricity.
- c) Draw the picture of any one electric appliance used in your house. Write about it.

6. Appreciation, Values and Creating Awareness towards Bio-diversity

- a) Wood is also a fuel used mostly for the purposes of cooking. What else can be used as an alternative? In case you must use wood what would you do?
- b) Which is the best among wind energy, hydro energy, fuel energy and solar energy? Why? Which among the above should be saved? What can we do?
- c) Display slogans to create awareness about saving water and electricity.

I can do this

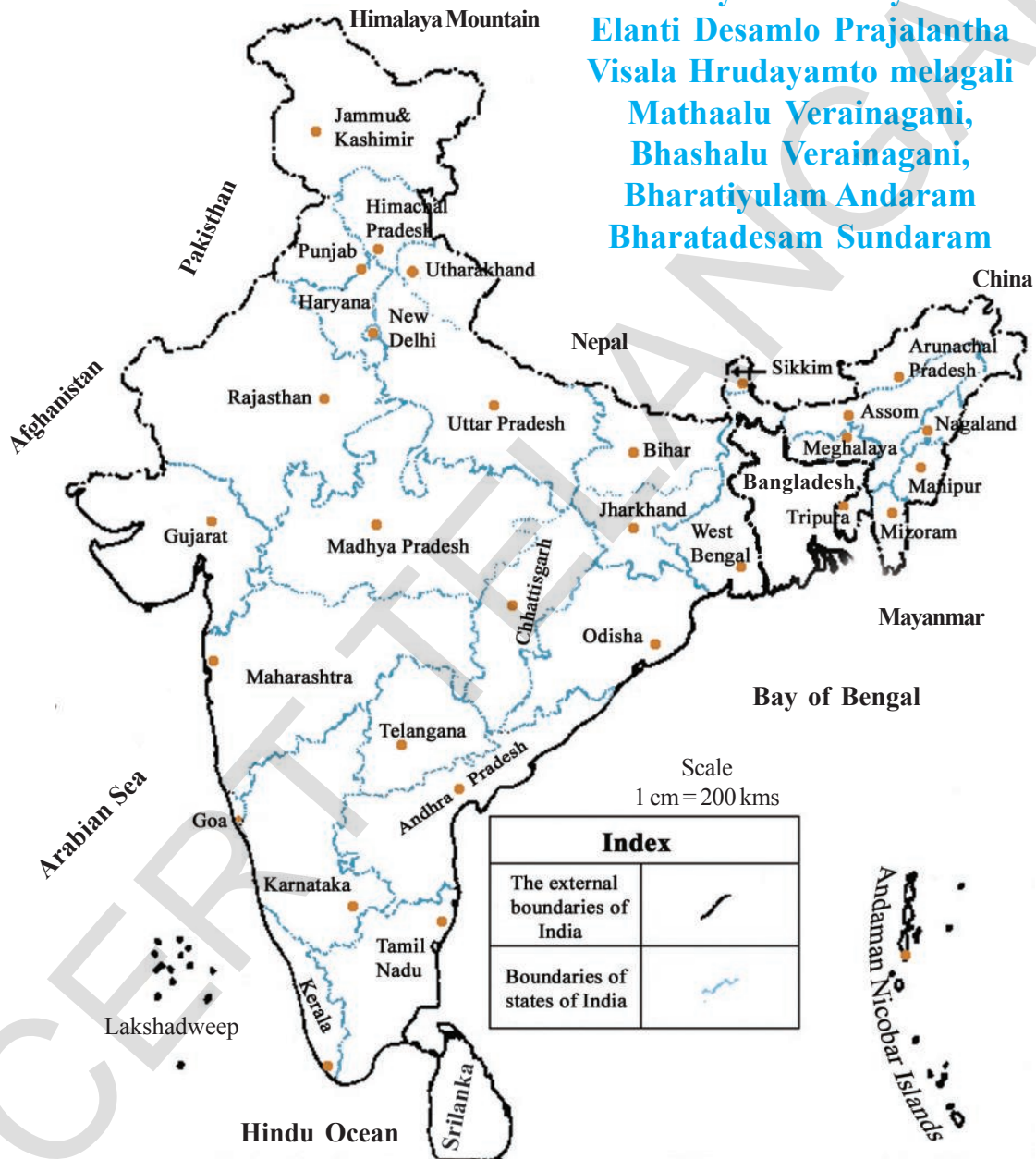
- | | |
|---|----------|
| 1. I can explain the steps to save fuel. | Yes / No |
| 2. I can ask questions about power cuts and saving electricity. | Yes / No |
| 3. I can observe the expenditure on electricity in my house. | Yes / No |
| 4. I can prepare a table with the reasons for over consumption of electricity. | Yes / No |
| 5. I can explain the generation of hydro electricity with the help of a diagram | Yes / No |
| 6. I can talk about saving fuels and saving electricity. | Yes / No |





14.1. India

Visala Bharatha desam manadi
Himalayalaku Nilayamidi
Elanti Desamlo Prajalandha
Visala Hrudayamto melagali
Mathaalu Verainagani,
Bhashalu Verainagani,
Bharatiyulam Andaram
Bharatadesam Sundaram



Children! Have you heard the above song? What does the song tell you about? Yes, this tells us about our country, that is, India. We all are Indians. You have read about our state in the 4th class. You know the details of our state's map, districts, mandals and their borders etc., Now, let us know more about our country!

Group Work



- ◆ Look at the map of India given on the previous page. Locate our state. Colour it in green.
- ◆ Colour the neighbouring states in blue.
- ◆ Which states are adjacent to the Bay of Bengal.
- ◆ Which states are adjacent to the Arabian Sea?
- ◆ What are the boundaries (Frontiers) of India.
- ◆ How many states are there in India?

There are 29 states and 7 union territories in India. New Delhi is the capital of India. India is the 7th largest place in the world on the basis of area occupied. There are Vindhya and Satpura mountains in the central part of India. The land to the north of Vindhya mountains is called north India and the land to the south is called south India.

Do you know?

Russia, Canada, China, United States of America, Brazil, Australia are Larger in area when compared to India.

India is one of the oldest countries in the world. Our country has the historical heritage of thousands of years. Our country is treasure of knowledge by virtue of the Vedas, the Upanishads, the Puranas and the Ithihasas. The religions Buddhism, Jainism that preach -peace were founded here.

Aryabhatta, Varahamihira, Charaka, Susrutha, Pathanjali etc., were the greatest scholars who created voluminous knowledge in the fields of mathematics, medicine, astronomy and yoga. India has different religions, languages (22 languages are recognised by our constitution) landforms, culture and traditions. It is because of this unity in diversity, the Indian 'sub continent' is a role model for the entire world.

