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Mid day meal details	Rice	Pulses	Vegetables	Oil	Others (Eggs, Banana etc..)
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Upper Primary Stage	150 gm	30 gm	75 gm	7.5 gm	Twice a week

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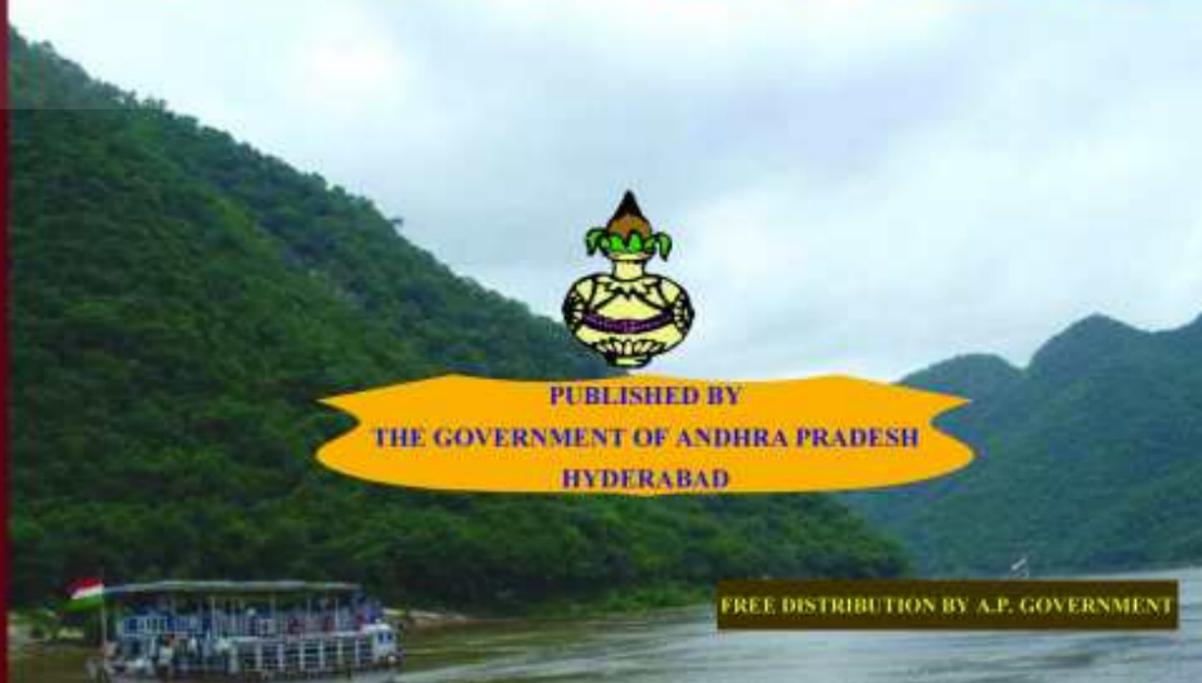
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**WE - OUR ENVIRONMENT**

**CLASS-V**

**F**



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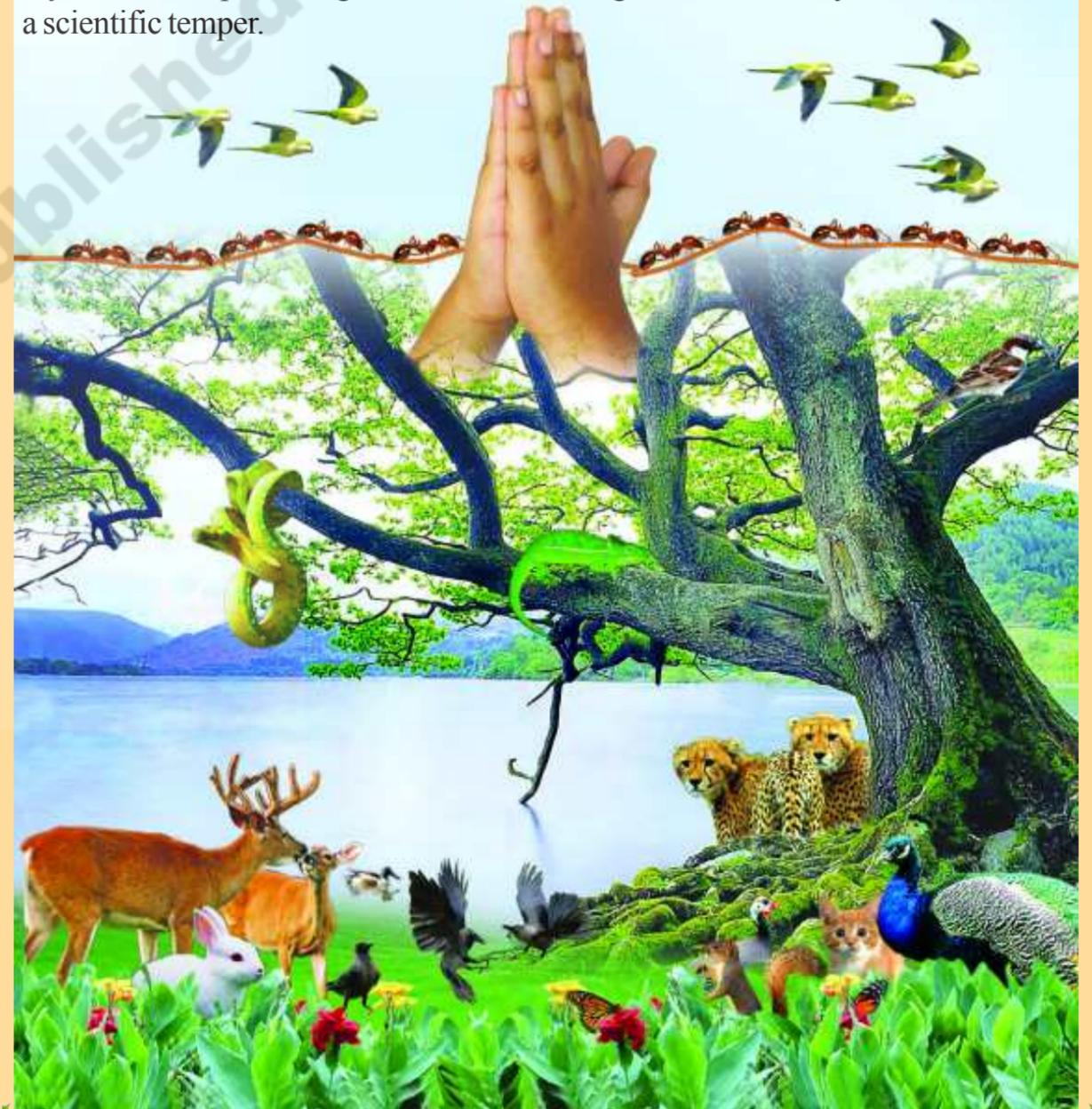
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## Children! use this book in the following way

- ◆ This Book is written for you. Read all the lessons by 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 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 Andhra Pradesh 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 'Can I 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 gas 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 by the hard work of Ants and on preaching the message of Unity by the flock crows. Whether it is a squirrel or a cheetah but, 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 the nature by poisonous chemicals and plastics. I lead my life using my discrimination and try to remove the blind belief. I pledge my devotion in protecting the nature and saving the Bio-diversity as a student with a scientific temper.



# ENVIRONMENTAL STUDIES

## CLASS - V

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*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 would become possible by learning from the environment from this environment. Nowadays the most important thing is to develop an attitude of protecting and giving equal importance to plants, birds, animals etc, like Human beings. 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 themes on Basis of life (animals, rivers, food, plants), health and hygienic, atmosphere, safety, history, physical features and values-rights. Each lesson is written with interesting situations, incidents of daily life, thought provoking and reflective activities and explorations. Without giving direct information in the lessons to the children, more importance is given to make children to collect information, do the things 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 'Can I do this?' is given at the end of each lesson for the self-evaluation of the children. All lessons contain photos and drawn pictures which make children to get the real experiences of the concepts.

Instead of providing direct knowledge to the children, the text book has given emphasis to construction of knowledge. Keeping in view of this the teachers have to construct knowledge by conducting activities. The exercises in the text book make the children to interact with the peer group, society and material. So, conducting 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 as 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 the book beautiful and attractive. 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,  
A.P., Hyderabad

## OUR NATIONAL ANTHEM

- Rabindranath Tagore

Jana gana mana adhinayaka Jaya he  
Bharatha bhagya-vidhata  
Punjab Sindhu Gujaratha Maratha  
Dravida Utkala Banga.  
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

“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 in an year will be allotted to the Teaching of Environmental studies. There are 15 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 to exhibit their preparations, correcting the mistakes should be done during the class hours. Suggest the children to take up project works, collections and explorations after the school hours. Children should be given a clear understanding of exercises. They should be encouraged to write the answers on their own. Do not allow the students to write the answers copying 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 the information. Teacher has to guide them in what questions to be asked and how to collect the information. Make them to 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 '**Can I 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.

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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 A.P. , 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 - BASE OF OUR LIFE

### 1.1. Observe the picture and say



- What do you see in the picture?
- Guess... Why was the animal with them?
- How were they when compared to us? Where did they live? What they might have eaten?

### 1.2. Our needs - taming the animals

Our ancestors lived in forests. At first, their primary food was animals and tubers. Later they started growing crops and doing different kinds of work. During the course of time, for food, security and transport man started taming the animals to fulfil their needs. The present day 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 the animals like tiger and lion? Guess...
- ◆ What are the animals tamed by the present day people? Why?

Since generations man has been using animals to fulfill his needs. The milk of cow and buffalo is used as food. Similarly, ox and bull are used in agriculture. We use some other animals also for our needs. Have you ever seen a camel? They are found more in Rajasthan. It is a desert region. It is very difficult to walk across the sand in desert. The people living in deserts travel on camels.

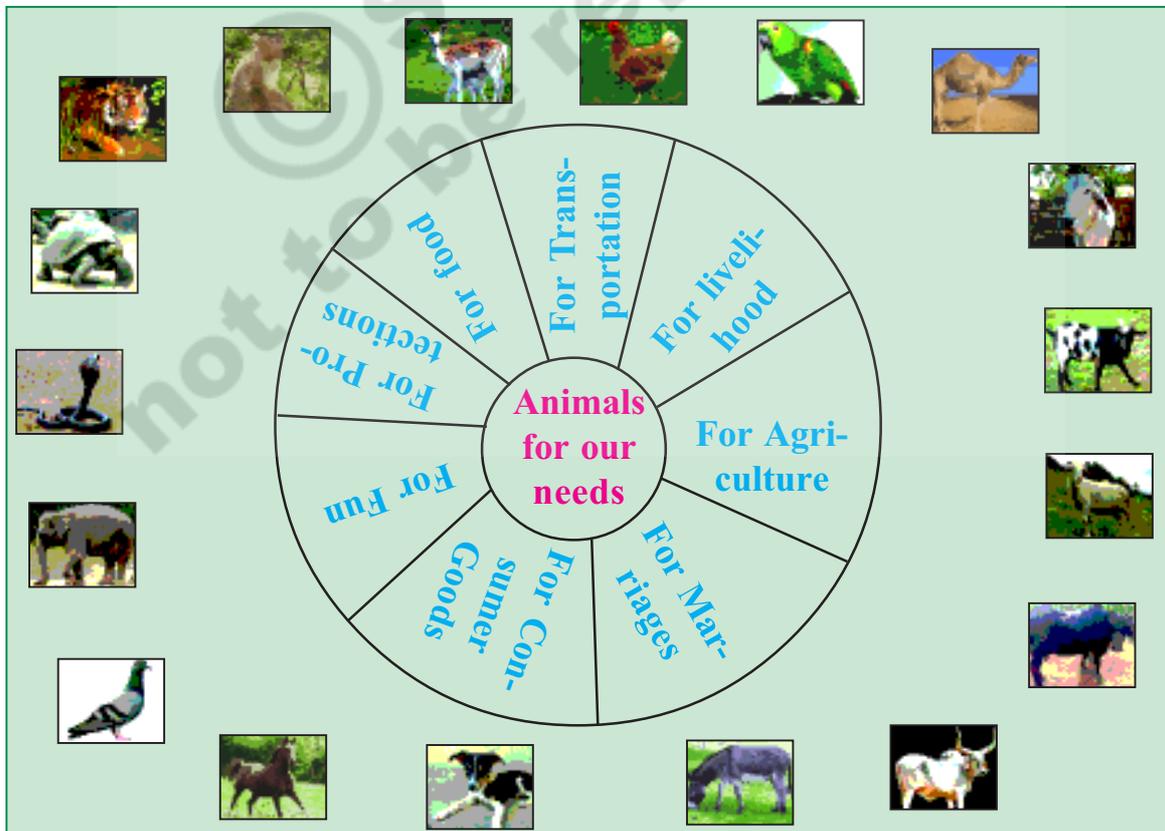


Some people from Rajasthan bring camels to our state and use them as 'fun-ride' for children and earn money for their livelihood.

### 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 do.





### 1.3. Sheep is my wealth

We depend on different animals for our various needs. Shall we know, what Lingaiah depends on?

This is Lingaiah. He rears sheep, at the uplands and hills of Palamuru. He has a flock of 40 sheep. To graze his flock he walks 30 of kms everyday. Both his children study in about 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 his lunch in a cloth bag and eats in the afternoon, and feeds the dog also. He protects

the lambs by carrying them on his shoulders. He grazes his sheep not only on the hills but also in the fields.

In summer, when grass is not available, he migrates to anicut along with the sheeps for five months. The other people also migrate in groups of 10 members each. They take a donkey with them to carry their cooking utensils and other things. They stay wherever they find grass. Usually, the grass is available near the banks of streams and canals. Some times cheetahs, jackals and hyenas attack the sheep. Dogs protect them to some extent. There is a fear of snakes during night times.

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 overtime will become a fertilizer and is useful for the crops. As the farmers are benefitted they, inturn give rice and vegetables to the shepherds. In this way, they help each other.

Lingaiah keeps a pair of leather chappals, a wollen rug, a hand stick and a wooden water bottle with him. In the past, when he was away from his home and family members, he was not able to know about their welfare. Once, when he was away, he could not know about his father's death. But, he bought a mobile phone recently and he talks to his family members over mobile cell phone every day.

He sells the adult sheep whenever he gets a good offer. He does not sell the lambs. He clears the debts with the money he gets and saves some money. When the businessmen purchase the sheep from him they take the sheep away by lorries, Lingaiah feels bad and cries for them. He consoles himself and continue rearing the sheep.

Lingaiah sold 25 of his sheep 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.36,000/- on the sheep for medicines, vaccination, fodder and transportation for the whole year. How much money is left with Lingaiah.

Let us know the income and the expenditure of Lingaiah.

Income		Expenditure	
22 sheep x Rs.5000	= 1,10,000	20 lambs x Rs.1500	= 30,000
Money received by selling excreta	= 4,000	Expenditure on Medicines & Vaccination (30 x Rs.100 x 12 months)	= 12,000
Income received by selling wool	= 2,500	Money spent on Tenant	= 12,000
Total Income	<u>1,16,500</u>	Money spent on Transportation etc.	= 5,000
		Interest on capital	= 6,000
		Total Expenditure	<u>65,000</u>
Total Income	= 1,16,500		
Total Expenditure	= <u>65,000</u>		
Profit	= <u>51,500</u>		

### Group work

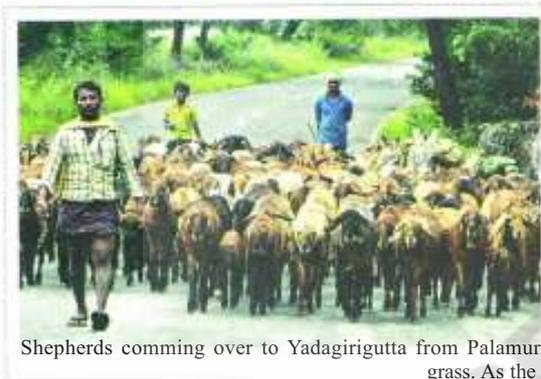


- ◆ How much money is left with Lingaiah after working hard for the whole year?
- ◆ Can he meet his basic needs with the amount left? How?
- ◆ How many hours Lingaiah works in a day?
- ◆ Is Lingaiah getting the benefits he deserve's, after so much of hard work?
- ◆ How are the shepherds helping in agriculture?
- ◆ Is Lingaiah taking good care of his sheep? Write your opinion.
- ◆ Do you know any one like Lingaiah? Discuss their life style?

## 1.4. Problems of sheep rearing

You have read about the shepherd, Lingaiah. 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 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 will live here themselves only for six months. Their life motto is to protect and save their sheep though they suffer from rains and lightening. They fight with wolves for their sheep. They even sacrifice their lives and fight fiercely with the foxes every day to save their sheep. Whenever drought hits, it is quite natural that the sons of Palamuru reach here.

The shepherds are very worried 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 brought the cooking utensils, food and other products on donkeys and came here with their families. They even brought their school going children to look after the sheep. Each herd comprised of least

■ The sons of Palamuru reached the hills for cattle rearing.

■ Grazing will take place for six months.

■ Left homes as the drought demands

400 sheep. The migrated shepherds graze the 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 their food and take the sheep for grazing wherever they find grass. As the rearing of sheep is decreased here, the other region shepherds are finding sufficient fodder here to feed their sheep. In the recent times, the people who are living in the surroundings of Hyderabad started living by doing agriculture or taking up real estate business. On knowing this, the shepherds of Palamuru enquired the pros and cons and started coming over here.



Donkey carrying the belongings of Shepherds

**I came here due to drought!**

We belong to Palamuru. We are suffering a lot from 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 to my home. If I want to go home someone should come as a substitute for me. Then only, I can go home my woes become doubled when it rains. We have to wake up all the night and look after the sheep.

- Venkataiah, shepherd, Palamuru

**Threats are more from foxes**

No chance of going homes then if it rains. Foxes will be watching us always. You have to lose your sheep if you are careless even for a single second. Sometimes foxes and wolves in five or six numbers attack us. Our dogs save us at that times. 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 village?
- ◆ Describe the life style of the migrated shepherds.
- ◆ What did Venkataiah and Krishan say about their difficulties?
- ◆ Who are helping them and how?

## 1.5. Friends of farmer

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

### I am an earthworm...



I eat the waste products from fields. Soil become fertile with my excreta. I loosen the soil so that the roots of the plants get enough air. By this the plants grow well and the yield of the crop increases. But we are dying due to the usage of pesticides.

### I am a spider...



I use my mouth secretion and make a thread. I knit the 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 usage of pesticides.

### I am an ant...



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

### I am a snake...



I help the farmers by swallowing the rats that eat the grains and destroy the fields. Most of you are afraid of me and kill me wherever I am seen. In fact, the snakes like king cobra (Nagu Pamu) Viper, Sea snake, Russels Viper are poisonous and 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 tykrograma...



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 at my level.

### 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 that we get milk, eggs, meat etc., from animals. We use animals for transport also. Which animals are useful to us and how? Think of it.

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

There are nearly 30 industries in Kakinada which make buttons with the horns of ox. They export these to other countries also. We get many products from animals. Look at the pictures given below.



Fan made with Peacock feathers



### Group work



- ◆ Have you seen the above products? What products do we obtain from different animals?
- ◆ How the products or animals are used for decoration?
- ◆ You have understood that there are many uses of animals. Then say, how are we useful to the animals?

## 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? Think and tell source of the living and non living things around you if so.

### Think and say...

- ◆ Many things are required by living creatures like us. What are they?
- ◆ Which other creatures have life like us? Do they also have 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. Other animals also need all these things, like us. These are basic needs. Think, wheathe we support animals to get their basic needs.

Are we showing affection and sympathy towards animals in our surrounding? Think... are we taking care of animals when they are subjected to pain or are wounded, hungry, thirsty or suffering from cold, heat and rain? How do we feel when we are subjected to pain like them? Look at the animals suffering given below.



### Think and say...

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

### Shall we listen to the pain of Lakshmi?



Lakshmi is a circus monkey. The circus people caught her when she was young. She has been trained to jump through the fire, walk on the rope, dance and ride the bicycle. The owner controls her with a sharp edged stick. Many people throw money at her of pity. But, do you know the feelings of Lakshmi?

I should jump, play and earn money, though I like it or not, I will be forced to do circus. Though I am hungry or suffer from pain I have to dance again and again. You all enjoy seeing me. But no one thinks of me. When I do not feel well and suffer from fever, they beat and threaten me to dance. Nobody is there to listen to my woes. I don't have parents like you to protect me and mine is a lonely life. Infact, where should I be? Who should I live with?

## Snake in a basket

I was captured and put into the basket, when I was enjoying 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 feel sick. Kindly help me to come out of this and give back my life and freedom.



## Parrot in a cage

I foretell everybody's fate, but I don't know my own fate. I was caught and placed in a cage. I want to fly freely in the sky. When will I become free?

People are killing the elephants for their tusks. Tigers and deers get killed for their hides. They are hunting, capturing and eating many other animals and birds.

## Group work



- ◆ Are the animals and birds who entertain us living happily? Think and tell.
- ◆ Wild life is a valuable national wealth. Whose duty is it to conserve them? and How? What should we do for the conservation of animals?
- ◆ Write a pledge to protect, show kindness, affection and love towards animals.

## 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? Its shelter, Is it healthy? How its rights are being exploited? How to protect their rights?

## Do you know?

According to the schedule-1 of wild life protection Act, 1971, hunting and selling wild animals is a crime. One who commits this crime will be punished with 3 to 7 years of imprisonment and a fine of rupees one lakh.

## 1.8. Ongole breed ox - the pride of Andhra



The Ongole breed oxen of our state have become popular as the best breed of the world. They are the backbone of our agriculture, it is two mtrs. in height, has short horns, has a nice hump, has thick skin at throat and has a beautiful look. Farmers are using them in agriculture. The Europeans who migrated to our country took these oxen and cows to their countries. At present, in most of the countries this breed of oxen are flourishing as the best breed. Especially, the people of Brazil developed this breed and are using them widely. The Ongole breed cow in Brazil gives 40 litres of milk per day. If we want to import our Ongole breed oxen from Brazil we have to spend nearly five crore rupees. Unfortunately, their number in our state is decreasing day by day, and this is a very much worrying fact.

### Collect and discuss...



- ◆ Visit any cow shed or go near cows 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.

## 1.9. Decreasing animal population

When there was no man on the earth, only one animal species per year could extinct. This is quite natural. But... nowadays, one species is disappearing every 20 minutes. Tiger is our national animal. Royal Bengal tiger is seen more in India and Bangladesh.