14.2. India and its regions

There are six regions in India. They are:

- | | |
|----------------------------|--|
| 1 Eastern India | Bihar, Jarkhand, Odissa and West Bengal |
| 2 Western India | Gujarat, Goa, Maharashtra and Rajasthan |
| 3 Northern India | Jammu & Kashmir, Himachal Pradesh, Uttaranchal, Uttar Pradesh, Punjab, Haryana and New Delhi (India's Capital and a Union Territory) Uttarakand? |
| 4 Southern India | Telangana, Andhra Pradesh, Tamilnadu, Karnataka and Kerala. |
| 5 The North-Eastern States | Arunachal Pradesh, Assom, Meghalaya, Tripura, Mizoram, Manipur, Nagaland and Sikkim. |
| 6 Central India | Madhya Pradesh and Chattisgarh. |

Do This



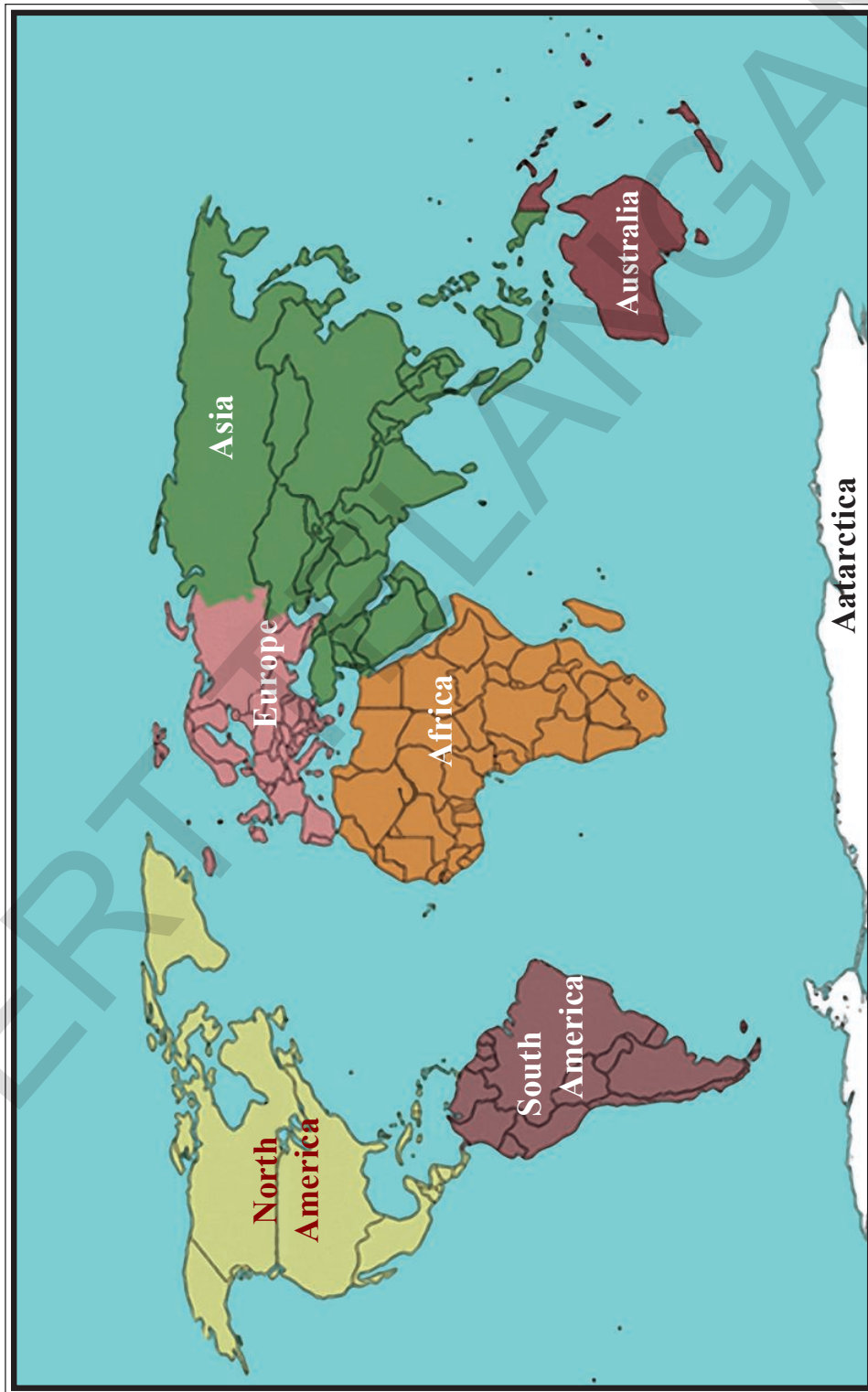
- ◆ You know the six regions of India. Colour the regions in the map of India as given below.
Eastern India - Blue; Western India - Yellow;
Northern India - Pink; Southern India - Green;
North-Eastern States - Red; Central India - Purple.
- ◆ Mark the boundaries of India on all four sides



14.3. Continents - and Oceans

There are many countries in the world. The surface of earth is made up of extended land and water. For our convenience, we have divided the whole world into continents and oceans. Look at the world map given below:

World Map



Think and answer

Observe the 'World' map in your school ?

- ♦ Look at the map and name the continents.
- ♦ Name a few countries in Asia?
- ♦ Which country is located on the western side of India?
- ♦ Which latitude passes through India?
- ♦ Name a few countries in the continent of Europe.
- ♦ Name the ocean adjacent to India? Name the countries and continents adjacent to the Pacific ocean?
- ♦ Write the names of some of the eastern and the western countries by observing the map of the World.
- ♦ Observe the map of the world and write down the names of the oceans.
- ♦ Name the countries through which the equator passes.
- ♦ Mark Australia on the world map. Identify its direction with respect to India?
- ♦ Which countries do we have to cross if we have to reach Brazil from India?

The whole world is divided into seven continents. They are: Asia, Europe, Africa, North America, South America, Australia and Antarctica. Asia is the largest of all continents and Australia is the smallest.

All the continents have mountains. There are plateaus and plains at some places. Some mountains are very high (Eg: Himalayas of India, Andes mountains of South America) the others are less in height (Eg: Alps mountains of Europe). Usually, the upper part of the mountains is very cool and with steep slopes. That is why the population there is very less. Plateaus are shorter than mountains, they are almost flat surfaces and sloping edges. The population in plateaus is more than that of the mountain regions. The Plains are flat. Population is more in plains. The Himalayas are to the north of India. They are covered with snow. The mount Everest is the highest peak in the world. The Ganges which is originated in the Himalayas flows | through India and Nepal.