Once there were thousands of tigers in the forests. At present their number has decreased considerably in our country. It is a worrying thing that the number of battameka pakshi, kalivi kodi and punganuru cow is decreasing day by day. Unless we take measures to protect them, they will surely disappear.



## Can you tell the whereabouts?



The bird in the picture is a vulture. It's 2 feet in height. It is not been seen in our state for some years. If you find this in your area, you are requested to inform the Bio-diversity society of Andhra Pradesh immediately. It is interesting to know that the informers will be paid 2 lakhs rupees as a reward.

### Think and say...

- ◆ Which other animals are disappearing like tiger and vulture?
- ◆ What are the reasons for their disappearance?
- ◆ What should we do to protect them from disappearing?

## 1.10. Bio-diversity

Whose earth is this? Is it only for humans beings? This earth is for different species like trees, animals, birds, fish etc., The nature provides sufficient food and water to all living things. Animals take their daily food according to their requirement only. They don't grab and store from nature. But the man rules the world by saying "everything is mine"! He is using more than his genuine requirements. Modern man does not care for other species and tries to get every thing for himself. He wants to enjoy all the natural wealth now itself. This is greed. Gautama Buddha said that "Wants and greed make our life sorrowful". All living creatures have equal right to enjoy the natural resources on the earth. Man is the only reason and responsible for pollution. Due to the mixing of pesticides, waste products and chemicals from factories with water and rivers many creatures that live in water are dying. Think... what problems the animals and birds are facing due to the plastics invented by the modern man. The Cattle are dying by eating the plastic covers thrown by us.

### Group work



- ◆ What is meant by greed? What problems arise due to greed? How to do away with it?
- ◆ What are the reasons for the regular disappearance of many living creatures?
- ◆ What are the reasons for the decreasing of forests? Who created this situation and why?

## Bio-diversity - things to be done

- Trees should be grown in the backyards of houses, school premises, streets & vacant places.
- Trees should not be cut down. Reforestation should be our goal.
- Animals and birds in our surroundings should be looked after with care, affection and love. Food should be given to them.
- Lakes, ponds, rivers which give shelter to many animals and fishes should not be polluted.
- We should not destroy the water animals by throwing plastic bags and other waste materials into the water.
- The fuels like petrol, coal etc; and the pesticides should not be used indiscriminately, as this pollutes the environment. Either we should walk or use cycles
- Any kind of action which harms living creatures should be avoided & discouraged.
- The habitats of the animals should not be destroyed in the name of development. If possible, they should be helped to live.
- Form an animal protection committee at your school. Take an oath to protect the environment and animals.
- Prepare an album on Animal World.
- Hunting wild animals is prohibited by the law. Find out more about this act from your elders and teachers and inform the particulars to all the village members & friends.
- Prepare a poster saying, all animals and birds should be shown love and affection. Provide them water & food. Paste the poster at important places like your school and the village.

### Keywords

Base of life	Bio-diversity	Protection of animals
Taming the animals	Self-protection	Hunting of animals
Livelihood	Friends of farmers	Export
Shepherd	Agricultural Research Council	Industries
Famine		Wild life Act
Income & expenditure	Pesticides	Kind to animals
	Needs of animals	



### 1. Conceptual understanding

- Which animals help us in our livelihood?
- List out the work done by a shepherd in a day.
- Write the names of any four animals which are disappearing.
- 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 and hypothesis

- All animals gathered and discussed about the 'movement on protecting animal rights'. They passed a resolution to question the people who exploit the animal rights. Write, what questions the representatives of Animal Rights Society would ask the people.

### 3. Experiments - field observations

- Visit a near by agricultural field. 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 animal breeding centres.

Name of the breeding centre	Animals bred	Main products	Allied products, uses
Dairy Farm			
Poultry Farm			
Emu Birds Farm			
Rabbits Farm			

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

- a) A.P.'s Ongole Oxens adjudged as the best breed in the world. Draw and colour a poster representing this and also write few lines about your feelings.
- b) Which districts have forests in our state? Mark on the map. Which animals are there in those forests?

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

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

### Can I 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 collect the details of useful animals and insects by visiting agricultural fields. Yes / No
4. I can collect, tabulate and exhibit the details of the products at 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



## CULTIVATION - CROPS

### 2.1. Observe the picture and say



- What people in the picture doing? Name the crop shown in the above picture.
- State the different stages in growing this crop?
- Whose services are needed in cultivation of this crop?
- From where the seedlings were brought? How is it processed for swing?
- What is cultivation? What is required for cultivation?

You may be aware that the process of growing crops is called cultivation. There are different stages involved in cultivation, right from preparation of the land to the final yielding 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 different stages of cultivation.

### Group work



- ◆ What would happen if farmers stop cultivation?
- ◆ Who are the people dependent on agriculture? How?
- ◆ What are the different crops grown in your village local area?
- ◆ Do your village people consume all the crops they produce?
- ◆ What do the farmers do with their yield?

We are getting food because of farmers. All the people living in cities are dependent on the farmers from villages. Urban people are buying agricultural products from the market, which are produced by farmers. People in urban areas won't get good items if farmers stop selling their produce. There are many people involved in the production of the food we eat. If you want to know about the hard work of farmers, visit a nearby farm observe and get the details.

### 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 :
  3. What is the source of water?
  4. What are the different equipments they use?
  5. Where did they get the seedlings from?
  6. Name the different fertilisers they use.
  7. What do they do with their crop?
  8. How many acres are being cultivated and what would be the net income?
  9. Women role in crop production.
- ◆ On the basis of the information collected discuss in groups and display the information on charts.

## 2.2. Agricultural equipment

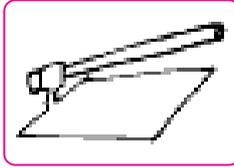
Equipment plays an important role in cultivation. Look at the pictures of some equipments and machinery given below.



**Plough**



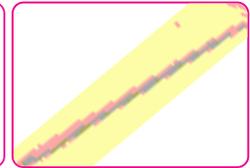
**Harrow**



**Spade**



**Sickle**



**Crowbar**



**Plantation Machine**



**Harvesting Machine**



**Paddy Cutting Machine**

People use plough to till the land. Now, tractors are being used in land tilling. Nowadays farm machinery is available for land preparation, planting the seedlings, weeding and harvesting. The use of machinery has helped the farmers in reducing manual labour and speed up the process of cultivation.

### Group work



- ◆ Is it good or bad to use machinery for cultivation? Give reasons.
- ◆ Draw the pictures of other equipments that farmers use in cultivation.
- ◆ List out the equipments that the farmers used in the past and those used in the present.

Name of the agricultural activity	Equipment	
	In the past	In the present
Ploughing the field	Plough	Tractor
Levelling the ground		
Sowing the seeds / planting the seedlings		
Drawing water from borewell / well		
Removing the weeds / yielding the crops		

## 2.3. Seed

Ramulu is a farmer, he went to the market to buy cotton seeds. He saw people standing in queue in front of the shops to buy seeds. He also joined the queue and bought them. He sowed the seeds in his land. The crop was good but the yeild was not good.



### Group work



- ◆ What would be the reason for Ramulu being unable to get the yeild?
- ◆ What is the reason for the crowd in the picture? Why it happens?
- ◆ Why is there a shortage of seeds during crop seasons? What are the other problems that the farmers face?
- ◆ What is the source of the seeds in the past?
- ◆ Where do farmer 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 won't give proper yeild.

In olden days farmers used to keep certain portion of their crop to be used as seed. Farmers even borrowed seeds from their neighbours. Today people are dependent on market for high yeilding varieties and have discarded their traditional seed preservation practices. When all the farmers depend on the market forces they are unable to get the required quantity of seeds. Sometimes farmers are being cheated with sub standard seeds which gives low yeild.

### Do you know?

For centuries we had 5400 rice varities, 740 mangao varities and 3500 varities of brinjal cultivated in our country. The market forces have raised the cost of seeds, as farmers discarded the traditional way of seed preservation. Now, most of the traditonal seeds have disappered.

In our country "the National Bureau of plant Genetics" is collecting and conserving the genes of different plants.

### Think and say...

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

## 2.4. Sustainable farming / sustainability in farming

Mallesh is cultivating his 10 acres of land. He is cultivating mulberry in 5 acres, maize in half acre and crops like ginger, turmeric in the rest. He is growing green fodder in 2 acres. He is also cultivating vegetables like brinjal, tomato and



Dairy Farm

flower varieties like, Jasmine, marigold and roses. In order to increase the soil fertility he is preparing a vermicompost. He is also preparing insecticides from neem oil and other such products. He has raised his crop production by using organic fertilisers and organic insecticides. Further he has a dairy farm and also rears silk worms in his farm.

In his poultry farm he has been building layers for eggs and broiler for meat. There is a pond for the dairy farm animals to rear. He is also raising 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 monocrop the soil fertility will reduce and farmers may lose financially. Due to his different practices he could earn more money, and also could provide employment for others.



Poultry Farm

### Group work



- ◆ How could Mallesh produce more in his farm?
- ◆ What did he do to protect the crops from insects?
- ◆ Why did he cultivate ginger, turmeric etc., in his farm? Why did he raise ducks, poultry and cows in his farm?
- ◆ According to Mallesh cultivation is good or bad profession? Why?
- ◆ What is your opinion on Mallesh's agricultural practices?

## 2.5. A success story of a woman farmer



Do you know about Gangawar Manemma? She has been practicing agriculture a job which generally men alone do. Now, read what she has said about her farming.

My name is Gangawar Manemma. I belong to Gangawar village in Nyalkal Mandal of Medak district. We have 3 acres of land. It has red soil and is a barren

land. We could not grow any crop in that land. When it rained we could grow jowar and millet. My life changed since I joined as a member in Deccan development society (DDS).

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

Many people are following traditional way of farming like Manemma by preserving their own seeds. Deccan development society is supporting poor farmers in practising sustainable cultivation in the surroundings of Zerheerabad in Medak district. They could revive a variety of traditional crops by following conventional practices. These practices reflect the biodiversity in this region.

### Group work



- ◆ What practices did Manemma follow?
- ◆ Who helped Mannema? How did they help her?
- ◆ Should we appreciate Mannemma? If so why?

## 2.6. Pesticides

Vasantha daughter of Ramulu 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 it to her. Grandma warned Vasantha not to eat any fruit without washing.

### Think and say...

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

Farmers spray pesticides to protect crops from insects and to get good yield. Due to the over use of pesticides, the insects are becoming resistant to such pesticides. This also leads to food poisoning. Eating the food items which are exposed to excess pesticides causes 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, solution of tobacco and other locally available materials.



Use of chemical pesticides may increase crop productions but it harms the insects which are useful to us and also harmful to human being and other animals.

### Think and say...

- ◆ What are the other disadvantages of using chemical pesticides?
- ◆ What are bio-pesticides? Why should we use them?
- ◆ Why should we wash vegetables & fruits before we eat or cook?

## 2.7. Kinds of crops

We grow different varieties of crops in our state. Rice, wheat, jowar, maize, pulses, oilseeds, vegetables and fruits are some of the crops we grow. We call them 'food crops'. We also grow cotton, jute and mirchi which are called commercial or cash crops.

### Group work



- ◆ Prepare a list of crops that grow in your village.
- ◆ What are the food items that your village people get from other places? Why such items are not available in your village? Write and say the reasons.
- ◆ What is the time duration various crops to grow and yield?

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

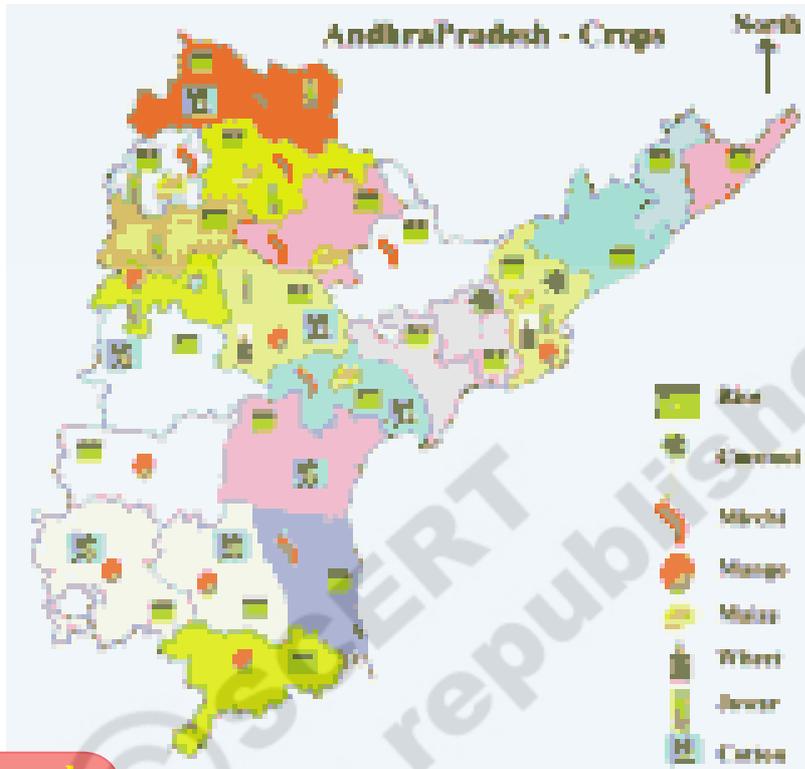
Sl.No.	Crop	Varieties
1	Paddy	IRZO, Hawsa, Swarna, Masoori, Bangarutheega, Samba
2	Redgram	Redgram, Balkgram, Asha, Nadipi

Every crop needs a different environment 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 month. 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 which is also a rainfed crop. What are the different crops grown in your village. Collect the details and fill the following table.

Sl.No.	Name of the Crop	Crop Period	Required water Rainfed crops has requiring more water

## 2.8. Places where different crops grow in Andhra Pradesh

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



### Group work



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

Sl.No.	Crops	District that grows this
1.	Rice	
2.	Jowar	
3.	Cotton	
4.	Mirchi	
5.	Mango	
6.	Coconut	
7.	Wheat	
8.	Maize	

## Keywords

Agriculture	Seeds	Poultry farm
Stages in cultivation	Shortage of seeds	Dairy farm
Farm equipment	Crop production	Agricultural practices
Water source	Sustainable agriculture	Pesticides



### 1. Conceptual understanding

- What is cultivation?
- What are the modern equipments that are being used in cultivation?
- What are the rainfed crops?
- It's not good to use chemical fertilisers. Why?
- What are bio-fertilisers? Why should we use them?
- What are the advantages of preserving our seeds?

### 2. Questioning and hypothesis

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

### 3. Experiments - field observations

- ◆ Buy some fruits from the market. Wash the fruits in a bowl and observe the water. Say what you have observed.
- ◆ 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 the farmer in your locality and collect the following information and fill the table

Sl.No.	Name of the farmer	Growing crops	Fertiliser they use	Pesticide they use	Farm equipment they use	Farmers opinion

- What are the crops they grow more?
  - What are the fertiliser they use more?
  - Name the equipment that are more in use.
  - Name the equipment that are less in use.
  - Name the pesticides that was used by a few people?
- b) Meet the farmers in your locality and prepare a report on the issues they are facing.

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

Answer the following questions on crops with referene to the AP map.

- What are the crops mentioned in the map.
- Name the crop which is being cultivated in more districts.
- In which district more number of crops are being cultivated? What are they?
- Name the districts in which we find less crops.
- Identify the crops which grow in your district.

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

- a) The farmer's labour is hidden in the food that we eat. What is your opinion.
- 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 the green fields. Why?
- d) What would be your contribution in keeping the earth green.

#### Can I do this?

- |                                                                                                                     |          |
|---------------------------------------------------------------------------------------------------------------------|----------|
| 1. I can explain the different stages in cultivation, required form equipment, pesticides and seeds in cultivation. | Yes / No |
| 2. I can explain what is ideal cultivation.                                                                         | Yes / No |
| 3. I can collect the information related to cultivation and write down it in the tables.                            | Yes / No |
| 4. I can explain about the details of the crops grown i A.P. with the help of state crop chart.                     | Yes / No |
| 5. I appreciate the hard work of the farmer in cultivation especially women.                                        | Yes / No |

# 3



## LET'S PLANT TREES

### 3.1. Observe the picture and say



- What difference did you notice in the above two pictures.
- Which picture did you like? Why?
- Where do you find more greenery? Why?
- Why does the second picture look like that? Can you guess?
- In the above given pictures, where will you find more animals? Why?
- Are there any places in your locality without trees? Why?
- What should we do to see that such condition does not occur?

We feel very happy and cheerful when we see plants and trees around us. Forests render greenery on the earth. Forests should occupy one-third (33%) of the earth's space. But the area occupied by the forests is decreasing day by day and it is 21% in our country at present. As the area occupied by the forests is decreasing, the number of birds and animals is also decreasing. The decrease in rainfall is lead to the drying up of the ground water. Rivers are becoming dry. The earth's outer surface is becoming hot due to the rupture of the ozone layer. Ecological balance is disturbed due to environmental pollution, from human actions.

If these conditions continue, it may lead to the extinction of the living organisms from the earth. In order to over come this situation, we have to protect our environment. We have to safe guard (protect) trees and forest wealth and it is our duty. We should protect forests and should grow trees where ever possible. So, now let's know how, to grow plants, trees and what are the essential conditions for their growth.

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

#### Do like this



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

Day	Change observed	Plant in a dark room	Plant in the open place
7th Day	Is it healthy? Length other changes		

#### Group work



- ◆ Discuss the changes observed and tell the result.
- ◆ 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. Fill the other with soil mixed with organic manure. Plant two similar healthy plants in them. Keep them in the sun light. Water them everyday. Observe them for a week and tabulate your results.



Day	Change observed	Plant in ordinary soil	Plant in fertile soil
7th Day	Is it healthy? Length 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. Supply water to one of the plant every day and ignore (do not supply water to) the other one. Observe for one week and write down your results in the table given below.

Day	Change observed	Plant without water	Watered plant
7th Day	Is it healthy? Length other changes		

### Group work



- ◆ From the above experiments, what are the essential conditions for the growth of a plant?
- ◆ What are the other aspects (factors) that you have observed in the above experiments?
- ◆ Share the observations of the above experiments in your class room and discuss your results.

From the above experiments, we have learnt that water, sunlight and fertile soil are essential for the growth of a plant. You have learnt about the conditions essential for the growth of a plant. Now let's know about the places where we can grow 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 plants should be grown in which places? What precautions should we take while planting the trees? Why?

### 3.5.1. Which plants are to be planted and where?

- We should select a suitable place before planting a tree.
- Plant trees which are always green and give shade, like neem and kenuga in the school premises.
- Plant trees like lemon, mango, guava, cheeku, banana, drumstick, curry leaf, banana, coconut, peepal, neem, temple tree, jasmine, nerium, nandivardanam and fruit bearing trees in the backyard of the house.
- Plant trees like neem, banyan and derris on the either side of the roads.
- Vegetables can be grown in pots on the terrace, balcony and in places that receive sunlight.

#### Think and say...

- ◆ Which type of plants are to be planted in the parks?
- ◆ Which plants are to be planted in the very little place available in your house?

We can grow fresh vegetables and leafy vegetables with less expenditure. The vegetables cultivated in our house will be tasty and are of good quality. These vegetable gardens prevent pollution and bring a cheerful atmosphere to the city dwellers. Watering these vegetable plants gives us physical exercise and also helps in protecting the environment. The green plants on the terrace reduce the temperature in the cities. By doing so, the roof of the house remains cool.

#### Trees - advantages

- Cool winds blow. Increase humidity in the air.
- Give shade.
- Give flowers and fruits.
- Give wood (fuel) to cook.
- Help to bring rainfall.
- Give health and wealth.
- Prevent floods and soil erosion.
- Convert solar energy into food.
- Provide shelter to (many) numerous living creatures.
- Provide food materials to many living organisms.
- Give oxygen to breathe.
- Give joy and greenery.

#### Do you know?

Mango, tamarind, banyan and citrus trees grow very big. Can we grow them in pots? Such big trees which are grown in pots are called Bonsai Trees. This is Japan's traditional art.



### 3.5.2. Precautions to be taken while planting a tree

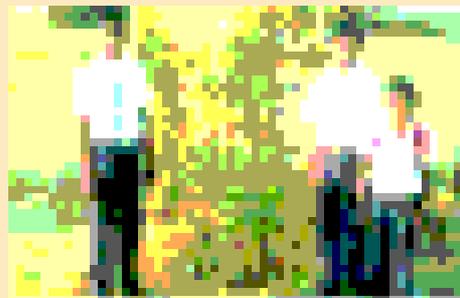
- Dug the pit and soil taken out from the pit should be divided into two parts.
  - a) Fertile soil is present on the outer surface of the pit. Take out this soil and make a heap on the right side of the pit. Mix organic manure or neem powder to this soil. Fill the pit with this soil first when you plant a tree.
  - b) Put the remaining half of the soil on the left side of the pit. The soil deep inside the pit is not so fertile. After planting a tree, put this soil on the outer surface.
- Plant the trees in places which are well exposed to sunlight. The plant does not grow well if planted in shade.
- A distance of 20 feet must be maintained between two plants. Both the plants become useless if 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 so as to provide support to the plant.
- Pour only sufficient water to the plant. More watering immediately after planting may lead to the death of the plant.

#### Think and say...

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

### 3.5.3. Protection of the plants - measures to be taken

- Construct 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 all sides of the plant 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 the pests infect the plants, soak neem powder for five days in water and sprinkle the 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.
- Do this if it is not possible to water the plants daily. Take a two-litred used water bottle and make a hole on its lid. Insert a wick or a cotton clothe 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 learned about planting trees and the protective measures to be taken. From where do we get these plants? Who will give them to us? These issues trouble 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 to render (provide) the necessary help and provide plants to grow in our schools.

Plant trees, develop relationship with them. It is our duty to protect the essentials of our lives the water and air and environment. Our life is depended on trees. The Council for Green Revolution reminds the adults and the children not only wealth but also 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 student to take part in the Green Revolution. This organisation aims at planting one crore plants. It has supplied plants to 650 Govt. schools so far. They have given five plants to each student.



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

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). They are successfully organizing the programme by planting trees.

For the last two years 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, Ranga Reddy and Prakasham districts are carrying forward the movement. Medak district has started this movement in 2012-13. 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 was an ideal example for greenery and won the Green School award recently. This school is located at Telakapaly mandal in Mahaboobnagar district. The schools Head Master, teachers and students together tried and made it a green school.

Council for Green Revolution has extended their co-operation by supplying them with 400 types of plants. Half of them were planted in the school and the rest in their houses.