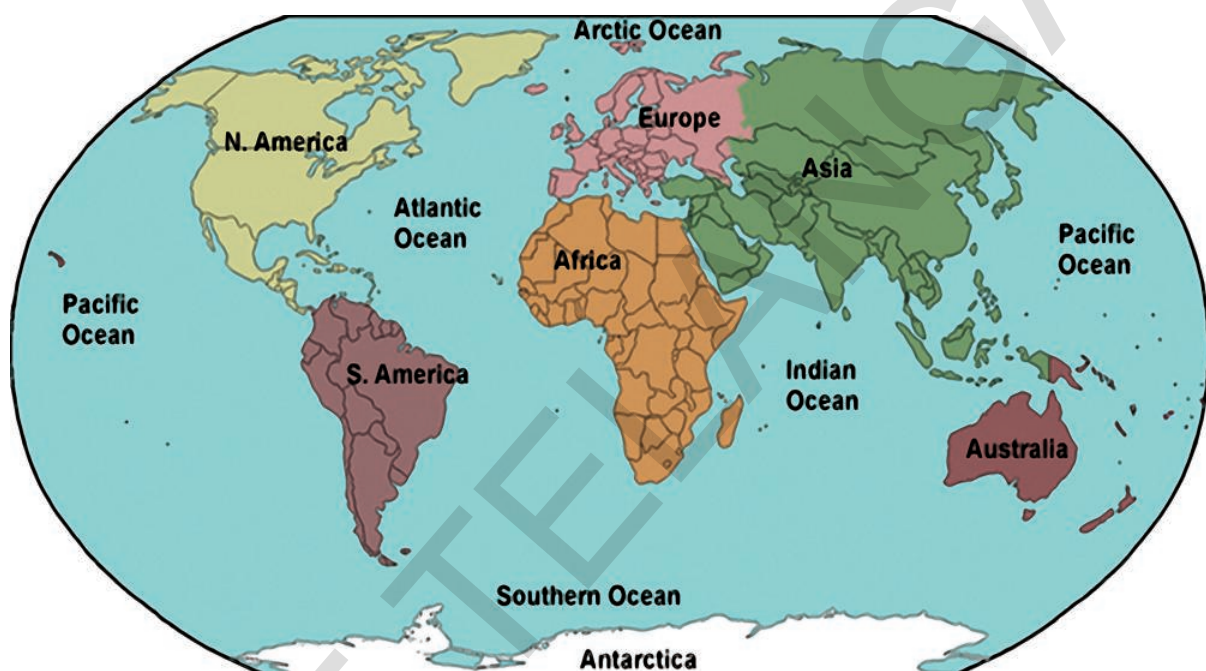
Group Work



- ♦ Why is ice formed on the Himalayas?
- ♦ Point out India, Srilanka, England, Brazil, Canada, Russia and Australia on an out line map of the world. Colour them.

14.4. Water region

Large, salty water regions on the earth are called oceans and the smaller ones are called seas. These are in different shapes and sizes. Ocean surround all the continents and are connected to one another. There are five oceans. They are Pacific Ocean, Atlantic Ocean, Indian Ocean, Arctic Ocean and the Antarctic Ocean. Pacific is the largest and Arctic is the smallest Ocean. The lands surrounded by



Group Work



- ♦ What are the advantages of seas?
- ♦ Locate the oceans on the map of the world. Colour them in blue.
- ♦ Which seas lie adjacent to India?
- ♦ Is India an island or a peninsula? Why?

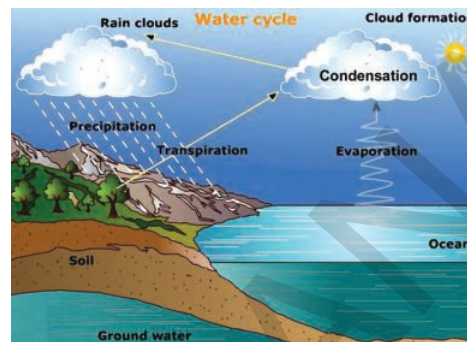
Do you know?

As we go upwards from the sea level, for an ascent of every 1000 mtrs. temperature reduces by 6° centigrade.

water on all four sides are called Islands. Eg: Green Land, Great Britain. The land surrounded by water on three sides and land on one side is called a peninsula. Example: India.

Water on the earth occupies more area than land. Nearly, 75% of the surface of the Earth is covered with water.

The water in the oceans evaporates due to the heat of the sun. This water vapour goes up and forms clouds. When the temperature decreases, the clouds become cool and fall as rains. This continuous process is called the 'water cycle'. In this process, water becomes water vapour and the water vapour changes back into water.



Do you know?

The surface of the oceans sinks at some places. Due to this, deep pits are formed. These pits are the deepest parts in the oceans. Some of these are as deep as 10,000 mtrs. Some pits are so deep that the Himalayas also will submerge in them. High mountains are also present in the oceans. The mountain ranges are extended in the waters of the Pacific, Indian and Atlantic oceans. The total length of these mountain ranges is about 65,000 kms, and they form the longest mountain ranges on the earth. The crests of some of these mountains extend above the water level of the seas and form Islands.



Ocean water is a mixture of various salts. Sodium chloride (common salt) is a major component of the ocean waters. The ocean water contains 96 percent water and 4 percent salts and other insoluble solids. Ocean water is denser than pure water.

Keywords

nation, world	north India	central India
location	south India	west India
continents	east India	water regions
oceans	north - east India	land regions



What have we learnt?



1. Conceptual Understanding

- What are the boundaries of India?
- Write the names of all the continents and the oceans.
- Differentiate between an island and a peninsula. Give examples.
- Which continents are present adjoining the Atlantic Ocean?
- Name all the south Indian states.

2. Questioning and Hypothesis

- ♦ Look at the world map or India map and frame 5 questions to understand them.

3. Experiments - Field Observations

- ♦ Observe and write a note about the different cultures and traditions followed by the people in your village/city.

4. Information Skills, Projects

- ♦ Different languages are spoken by the people in different states of our country. Collect information on the languages spoken in different states.

5. Communication through Mapping Skills, Drawing Pictures and Making Models

- Draw a suitable diagram and explain the water cycle.
- Point out all the southern states on a map of India and mark the borders of our state.

6. Appreciation, Values and Creating Awareness towards Bio-diversity

- What can you do to live in harmony with all?
- What are the occasions on which we use maps (state/country)?

I can do this

- | | |
|---|----------|
| 1. I can explain about our country. | Yes / No |
| 2. I can collect and tabulate information about the states and their languages. | Yes / No |
| 3. I can draw and explain the water cycle. | Yes / No |
| 4. I can point out different states on a map of India. | Yes / No |



15.1. Our Constitution



We have Sarpanch at village level, Chairman at mandal, Zilla Parishad Chairman at district, Chief Minister at state and Prime Minister at national level. They serve to meet the needs and necessities of the people. All these people discharge their duties following some rules and regulations. These rules and regulations are written in a book called the 'Indian Constitution'. The citizens of India should follow the rules written in the constitution. Our constitution was written after we got independence from British colonial rule. It was developed under the chairmanship of Dr. Rajendra Prasad. He was the first President of independent India.