### Environmental pledge



- Plant and grow trees that give out oxygen which plays a vital role in the existence of the living organisms.
- Motivate the people to plant trees as it brings rainfall.
- Make all out efforts to see that air, water and soil do not get polluted.
- Let the people know the fact that the house which protects us from heat, cold and rain cannot be built (constructed) without trees.
- Condemn cutting down the trees, exploiting forest wealth, factors causing pollution, interrupting with nature. Do not allow such activities to take place any where.

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

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

Thus, to make the environment green in the school not only council for green revolution, but also organisations like Vandemataram foundation, 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 have participated in 'Forest - Motivating Movement' for carefully planting, growing and protecting the plants given by them and also helping in protecting the environment.

### Think...

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

### 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 from high schools in our state with various activities.

### Do you know?

Many people are migrating from the villages to towns and cities in search of livelihood (jobs). 67% of the population are living in towns. As the population is increasing in cities the quantum of waste substances and problems are arising. Temperature is increasing along with the 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 are spent to dispose garbage only in Hyderabad city. This problem can be solved by converting the organic garbage into organic manure. Horticulture department officers have planned and being implemented the process of making compost from kitchen waste and use it as manure for plants in pots on the terrace and balcony. Moreover, bags, polyethene covers, baskets, tubs, boxes, plastic plates, cement bags and old tyres are used in growing vegetables on ladders.

### Group work



- ◆ What steps did you take to promote greenery in your school?
- ◆ What will you do to protect the plants planted by you?
- ◆ Whose help do 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 and earth. Poisonous chemicals are found in the tests conducted on vegetables grown by providing sewage water in cities. Consuming such vegetables leads to diseases like heart-attack, diabetes, cancer etc.

In olden days, there used to be an open place (backyard) in 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 small houses. As the land rates are increasing considerably, houses are constructed in small area. So, it is not possible to cultivate vegetables. Every body is depending on the market for vegetables and refrigeration to store them for transportation to cities. Such vegetables are not tasty and cause diseases (show their effect on our health).

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.

### Do you know?

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



Neem is the medicine for thousand or diseases. "Don't spend thousands on diseases... It's beneficial to plant neem."

### Think and say...

- ◆ From where do you bring vegetables?
- ◆ What do you do to grow vegetables at your house?

### Keywords

Producers	Protection	Forest motivating movement
Growing Plants	Place to plant	Park department
Sun Light	Protecting the plants	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 to take the environmental pledge?
- b) What are the essential conditions for the growth of a plant?
- c) What precautions are to be taken while planting the trees?
- d) What measures are to be taken for the protection of the plant?
- e) What are the differences between the vegetables cultivated at our house and the vegetables 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?
- Write the questions that you would to ask if you want to grow vegetables in your school or at home?

## 3. Experiments - field observations

### Observe and Say:

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

Flowering plants	Fruit bearing plants	Ornamental plants

- Plant two plants and observe their growth & record changes & your feeling.

## 4. Information skills, projects

Details about the plants being planted in Gopalapuram during 2008 to 2012 are given in the 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	15	35	2000	18	15	1758
2011	20	65	965	15	32	815
2012	25	45	10800	22	18	1763

- Where did they plant more trees?
- Where did less than half of the plants survive? What may be the reasons?
- How many plants were planted altogether in the schools? How many survived?

- In which year did they plant more?
  - In which year did many plants survive? What may be the reason?
- a) Plant and take care of a tree, record your daily observation.

Date when the seed was sown : \_\_\_\_\_

Date when 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 the plant, planted by you. Draw figures of the plant from the day it was sown to 30 days in your note book.

One the day sprouting	15th Day	30th Day

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

- a) Plants are giving us food, shelter and clothing. How should we deal with the plants?
- b) Collect songs about plants and exhibit them on the wall magazine. Sing them in classroom & during assembly.
- c) We can split bamboo longitudinally. Write a list about the articles prepared with it. If the bamboo stem did not possess this quality, what items will not be available to us. Think over and write.
- d) When you look at a beautiful flower garden, fruit garden and vegetable garden. How do you feel?

#### Can I do this?

1. Can explain about the conditions necessary for the growth of a plant. Yes / No
2. Can demonstrate the experiment showing the growth of a plant. Yes / No
3. Can draw and explain the growth of a plant. Yes / No
4. Can explain the precautions to be taken while planting a tree. Yes / No
5. Can take measures to protect the plant & plant trees at school and house. 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. So, let us see what Navid, Aruna and Sagar eat daily.

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



Aruna likes to eat the food available in the market like chips, mixture, biscuits, ice-creams, bread-jam, noodles etc., daily. She eats these items more like food. 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 gingeily (sesame) laddus. Besides these, he eats sprouts (germinating seeds) and raw vegetables. Boiled or fried groundnuts, green grams, Bengal gram, jowar chapatis are eaten as food in his house. Ragi malt is also used as food by them.

### Group work

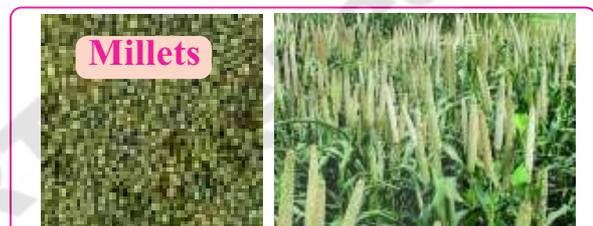


- ◆ Why Navid eats his food with only pickles?
- ◆ Are the food habits of Aruna good for healthy life? Why?
- ◆ Among the above mentioned three children, Whose food habits are similar to your habit?
- ◆ Among the above three, whose food habits do you think is correct? Why?

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, to be healthy and which develops immunity against diseases. Do you know what all are present in the food items we eat?

## 4.2. Energy giving foods - cereals, millets

Paddy, wheat, jowar, maize, ragi, millets are called chirudhanyalu. These food items give the necessary energy to our body. We need energy to grow, to work and also for our different body organs to work. The foods which give energy are called 'Carbohydrates' or starch. Chirudhanyalu contain more of starch. Nutrients like proteins, vitamins, minerals salts are also present in little quantity. Let us see the pictures of the food items given below. In which food items carbohydrate is present.



### Group work



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



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

body and make us fat. 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 - (growth foods)

Bengal gram, green gram, black gram, chick pea, peas etc are pulses. Along with this milk, eggs, meat also help in physical growth. These are called as growth foods.



**Bengal gram**



**Green gram**



**Black gram**



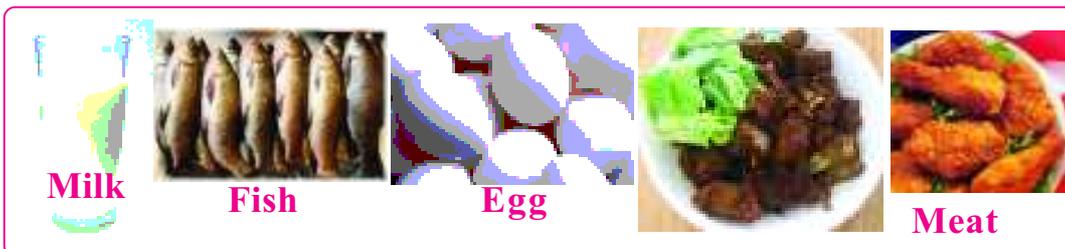
**Red gram**



**Chick pea**



**Peas**



**Milk**

**Fish**

**Egg**

**Meat**

## Group work



- ◆ Which items do you know in the picture given in the previous page?
- ◆ Which food items are prepared from them? Do you like them? Why?
- ◆ Which pulses (dals) are used in your house? What do they prepare with them?
- ◆ Everybody can not take eggs, milk and curds as food daily. Why?

Always some cells die and are replaced by new cells in our body. When we get injured new cells are formed to heal the wound. Nutrients called 'Proteins' are essential to heal the wound. 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 the food which we are taking includes pulses, milk and eggs.

### 4.4. Food that keeps us healthy - fruits, vegetables - health foods

Vitamins are necessary to make use of the carbohydrates and proteins eaten by us. Mineral salts like iodine, phosphorus, calcium, iron combine with proteins and form a part of our organs. Iron is found in the blood, calcium, phosphorus are present in bones and teeth. Vitamins are found in sprouts (germinating seeds) and also the food items soaked over night in water (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 vegetables did you eat since the last week?
- ◆ Which raw vegetables do you eat?
- ◆ Write the names of the fruits which you did not eat so far?
- ◆ Write and say the reasons as to why you do not eat fruits daily?
- ◆ Write the names of the fruits and vegetables available in your locality that you need not buy from outside?
- ◆ Which food substances give resistance against diseases?

Compared to carbohydrates and proteins, vitamins and minerals are needed, in very small quantity for our body. But they are essential to our body. We fall sick, if they are not become part of our food. They fight with the diseases i.e. they give resistance against diseases.

## 4.5. Significance (Importance) of food

### 4.5.1. Food - health

#### Rashmi's age is 5 years



But Rashmi looks like a three-year old girl.

Her hands and legs are thin. Her belly (stomach) is like a pot. She falls ill very often. She always looks tired. She can not go to school regularly. She

does not have energy even to play.

#### Food

It is very difficult to get proper nutritious food.

#### Kailash's age is 7 years

Kailash appears to be older than his age.

He is fat. 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

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



### Think and say...

- ◆ Why are Rashmi and Kailash like that? What foods should they eat if they want to become healthy?

### 4.5.2. Suitable nutritious food

We have come to know about 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 the children in India do not get the required good, nutritious food, necessary for their proper growth. Think, why their condition is like that? These children are very weak and very often fell 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 government schools and made arrangements to provide nutritious food to all the school going children. Every child must eat mid-day meals in the school. Government has given the 'Menu' which contains the food items supplied to the children daily. They should follow the menu. Parents and teachers should see that the lunch is provided as per the menu.

#### Think and say...

- ◆ What do they serve for lunch in your school?
- ◆ Are you getting all types of food, materials in your school?
- ◆ What is your opinion about the Mid-day-meals in your school?

#### Group work

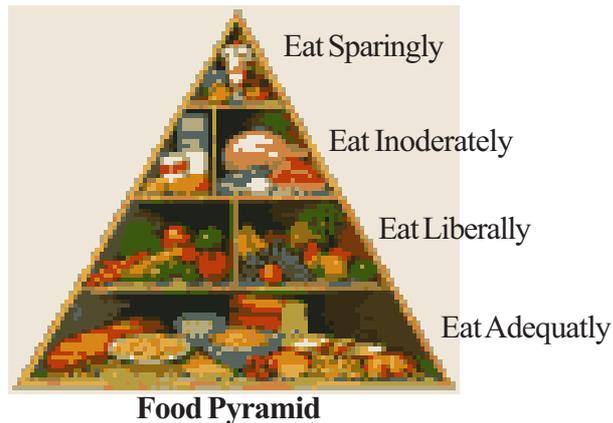


- ◆ Write about the food items you had last week in your house in the table given below.

Day	Food items taken in your house	that give energy	useful for growth	to maintain good health
Monday				
Tuesday				
Wednesday				
Thursday				
Friday				
Saturday				
Sunday				

- ◆ Which food items are served often?
- ◆ Whether you take more growth foods??
- ◆ Do you think that the you take is nutritious food?

We feel hungry everyday. That means our body is reminding us that we need food. Our body needs carbohydrates, proteins, vitamins and mineral salts. We need food material (items) that contains all the nutrients. Such food or diet is called a balanced diet. Any one type of food item does not provide all the required nutrients. For this purpose we should eat the food that contains various types of cereals, millets, pulses, vegetables and fruits everyday. The food that is eaten gets digested. The useful part of the digested food reaches the blood. This digested food reaches all parts our body through the blood. Hence, the body gets energy. This helps in body building (growth of the body) and also in maintaing good health. We become healthy by the food we eat. That is why we should eat the food that contains all the necessary nutrients.



### Think and say...

- ◆ What happens if we do not eat all types of food. (items)?

### Do you know?



A medium sized tomato contains 1.08 gms. of protiens, 1.5 gms. of fibre. Minerals like potassium, phosphorus, magnesium, sodium etc. are available abunduntly. Along with these, Vitamin A, Vitamin B<sub>2</sub>, B<sub>6</sub>, Vitamin E, Vitamin K and other Vitamins are also present in plenty.

Our body parts get swollen, if the nutrients required for the growth of the body are not taken. Face gets swollen. Children will not be active in studies and in playing games. They would look tired. Their hair also would become pale.

Hands and legs become thin if we do not eat the food that give us energy and also the foods that help in growth. Belly gets swollen. Ribs can be seen clearly.

Body growth and development is retarded if the necessary nutritious food is 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 vegetable pieces and curry leaves from the curry served to them in the mid-day-meals. 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) mostly and they become fat. They suffer from health problems. A three - legged stool can not be in its standing position, if one of its leg is broken or missing, it falls immediately. In the same way, energy giving foods (carbohydrates, fats, oils), growth foods (proteins). Foods that help in maintaining good health and (fruits, vegetables) must be present in the food take.

#### 4.5.2. What should we eat?

The food habits followed from the good old days in our houses are of good nutritious value and helpful to maintain our body's health. Now-a-days people are getting used to eating ready made, instant foods. This leads to less in take of nutrition. Jowar corns (popcorns) boiled or fried Ulavalu, bengal gram, round gram, 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, ground nuts, gingelly, cooked ragi etc. are the foods containing good nutritive values. They are tasty too! We should take care that the food we eat are 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...

- ◆ Which food items support for body growth?
- ◆ Which items keep us away from diseases?

#### 4.6. Junk foods

While going home from school, children purchased some eatables from a shop. They purchased some other eatables from another shop and went to their houses. Discuss about the eatables that were purchased in the shop and eaten by the children.

## Group work



- ◆ Write the names of the junk foods (edibles) available in the shop and eaten by you.
- ◆ Which items do you like to buy and eat? Why do you like them?
- ◆ How many days can these items be stored?
- ◆ Which items you, do not know from the picture given below.



## Think and say...

- ◆ Have you eaten any of the above food items? Do you know about the preparation of any of the above junk foods?
- ◆ How many days can they be stored?
- ◆ Are the junk foods healthy?
- ◆ Junk foods, cool drinks cause harm to our body. Then why are they available in the market?

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 a longer duration, chemicals are used heavily. They add salt, chilli powder and sugar to make them tasty. To make them attractive they add artificial colours. They lose their natural nutrients by doing so. 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 by eating such junk foods. Generally, junk foods fried foods contain only calories (carbohydrates) rather salt and oil they cause harm to our body. So, it is better to avoid them, than become fat by eating such foods. This problem is faced by people all over the world.

### Keywords

Nutritious food	Junk foods	Maintain good health
Carbohydrate or Starches	Traditional food	Children's right
Proteins	Energy	Fat (Obesity)
Junk foods	Growth	Mid-day meals
	Immunity	Vitamins & minerals



### What have we learnt?



#### 1. Conceptual understanding

- What is meant by nutritious food? Why should we take it?
- Write two examples for each - foods which give us energy, health, helpful for the growth of the body.
- What is the difference between carbohydrates and proteins?
- Junk foods should not be eaten. Why?

#### 2. Questioning and hypothesis

- Raju's mother prepared vadas with millets(Sajjalu). Raju learnt about Sajjalu. What questions he might have asked?
- Kiran is lean (thin) and weak (tired). He does not participate actively in games and studies, he falls ill very often. Why does it happen?

#### 3. Experiments - field observations

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

#### 4. Information skills, projects

- ◆ Ask 5 of your friends about the food they eat, what nutrients are available from them. Put a tick '✓' below

S.No.	Name of your friend	Food Taken	Nutritive substances received			
			Proteins	Carbohydrates	Fats	Vitamins

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

- Draw 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 asked her to buy any one of burger, pizza and curry puff. But, Neelima said that they are not good for health and she does not want them. Write a few lines appreciating Neelima.
- Why should we preserve / protect all types of cereals and millets.

#### Can I do this?

- I can explain about the necessity of nutritious food. I can say what are present in different food substances. Yes / No
- I can define nutritious food and give examples for nutritious food items. Yes / No
- I can explain the preparation of fruit salad. Yes / No
- I can give a 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
- I can draw the food pyramid and explain its importance. Yes / No
- I can highlight the importance of cereals and millets and also give information about the harm caused by junk or fried foods. Yes / No

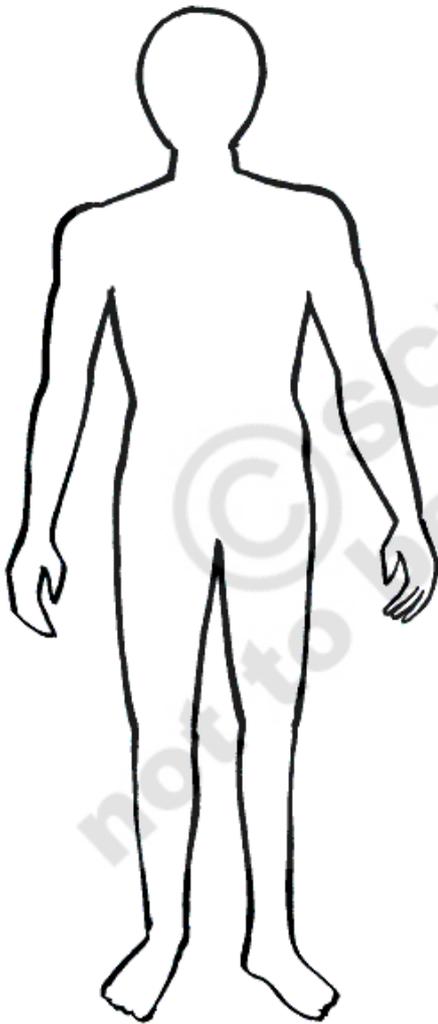
## 5



## OUR BODY PARTS - SENSE ORGANS

### 5.1. Our body - parts

Navya draws well. She drew a picture of her friend Naveen. Some of her friends, after observing the picture said that she missed some parts of the body. Observe the picture and draw the parts which Navya missed.



Write the names of the parts of the body you have drawn and their functions.

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

The organs which are seen outside the body are called external organs. With the help of these organs we can perform many activities at home, outside and at school such as playing, writing, reading and also odd jobs at home. We perform all these activities with the help of organs.

We make use of more than one organ to perform various activities. For this we need co-ordination between the organs. Rani draws good pictures. What are the different organs that help her in drawing? Think.

Looking the picture with the eyes holding the pencil with fingers and hand movement one can draw full picture. Like this different organs co-ordinate and help us to draw pictures. In the same way, we perform many activities daily. What are the various organs that help in performing these activities? 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 rhyme:

Eyes know the colour of the flowers.

Ears know the melody of the cuckoo's song.

Nose knows the fragrance of the jasmynes.

Tongue knows the sweetness of the mango.

Skin feels the warmth and cold and covers our body.



Sense Organs

What does the above rhyme tell us about?

Eyes, ears, nose, tongue and skin help us to know about our surroundings and gain knowledge of the different things hence they are called the sense organs.

Children! you all like riddles very much, isn't it! Now, let us solve this riddle. There are two little windows, which lay side by side but they do not see each other. Say, what are they?

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

- Collect and ask some riddles like this.

### 5.3. The Eyes

Can you reach your school closing your eyes? Think. Can you do your routine work without seeing? Why can't you?



#### Do this



◆ Close your eyes and draw a flower in your note book. Draw the flower again, after opening your eyes.

- ◆ Which is good? Why?
- ◆ Were you able to do your routine work without seeing?

Now, you know how important our eyes are! Therefore we must take proper care of them. What do we mean by the saying "Sarveindriyam Nayanam Pradhanam"? Why do we say this?

Then how do people who have lost their eye sight do their work? How do you feel about them? How can we help the people who lost their vision?

In Navya's school there was an eye camp called "Chinnari Choopu". In this programme they organised eye check up and distributed spectacles to the children with sight problems. They also explained about the care and precautions to be taken to protect our eyes.

We enjoy observing the scenic beauty of nature through our eyes. Do you know what are the precautions to be taken, to protect our eyes?

#### Precautions to be taken to protect our eyes:

- Always read in sufficient light (not very bright or dim light). 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 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 properly on the black board you must inform your parents and teacher.
- Do not rub your eyes.
- Do not use the handkerchief and towels used by the persons suffering with eye infections like conjunctivitis etc.
- Consult an eye specialist / doctor if irritation, redness, watering and burning sensation of eyes persists or while

*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 a foreign body / particle enters your eyes?
- ◆ We must not look directly at the eclipses. Why? Know the reason from your teacher.
- ◆ Say and write how you can help the people without sight?

Foods that help us keep our eyes healthy.



## 5.4. Ears

As all of you know we can listen to the sounds with the help of ears, the sense organ!

- Observe the shape of the ears of your friend 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 from where the sound is coming.

#### Activity - 2

Close one of your ears and make some sound with your mouth and observe. How is it heard. Now, close both the ears with cotton and make the sound aloud. Listen to the same sound with out closing the ears. Did you find any difference?

#### Activity - 3

Ask one of your friends to make a sound by scratching the pencil at the corner of the bench and listen to the sound from the corner keeping your ear on the bench. Let the sound be made again. Now listen to the same sound standing at the edge of the bench. What difference did you note? In which situation more sound is heard.

#### Activity - 4

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

### Do this

#### What is your audible range?

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 / following table, the distance at which the sound is audible and ranges 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 from a long distance?
- ◆ Who are able to hear from very short distance?
- ◆ What is the distance at which more pupil are able to hear?
- ◆ Compare the audible range of your self and your classmates. If you notice a wide / large difference, do not forget to consult a doctor.

If a man can not hear from his birth, he cannot speak also. As they are not able to hear the other person talking, they do not know what and how to speak. Hence they do not speak.

People like this, use sign language i.e., through symbols and gestures message is conveyed. Have you ever watched news for the hearing impaired on Doordarshan. If not, watch and talk about it.

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



### Group work



- ◆ What are the other causes of sound pollution? Think and list them.
- ◆ What measures can you take up to reduce the sound pollution. Discuss with your friends.

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

During festivals and functions, arranging loud speakers with high volume causes sound pollution to others. Blowing vehicles horn loudly and repeatedly causes inconvenience to others. Talking to others on cellphones for long hours is to be avoided. Using cell phones extensively is dangerous. Speaking on cell phones continuously damages the sensitive organs of the head. If sweating is seen beside the ear it is very dangerous.

#### Precautions to be taken to protect our ears:

- Close the ears if loud and harsh sounds are heard.
- Take proper care to prevent water entering into 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 for other ear problems you must consult a doctor immediately.
- Do not use castor oil or other oils for the ears.

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

#### Think and say

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

#### Do you know

Bat is a nocturnal mammal (active during the night). It knows its path by making sounds. It identify objects on its way, when sound waves produced by it reflects back and reaches it. The sounds echo from the obstacles and thus changes its path.