Think and answer

- ♦ What is independence? When did our country get independence? How was our country before independence? How were the people?

When we achieved independence in the year 1947, our leaders decided to write down all the rules and regulations to govern the country, and rights and duties to be given to the citizens, in the form of a book. They conducted many meetings with intellectuals and discussed all the issues in detail. A Drafting Committee was formed and Dr. Bheem Rao Ambedkar was appointed as its Chairman. The members of the committee examined the constitutions of the various countries of the world and framed a constitution for us. It came into force on 26th January, 1950. From that day, our country is being ruled according to the Indian constitution and 26th January is celebrated as Republic Day every year.

The rules as well as, citizen's rights and duties have been written down in the constitution. We have a provision for changing the rules of our constitution. When people accept the demand for changes then the constitution can be amended. Ours is the biggest written constitution in the world. Some countries like Britain have no written constitution at all.

Think and say

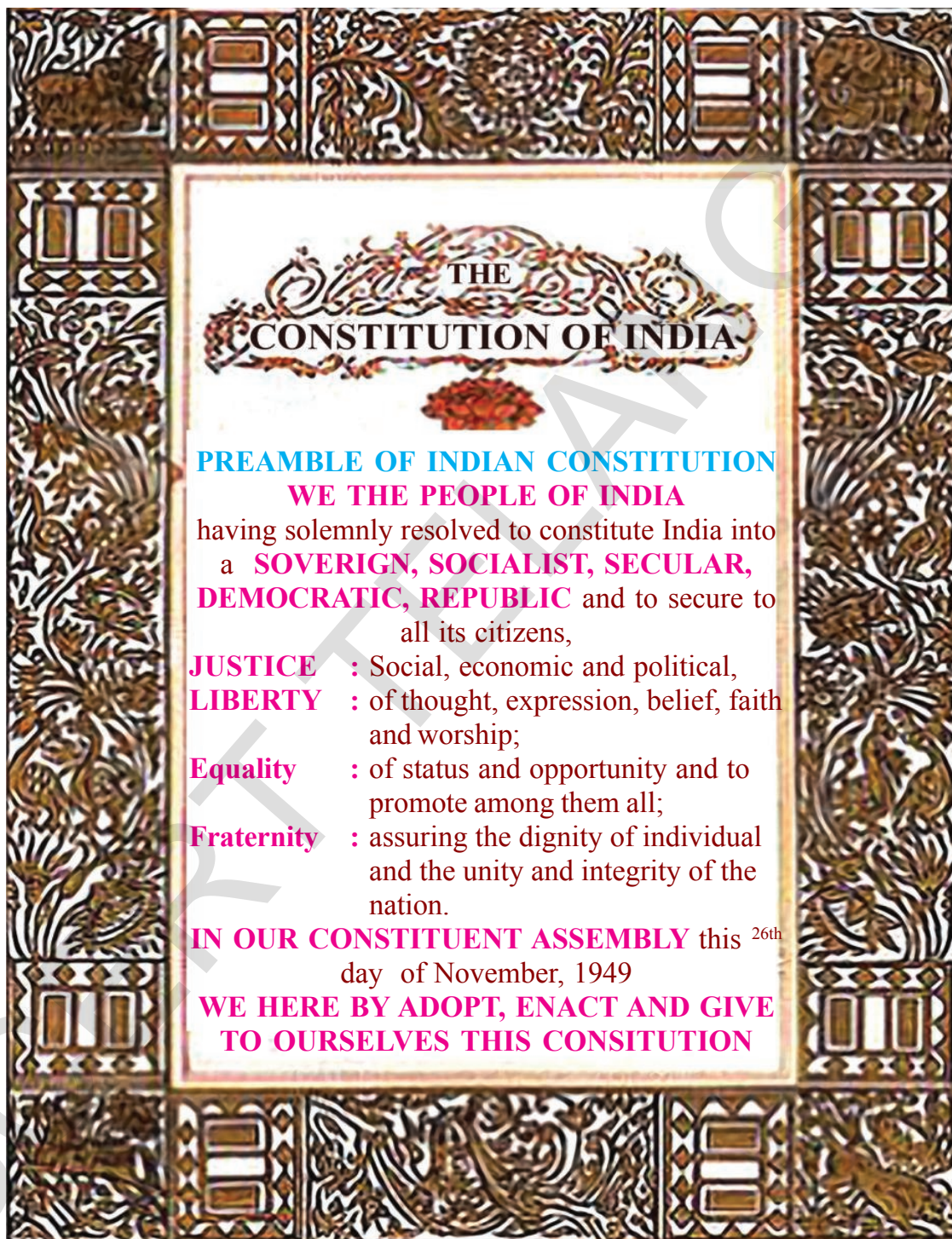
- ♦ What is the greatness of the Indian constitution?
- ♦ What did Dr. Ambedkar give to the country?

Do you know?

While Dr. Ambedkar was the Chairman of the Drafting Committee, other intellectuals such as Gopala Swamy Ayyengar, Alladi Krishna Swamy Ayyar, K.M. Munshi, Syed Mohammed Sadullah, N. Madhava Rao, P.T. Krishnama Charyulu etc., were some of the members. It took 2 years 11 months and 18 days to write the Constitution.

15.2. Preamble to the Indian Constitution

Our constitution starts with a preamble. This is an introduction or a foreword to the constitution and gives information about the objectives of our nation. Preamble is the heart of the constitution.