## 5.5. Nose

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

### Do this

- ◆ Blind fold your friend with a hand kerchief and ask him to identify the different items by sense of smell. Take different items near to the nose and ask him to identify.



Coriander leaves, curry leaves, onion, garlic cloves, cardamom etc. have good odour. We know their taste through smell only. Close your nose and keep them into your mouth one by one. Did you know the taste of these items? Is nose used to smell things? Do you know what is the other use of nose? Close your nose for few minutes. Say what happened? We cannot live for a long time if don't breath air. 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 sense of smell useful to us? Why we do catch cold?
- ◆ What precautions do you take to prevent the cold from spreading to one 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, isn't it! 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 if small pebbles or things enter your nostrils and if breathing is difficult or painful.

## 5.6. Tongue

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



### Think and say

- ◆ Tongue does not recognise the taste of food, if we eat too hot or too cold food. Why?
- ◆ Discuss about any four types of tastes.

### 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, on seeing or smelling some food items. Write 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 the tongue of your friends with a magnifying glass. Note 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 with water before and after eating. If we do not rinse germs may attack and cavities develop in our tooth and thus teeth may decay and fall and results in bad breath. Hence we should brush our teeth and also clean the tongue daily in the morning. We should also clean our tongue and brush our teeth before going to bed at night.

## 5.7. Teeth

We identify the different tastes with our tongue. Do we take the help of tongue alone while taking in the food? There are teeth also along with the tongue! We chew food with the help of teeth when we eat. 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 the taste is known. People who lose their teeth, cannot chew the food. Hence they do not know the complete taste of food. Therefore we must take care of our teeth.

### Do this



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

### Think and say

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

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

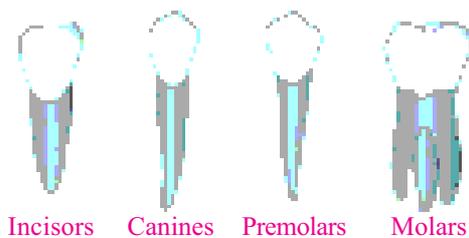
### Do this

- ◆ Observe your teeth in a mirror or the teeth of your friend. Are all the teeth same? Say.

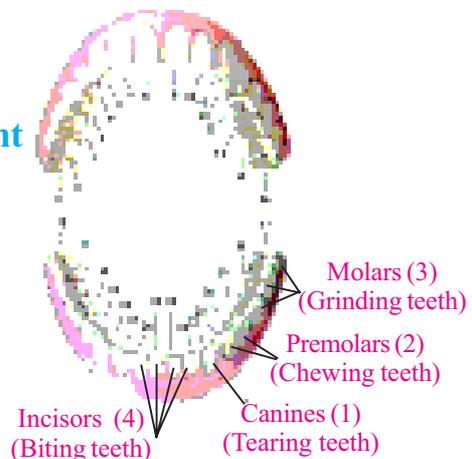
There are four different types of teeth, for biting, tearing, chewing and grinding the chewed food.

Observe the picture given below:

#### Type of Teeth



#### Arrangement of Teeth



### Group work



Observe the teeth in your friends mouth and say.

- ◆ How many teeth are there in your friends mouth?
- ◆ How many types of teeth you found?
- ◆ 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 kind of food isn't it! 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 to speak clearly. The teeth that appear in children from 6th or 7th month onwards, for the first time are called 'Milk teeth'. They fall off at the age of 8 or 9 years. In

their place new, strong and big teeth grow and are known as 'Permanent teeth'. If we loss this teeth we cannot get back new one's. Hence if we do not brush our teeth properly they decay and we get bad breath from the mouth. If this happens then we cannot eat the food we like and we even 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 become yellow?
- ◆ Observe the teeth of your friends. Whose teeth colour has changed to yellow or black.
- ◆ Whose tooth has cavities?
- ◆ In whose tooth food particles are stuck?
- ◆ Whose teeth has plaque deposits.
- ◆ Whose teeth are healthy and shiny?
- ◆ Why should we brush our teeth every morning and night?

Identify & appreciate your classmate for healthy & shiny teeth.

After eating bits of food particles remain stuck between the teeth and they cause tooth decay. If they remain on the tooth, harmful 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?

- Brush twice a day that is every morning and every night before going to bed.
- After brushing the teeth, rub the teeth and the gums with your finger and also rinse your mouth with water. This helps in keeping the teeth strong.
- Rinse your mouth with water after eating or drinking this helps in washing away the bits of food particles stuck on and between the teeth. Rinse twice or thrice in a day.
- Twigs of *Acyranthus* (Uttareni), *Derris indica* (Kanuga), *Neem* and *Acacia* (Babool) are used to brush the teeth or use tooth paste / powder and tooth brush for cleaning.
- Brush the teeth of the upper jaw from up to down and lower jaw teeth from down to up.
- Brush the teeth from all sides that is up, down, inside, outside, leftside, and rightside, each and every tooth must be brushed properly and in 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 do not grow in its place. If we do not have teeth we can not eat solid foods.



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

## 5.8. Skin

All the parts of our body is covered by the skin. Do you know what is the use of skin? Skin protects all the parts of our body. It is the sense organ for touch. We can feel heat, hardness, softness, coldness etc., through the 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. Write them in order from more thickness to less 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. This causes ill health and diseases. Do not eat food without washing the hands with soap at school and at home. Wash your hands after toilet.

### Think

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

### Precautions to be taken to protect our skin:

- Have a bath twice a day every morning and evening with soap and water.
- While bathing rub the skin thoroughly. This helps in the removal of dead cells and makes the skin shiny.
- 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 the 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 then skin diseases may occur. Most of the skin diseases are contagious.

Skin is only affected first by the changes in the surroundings. If we protect our skin, the skin protect us. Skin protects the internal organs from outside environment. Skin feels the heat, cold and pain.

Due to the ridges and grooves present in the skin of the palm, finger prints are formed. Take your finger prints and that of your friends on a white paper and observe them. Are they similar? No two persons will have the same finger prints in this world. Hand also the 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 cure.

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

### Keywords

Body	Protection of eyes	Sense of touch
Sense organs	Sounds / Noises	Inhalation, exhalation
Organs	Audible range	Respiration
External organs	Sound Pollution	Teeth
Co-ordination between organs	Skin	Taste buds
Saliva	Enamel	



### What have we learnt?

#### 1. Conceptual understanding

- a) What are the organs that are seen outside the body and those inside the body (Internal organs)?
- b) We say that eyes are the most important organs of our body? Why?
- c) Write the names of the organs used to perform the following activities. Throwing a ball, plucking the flowers, stitching a button with needle and cutting the vegetables.
- d) Why do we call eyes, ears, nose, tongue and skin as the sense organs.
- e) What are the uses of the teeth? What precautions are to be taken to protect our teeth?

#### 2. Questioning and hypothesis

- a) What questions would you ask a doctor to know about the protection of eyes, nose and ears?
- b) Balaji's eye sight has decreased? Why does the eye sight decreases?

#### 3. Experiments - field observations

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

#### 4. Information skills, projects

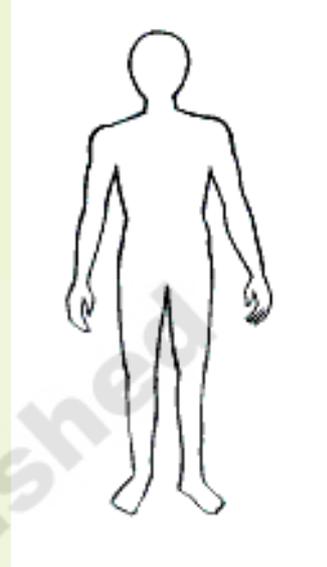
- a) Meet the ANM / health workers and find out the details of the people in the village who are infected with diseases related to eyes, ears, skin and tongue know the reasons and write.

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

- b) Observe the ears of ten children of your class / school students. Are the ears of the same shape? or 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 picture given beside. Label them.
- Draw the arrangement of teeth in our mouth and identify the types of teeth.



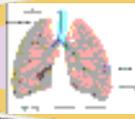
### 6. Appreciation, values and creating awareness towards bio-diversity

- 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?
- In your view, who is a healthy person?
- How can you say that our body is a wonderful machine?
- How should we behave with the people with special needs? What kind of help should be given to them.

#### Can I do this?

- |                                                                                                |          |
|------------------------------------------------------------------------------------------------|----------|
| 1. I can explain the sense organs of our body 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 are the things that can be identified by sense the 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 oxygen is required?
2. How & why blood runs all over body?
3. What makes our body to be erect and stiff.
4. What happens to the food we eat? How we get energy to do work?
5. We get diseases if wastes are not removed from over body. How wastes are removed from our body?

### 6.1. 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 the inhaled air enters our body?

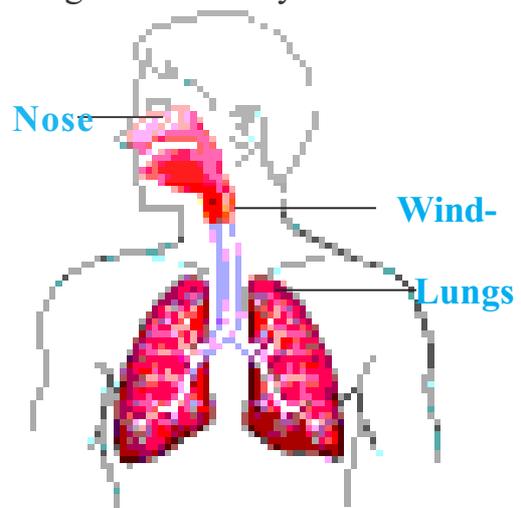
Lungs in our body, absorbs the oxygen from the air which we breathe in. Nose, wind pipe and lungs are the important organs of the respiratory systems. The air we breathe in enters into the wind pipe. The wind pipe divides itself into two, and opens into the lungs. The walls of the nostrils are wet and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

#### Think and say

- ◆ Which part of your body will move when you "inhale" and "exhale"?

#### Do This

- ◆ Using a measuring tape, measure the circumference of the chest of your classmates both 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 your inhale and exhale air in one minute.
- ◆ Compare the observations with 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 into the two spongy saclike structures called lungs in our chest region. The lungs are made up of many tiny structures (pluera). The structures help in the exchange of oxygen and carbondioxide. On these walls of the pleura 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. In the same way, they send out the carbondioxide and water vapour. The doctor who treats the diseases of the lungs is called a "Pulmonologist".