Subs. by the Constitution [Forty-second Amendment] Act, 1976, Sec.2, for “Sovereign Democratic Republic” (w.e.f. 03.01.1977)

Subs. by the Constitution [Forty-second Amendment] Act, 1976, Sec.2, for “Unity of the Nation” (w.e.f. 03.01.1977)

Group work



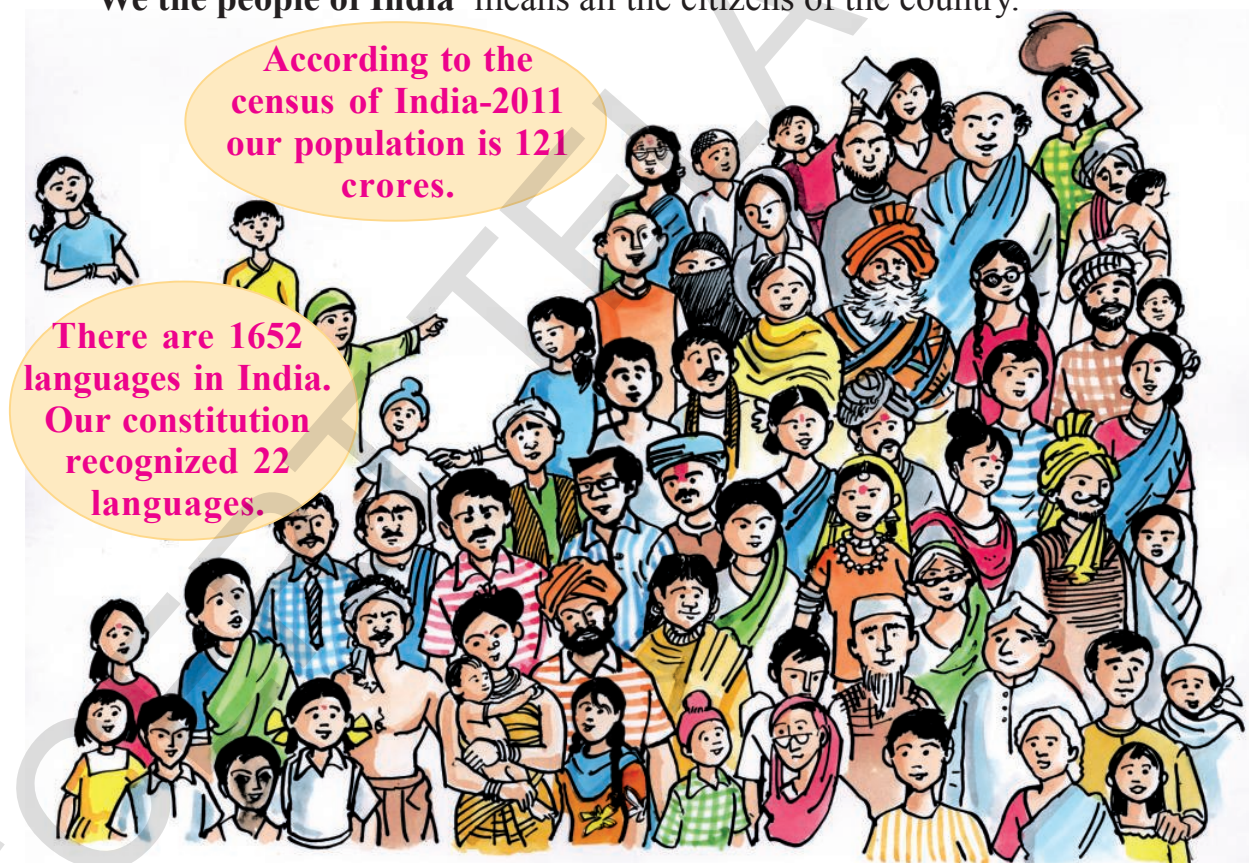
- ◆ You have read the preamble of the Indian Constitution. What did you understand?
- ◆ What are the great words written in it? Why do you feel they are great?
- ◆ The preamble of the Indian constitution is considered great. Why?
- ◆ What new words in the preamble have you come across?

15.3. Terms of the preamble and their concepts

Let us read the preamble of the Indian constitution to know why it is great, what message it gives, its key terms and their meanings.

15.3.1. We the people of India means...

'We the people of India' means all the citizens of the country.



15.3.2. Sovereign, Socialist, Secular, Democratic, Republic state means...

We have taken a collective decision to make our country a sovereign, socialist, secular, democratic republic state and included these words in our preamble.

Sovereign means we can take our own decisions regarding our country. No other country will be allowed to get involved in the decision making process of our country. But we maintain good relations with other countries for trading, education etc., and sign agreements.

Socialist means involving all the people of the country in production and wealth creation processes and enjoying the wealth equally. Everyone should share wealth. Everyone should have equal opportunities to get sufficient food, to live a healthy life, to go to school, not to be discriminated and receive all the facilities. We all should work for this equality and help others. We should always think that our welfare lies in the welfare of the others.



Let us share what we have with us

Everyone should be given sufficient food



Everyone should be able to go to school

Everyone should live healthily



Everyone should have a safe home



Doctors should be available to all

Secular means all religions are looked upon as equal. Equal respect is given to all religions and beliefs. Government does not give prominence to any single religion. Every citizen is given freedom to practice the religion he/she likes. Government is not formed on the basis of religion.

In India, 80% of the population is Hindus. Muslims are 13% and Christians 2%. The remaining are Sikhs, Buddhists and Jains etc; The religions like Sikhism, Buddhism and Jainism were born in India. Buddhism spread to other countries from here.

Democratic Republic Country means the representatives elected by the people rule the country. There are no kings or queens. The representatives elected by the people run the government. The government formed, of the people, by the people and for the people is called a democratic form of government. For this the people cast their vote and elect the leaders.

We should elect the people who work for us and who are good and selfless. These elected people run the government according to the rules written in the constitution and protect the commoners. They should always think about the welfare of everyone. They should meet the masses and try to know their condition. They should feel that helping people is their most important job.

Group work



- ◆ You have read about socialism. Do all the people of our country get opportunity to enjoy the wealth equally? What is your opinion?
- ◆ 'All religions are treated equal in our country. Everyone should respect the others'. What should we do to promote this idea?
- ◆ What is a government? Why should we elect good people as leaders?
- ◆ What is a law? Who makes the laws?

Do you know?

The leaders we elect make laws. These laws are made in the Parliament. The Parliament has two houses namely, The Rajya Sabha and The Lok Sabha. People elect 543 members to the Lok Sabha by casting votes for them. Two members are nominated without elections. 233 members are elected to the Rajya Sabha. 12 members are nominated by the President. The total number of members in the Parliament is 790.

Our state has a Legislative Assembly and a Legislative Council. 119 members are elected to Legislative Assembly. They are called the 'Members of Legislative Assembly' (M.L.A.). 40 members are elected to the Legislative Council. They are called 'Member of Legislative Council' (M.L.C.).

In our country, the people who are above 18 years of age have the right to vote. He / she can cast his / her vote as per his wish for a candidate contesting in the elections.

Think and say

- ◆ People below the age of 18 years are not given the Right to Vote. Why?
- ◆ Who is your M.L.A.? Has he/she ever visited your school or village? Why?

15.3.3. Equal justice to all - Social, Economical and Political Justice

All citizens are treated equal in terms of receiving education, implementation of laws, honour, dignity, opportunities, enjoying rights, receiving benefits, health facilities etc.

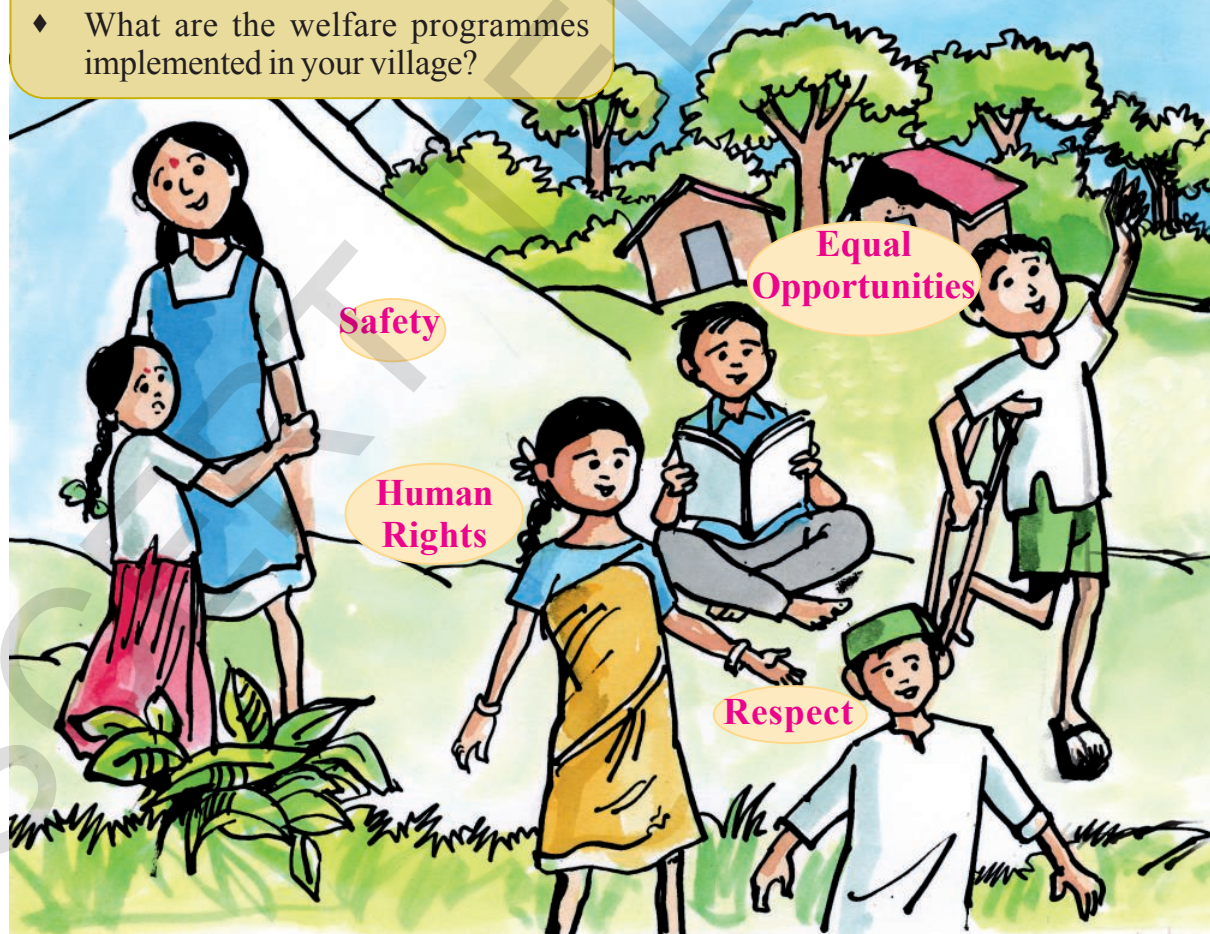
There should be no discrimination on the basis of gender, religions, castes, etc. All should be respected and treated as equals. Everyone should get equal opportunities of education and employment.

Think and say

- ♦ Why should we not discriminate between boys and girls or male and female?
- ♦ What is meant by 'treating all the people equal'?
- ♦ Do the people of your class or home or village treat every one equally?
- ♦ Is everyone given equal opportunities? What should be done to achieve this?
- ♦ What are the welfare programmes implemented in your village?

15.3.4. Equality

Every one should be treated equally irrespective of their race, caste, language, religion etc. Every one should be given equal respect. Both men and women should be given equal respect, equal opportunities and equal health facilities. Every one should have a chance to better life and to better developmental opportunities.



15.3.5. Freedom of Thoughts, Expression, Faith, Practice and Worship

The constitution provides many freedoms to us. They are: Freedom of speech, freedom of writing, freedom of visiting places any where in India without fear, freedom of residing at a place without fear, freedom of choosing friends, freedom of practicing the religion we like etc. We can study any course we like. The constitution sanctions our freedom until no harm is done to others.

Group work

- ◆ How do you utilise the freedom of speech?
- ◆ How should we use the right to freedom without causing harm to others?
- ◆ Do you think that you have freedom? What are the different freedoms you enjoy? What are the different freedoms you have lost?
- ◆ Do you ask questions freely in your class and school? What do you do for that?



15.3.6. Developing Self Respect, National Integration and Universal Brotherhood

According to our Constitution, everyone should receive equal respect. Many people live in our society. Do we respect all in the same way or do we respect some people more than others? Some people are never respected at all, think...

Do This



Look at the following table. Particulars of some people in the society are given below. Fill in the particulars regarding the extent to which they are respected put a (✓) mark.

Sl.No.	People of the society	Respect and honour they receive			
		High	More	Less	Very Less
1	House maids				
2	Poor people				
3	Illiterates				
4	Students				
5	Engineers				
6	Teachers				
7	Senior Citizens				
8	Doctors				
9	Sarpanches				
10	Rich People				

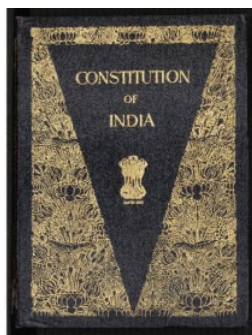
You have marked for different people. Your friends might also have marked. Who is respected the most? Who is respected the least? What did you understand from this?

We all should live as members of a single family with affection, like brothers and sisters. Everyone should be responsible and cooperate with one another. Everyone should strive together for the development of our country, irrespective of religion, language, culture, etc. Our country should be strengthened unitedly through its unity in diversity.

Brotherhood means living like brothers and sisters. All Indians should lead their lives as brothers and sisters of a family with affection towards every one. They should help one another and live together. Though languages, religions and food habits are different, we all should live together as Indians.

Think and say

- ♦ What is meant by brotherhood? What do you do to live amicably with others?
- ♦ Which languages do you speak? Are there any people in your class, school and village who speak other languages? Which language do you speak to them? Do you want to learn other languages? Why should you learn them?



The Written Constitution was accepted by the Constituent Assembly on 26 November, 1949. All the members of the Constituent Assembly signed it on 24th January, 1950, and we started

r u l i n g
ourselves according to the accepted constitution from 26th January 1950. That is why every year 26th January is celebrated as the Republic Day. This is our National Festival. Our National flag is hoisted in each and every village, institution, school and office on this day.



We should understand and follow our constitution. We should see that all are happy. The constitution has given freedom and equal opportunities to all the children for education, health and development. We should respect and practice it.

But, in reality some children don't get proper food. Some do not get the opportunity to attend school. They have to work as child labourers. All the children are not healthy. Think, why? If all the children don't get a chance to lead a healthy life and go to school then, the right to equality, justice, freedom will remain unfulfilled. Hence, we should make the lives of all the people better by being sincere and fair. We should protect the environment, plant trees and conserve them. Show affection and be kind to animals and birds. Give them food. Protect them. Protect the environment, lakes, hills, rivers, tanks and forests, and not pollute them. We must follow the principle, 'practice before we preach'.

15.4. Rights and Duties

The Indian Constitution has given us some rights and duties. The various rights given are : right to work, right to freedom of speech, right to freedom of religion, right against exploitation, right to vote, right to education, right to establish societies. Similarly, the constitution has given us certain duties also.

Fundamental duties

- a) Respecting the Constitution, National Flag and National Anthem.
- b) Cherishing the noble ideals of the freedom struggle.
- c) Upholding and protecting the sovereignty, unity and integrity of India.
- d) Defending the country and rendering national service when called for.
- e) Promoting harmony and the spirit of common brotherhood among all the people of India and renouncing any practice derogatory to the dignity of women.
- f) Preserving the rich heritage of the nation's composite culture.
- g) Protecting and improving the natural environment including forests, lakes, rivers and wild life.
- h) Developing scientific attitude, humanity, spirit of inquiry and reforms.
- i) Safeguarding public property and abjuring violence.
- j) Striving for excellence in all individual and collective activities.

Group work



- ♦ What rights do you enjoy? What rights you have been denied?
- ♦ What should we do to practice the fundamental duties?
- ♦ What is discrimination?

Some people are subjected to discrimination which means not everyone can enjoy all the rights. Not receiving equal respect, denial of freedom, non-recognition, prohibition from educational opportunities etc, comes under discrimination. But, this should not happen. Everyone should be able to enjoy all the rights and everyone should develop well as far as possible.

Keywords

constitution

socialism

republic state

constituent assembly

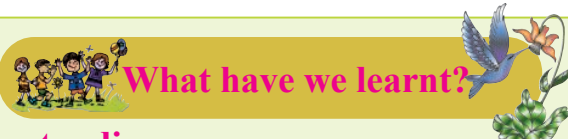
secularism

freedom, equality

preamble / foreword

democracy

brotherhood



1. Conceptual Understanding

- What is meant by Constitution? Who framed it?
- Write any 4 aspects of the Preamble.
- Write reasons for why people need freedom.
- What are your rights and duties?

2. Questioning and Hypothesis

- ◆ Frame any 5 questions on the Preamble of the Constitution.

3. Experiments - Field Observations

- ◆ The Constitution has provided freedom and equality to us. Observe your village/city and find out whether anybody from your villages / city is not receiving the freedom and equality granted to us by the Constitution.

4. Information Skills, Projects

- ◆ Collect information on the latest elections held in your village/city. Prepare a table on the basis of the particulars given below, write in your note book and analyze it.
Why are the elections held? Name the contestants. Name the winners.

5. Communication through Mapping Skills, Drawing Pictures and Making Models

- Write down the important aspects of the Constitution on a chart and exhibit it in your class room.
- Point out New Delhi on a map of India. Write its borders.

6. Appreciation, Values and Creating Awareness towards Bio-diversity

- Write a letter appreciating the services of the architect of the constitution, Dr. B.R.Ambedkar.
- Write a few slogans on the occasion of Republic Day.

I can do this

- | | |
|---|----------|
| 1. I can explain about our constitution. | Yes / No |
| 2. I can give reasons for non achievement of equal justice to all. | Yes / No |
| 3. I can frame questions on the preamble of our constitution. | Yes / No |
| 4. I can write a letter appreciating the contributions of the architects of our constitution. | Yes / No |



CHILD RIGHTS



Today's children are tomorrow's citizens. Today's youngsters are tomorrow's elders. The future of our society depends on the children. Their thoughts are boundless. The Indian Constitution has given a few rights to all its citizens. Similarly, children also have many rights. Parents, teachers, neighbours and the society should be kind and affectionate to children. Everyone should think about their development. Elders expect the children to be recognized and flourished in life and take efforts to achieve their objectives. But, is it right to do so? Are the different activities done in the name of children's development acceptable?

All the children are provided with the right to education, better life standards, right to participate in the games with freedom, protection against exploitation and express opinions freely etc.,

Children! You must be happy.

Record some incidents that make you happy

Name the people who make / keep you happy

What are the places that make you happy

What are the activities that keep you happy

Children! Now you know when you feel happy. You also feel unhappy, now and then. Try to remember the occasions, the people, the things and places that make you unhappy.

Situations that make you unhappy

What are the incidents that make you unhappy

Name the people who make / keep you unhappy

What are some of the places that make you unhappy

What are some of the activities that keep you unhappy

Do you know?

Helen Keller was born in America. When she was 19 months old, she had viral fever and lost both her vision and speech. She lost the ability to hear also. But her parents did not lose hope. They neither ridiculed the girl nor her disabilities. They tried to keep her happy. Helen Keller learnt the Braille script at the age of 8. She learnt to speak under the supervision of her teacher, 'Saraputter'. She learnt language by placing her fingers on the lips and throat of the speakers. She started giving speeches about the 'people with special needs' from the age of 33. Inspired by her determination, many parents of children with disabilities, shifted them back homes and started paying personal attention. Helen Keller inspired many people in various ways. She died at the age of 88.

The children who are happy and healthy grow up as good citizens and strive for the development and pride of India.

Now, let us know the different rights you have.

16.1. Child Rights

Children have four main Rights.

1. Right to Survival
2. Right to Protection
3. Right to Development
4. Right to Participation

As part of the above, children have many rights.

Look at the pictures on Child Rights



Right to have complete health



Right to have pure drinking water



Right to have parental protection



Right to conduct associations



Right to have the name wanted



Right to get nutritious food



Right to survival



Right to be protected from sexual, mental and physical exploitation



Right to adopt any nationality



Right to social safety



Right to have fun



Right to free and quality education



Right to relaxation



Right to participate in cultural programmes



Right to receive love and affection



Right to play

17



**Right against physical and
economical exploitation**

18



**Right to get protection
from humiliation**

19



Right to appreciation

20



**Right to freedom of
expression**

21



**Right to be identified as
citizen**

22



**Right to protection from
violence**

23



Right to express one's feelings

24



Right to be honoured

25



Right to protection from wars

26



Right to information

27



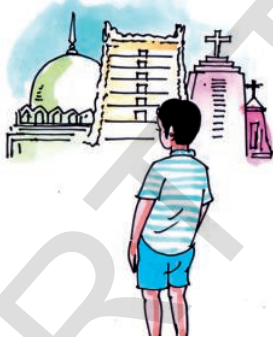
Right to freedom of thought

28



Right to have love and friendship

29



Right to freedom of religion

30



Right to behave with self-consciousness

31

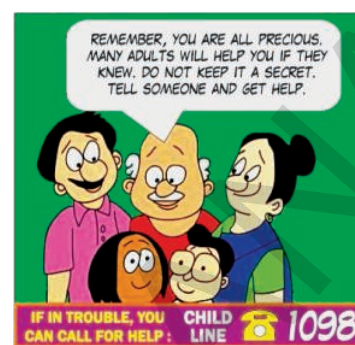


Right to social equality

32



Right to relief from discrimination



Group work



- ◆ Which of the above mentioned child rights do you enjoy?
- ◆ What are the rights you want to enjoy now, which are not already being provided to you?
- ◆ All the children are not able to enjoy all their rights? Why?
- ◆ Who should enable you to enjoy your rights and how?
- ◆ What discriminations are you facing? How?

16.2. What should be done at home?

No one should consider the children as workers or sources for earning money. Some children are made to work and are forced to do whatever is told to them. Sometimes, they don't even get proper food to eat and they have to fulfil all the demands of the adults. But, everyone should recognize their rights and act.

Free environment should be created for their growth. Children's opinions should be honoured. Decisions related to them should be taken after consulting them. Their likes and dislikes should be respected. They should be sent to school. Do not fix any targets for them. They should not be punished in the name of discipline. Write down what else should be done.

16.3. What should be done at the school?

As per the child rights, the children should not be subjected to violence either physically or mentally. They should not be punished for not doing homework, nor for not being able to read and write or not getting the 1st rank etc. They should be called by their names. They should not be scolded. Everyone should be friendly with them. Healthy atmosphere for growth should be created. Write down what else should be done.

16.4. What should be done in the society?

Society should respect the future citizens. As elders our rights are recognised, children's rights also should be recognized and respected. They should be given preference in every thing. They should be identified as growing people. Equal opportunities should be provided. Children should be respected and their opinions should be valued.

Children's rights should be protected every where. At home, school, in society and wherever they participate. Their rights should be understood and protected. Elders should know the child rights and act accordingly.

16.5. Parliament of children

A child parliament is formed with 30 children in the age group of 6 years to 19 years. The children of that area become members. They can discuss the issues of education, health, problems of children, denial of child rights etc., Every week they can conduct meetings and try to protect the children's rights. They can work with the organizations who work for the protection of child rights. In Kerala, there are 6 lakh child members in 2722 child parliaments. Think about the children who lost their rights working as bonded labour all over the world. What can you do to bring justice to them? Think... and participate in the preparation of such programmes. Let us all work together to protect the child rights with the confidence of achieving success.



Do This



- ◆ Establish a Child Rights Protection Club at your school. Conduct programmes in full swing.
- ◆ Meet people who work for the protection of child rights. and be a part of their programmes.
- ◆ Form a children's parliament. Work for the protection of child rights through the child parliament.

16.6. Who cooperates for the protection of child rights?

16.6.1. Centre for the Protection of Child Rights

Centre for the Protection of Child Rights takes action against the persons who violate child rights and torture the children physically or mentally. They take measures according to Right to Compulsory and Free Education Act 2009 (R.T.E.). Punishing children for not paying the fee, not studying properly, not attending to domestic work is a crime according to Law. When child rights are violated, you can call the number **18004253525** and give details. Proper action will be taken. This is a free service. This office is situated at Samagra Shiksha in Hyderabad.



16.6.2. Child Rights Protection Club

Child Rights Protection Clubs should be started in each and every school. Children should become the members of this club. They should help in the protection of child rights. They should meet every month and review the proceedings. The important activities of this club are to ensure that child rights are not violated and to fulfil the needs of the children.

- Children should- Always be happy. Play games. Ask and find out about things without fear. Participate in every thing. Follow your likes. Honour the rights of other children. Act freely.

16.6.3. Special help centre for children - Child Line



To Whom?

It is centre for child labourers, street children, children subjected to discrimination, children habituated to drugs, victims of child marriages, H.I.V. / AIDS infected children.

How does it function?

The children or the persons who want to help such children can dial the toll free number 1098. Then the information is passed to the officials on child line. They respond immediately and take proper action to protect the children. They unite the children with their parents when it is needed; otherwise, send the children to children's rehabilitation centres and provide free accommodation and education. To protect children from sexual abuse and exploitation in 2012, the Government of India made Protection of Children from Sexual Offences Act-2012 (POCSO). Government also developed a toll free number 1098 to help children from atrocities and exploitation sexually.

Think and Answer

- ♦ What should we do for the implementation of child rights in school?
- ♦ Why should we establish Child Rights Protection Club? What are its programmes?
- ♦ When can the services of child line be used and how?

Keywords

child rights	right to development	child parliament
right to survival	right to participation	Centre for Protection of Child Rights
right to protection	healthy atmosphere	Child Rights Protection Club



What we have learnt?



1. Conceptual Understanding

- What are the different rights of children?
- What is right to participation? What should the children participate in?
- Why are the children losing their rights?

2. Questioning and Hypothesis

- ♦ Write 5 questions on child rights.

3. Experiments - Field Observations

- ♦ Observe the children of your village/city and write down what rights they are losing.

4. Information Skills, Projects

- ♦ Collect the following particulars from your class. How many children are healthy? How many children play games every day? How many children take Mid-day-meal? How many children ask questions freely? How many children are called by their names?

5. Communication through Mapping Skills, Drawing Pictures and Making Models

- ♦ Draw pictures to show how the children look like when they play and sing happily.

6. Appreciation, Values and Creating Awareness towards Bio-diversity

- Some children go to work without attending school. These children lose their childhood. They don't enjoy their rights. What can you do to readmit them into school?
- Write some slogans on child rights keeping in view what parents and teachers should do. Exhibit them in the classroom.
- Join as a member of Child Rights Protection Club in your school. Inform your problems to your headmaster.

I can do this

- | | |
|---|----------|
| 1. I can explain about child rights. | Yes / No |
| 2. I can ask questions about child rights. | Yes / No |
| 3. I can collect the details on child rights. | Yes / No |
| 4. I can help the children who do not go to school and see that the child rights are implemented. | Yes / No |