### Group work

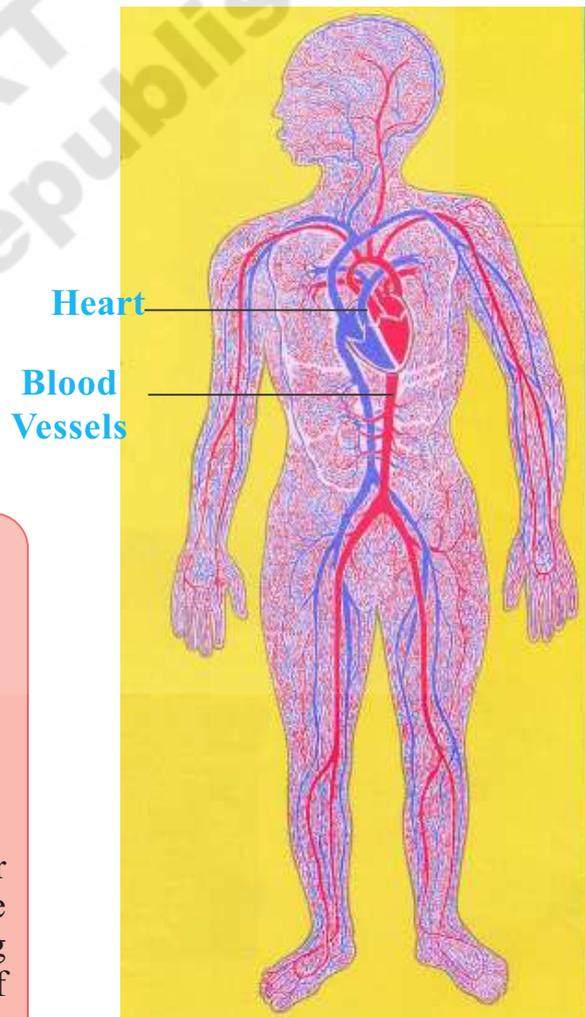


- ◆ We should cover our nose with a hand kerchief when exposed to dust, dirt and smoke. Why?
- ◆ What should we do to get fresh air & more breaths?
- ◆ What should we do to inhale more air per minute? / What should we do to increase the rate of respiration?

In 'Yoga' and meditation concentration is on the breathing. This help us to remain healthy.

## 6.2. 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



**Heart-Ciculatory System**

### Group work



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

Heart supplies blood to all parts of the body. Blood transports the oxygen and a variety of materials obtained from the food which we eat to each and every part of the body. The food we eat is digested in the stomach and then sent into the blood and through blood vessels it is sent to different parts of the body and thus helps to 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, which is in liquid form. 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. Heart is situated in the chest region,  $\frac{2}{3}$  is on the left side of chest and  $\frac{1}{3}$  is on the right side. Heart pumps the blood to different parts of the body. Heart is a pumping organ.

### Think and say

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

Blood must be supplied to all parts of the body properly then only we will be healthy. 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. Skeletal system

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

#### Group work



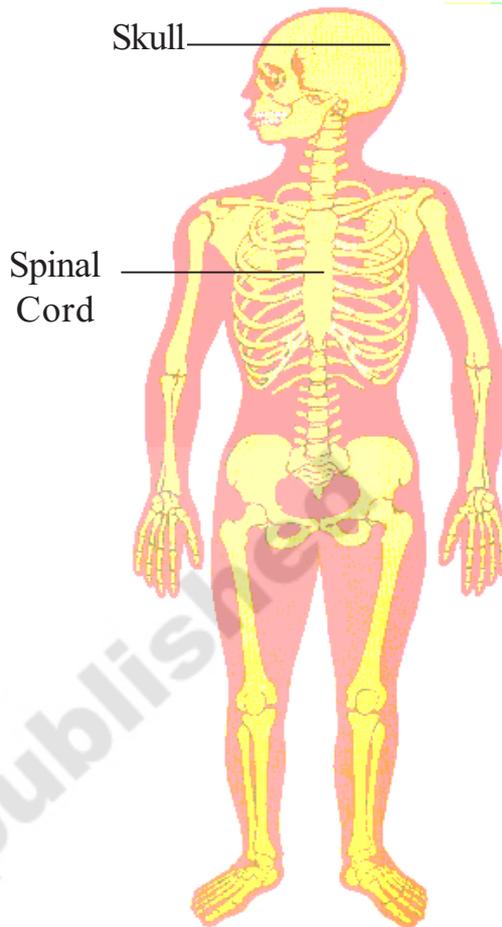
- ◆ Observe some x-ray photographs and identify which part do they belong to. Draw the diagrams.
- ◆ How do bones help us?

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 at different parts of the body. 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 small bones from neck to waist. This helps the body to stand erect. It is also called the "Spinal Cord". Calcium helps in keeping the bones strong. We can have strong bones & 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 "Orthopedition". The bones give shape to the body. We get vitamin 'D' when we are exposed to sunlight. Vitamin 'D' helps bones and skin to be 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 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 with out bones & without joints.

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 for strong bones.



## 6.4. Digestive system

### Where does the food chewed and swallowed in mouth enter?

You might have observed that our stomach seems to become bulged when we drink water or eat food. In the figure given below the path of the chewed food is shown. Food changes into liquid form i.e., Chyme and passes through the different parts as shown in the figure.

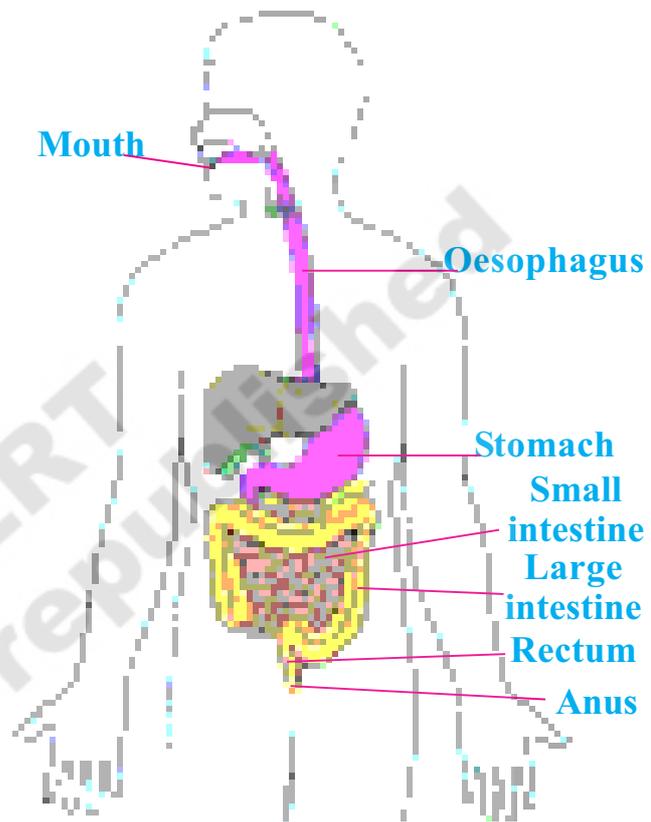
The food we eat changes its form in our mouth. The food supplied to different parts of the body is not in the same form in which we eat. It changes into different forms. The solid and liquid foods change into simple substances and finally get absorbed into the blood. This process of changing starts from 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 feces 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 was a large hole. 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.

Scientists did not know how food gets digested? How do the digestive juices in the stomach help in digestion, or how food is converted to chyme? No one knew if there were any other organs, that helped in the process of digestion. Do you know for how many years Dr. Beamont experimented on Martin's stomach? For nine years.

Dr. Beamont took out a small quantity of fluid from the stomach and put it into a glass jar, to find out if the food kept in a glass jar gets digested 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 the stomach 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 into the glass jar filled with digestive juice. He gave Martin food at the same time she 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.	Unboiled 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?*

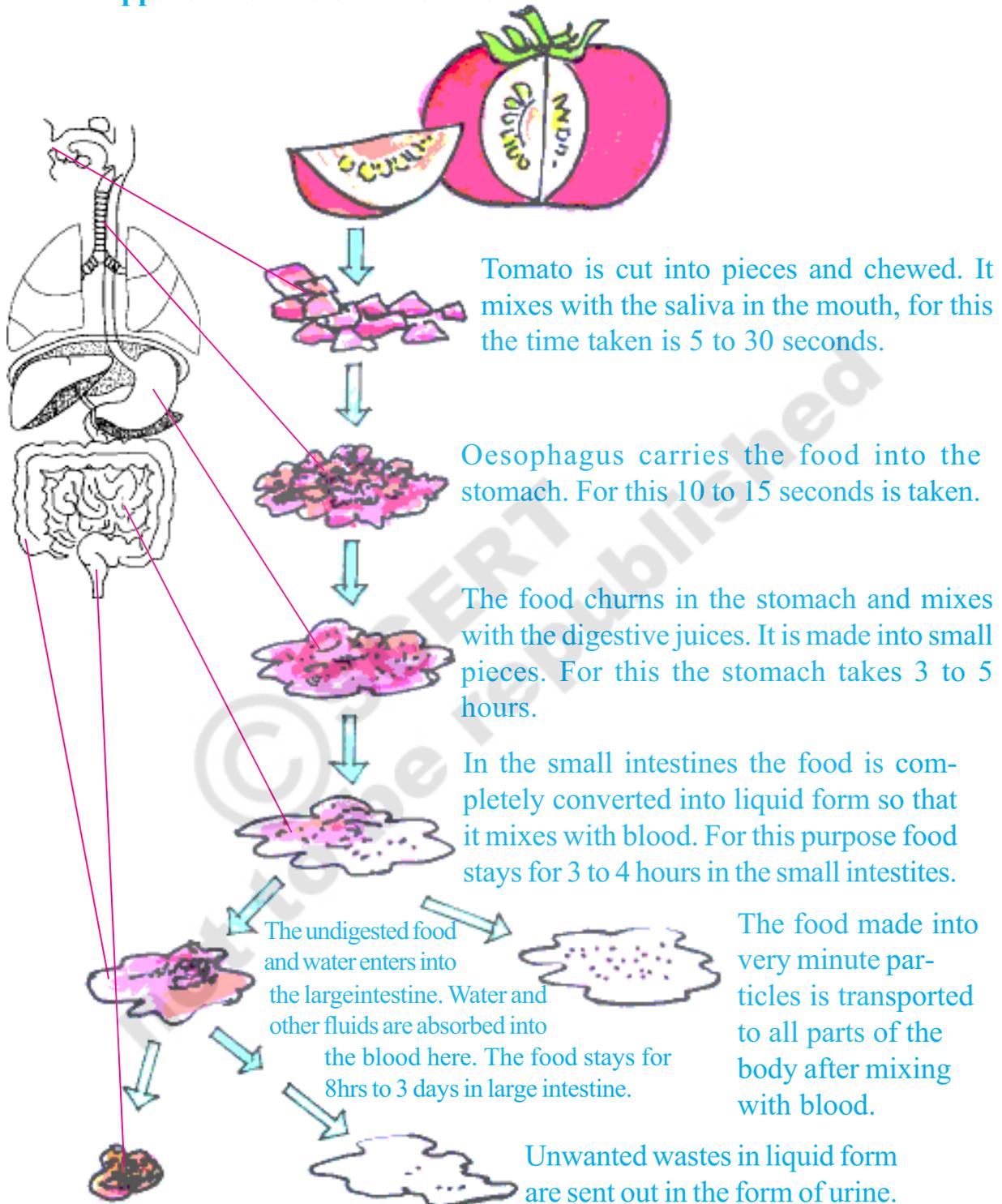
Dr.Beamont discovered many secrets of the digestive system by performing many experiments. He found that food is digested quickly in the stomach than when placed out side the body. Did you observe the same thing in the table given above?

Our stomach churns the food items and digests the food. Martin found that when he was unhappy, the proces of digestion was slow. He also found that the digestive juices present in stomach are acidic in nature. If someone does not eat food properly or when food is not digested it leads to acidity. Have you ever heard people complaining about. "acidity" or burning sensation in the stomach or chest region?

Thanks to Dr.Beamonts experiments, the process of digestion has been understood. After his experiments scientists performed 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 a story of our stomach? What do you say?*

## What happens when we eat a tomato?



Unwanted wastes in solid form are sent out through the anus (faeces).

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 or eat watery fruits like citrus fruits etc.,

## 6.5. Excretory system

In our body many life processes go on continuously. Through these processes many wastes / harmful substances are formed.

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

### Group work



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

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

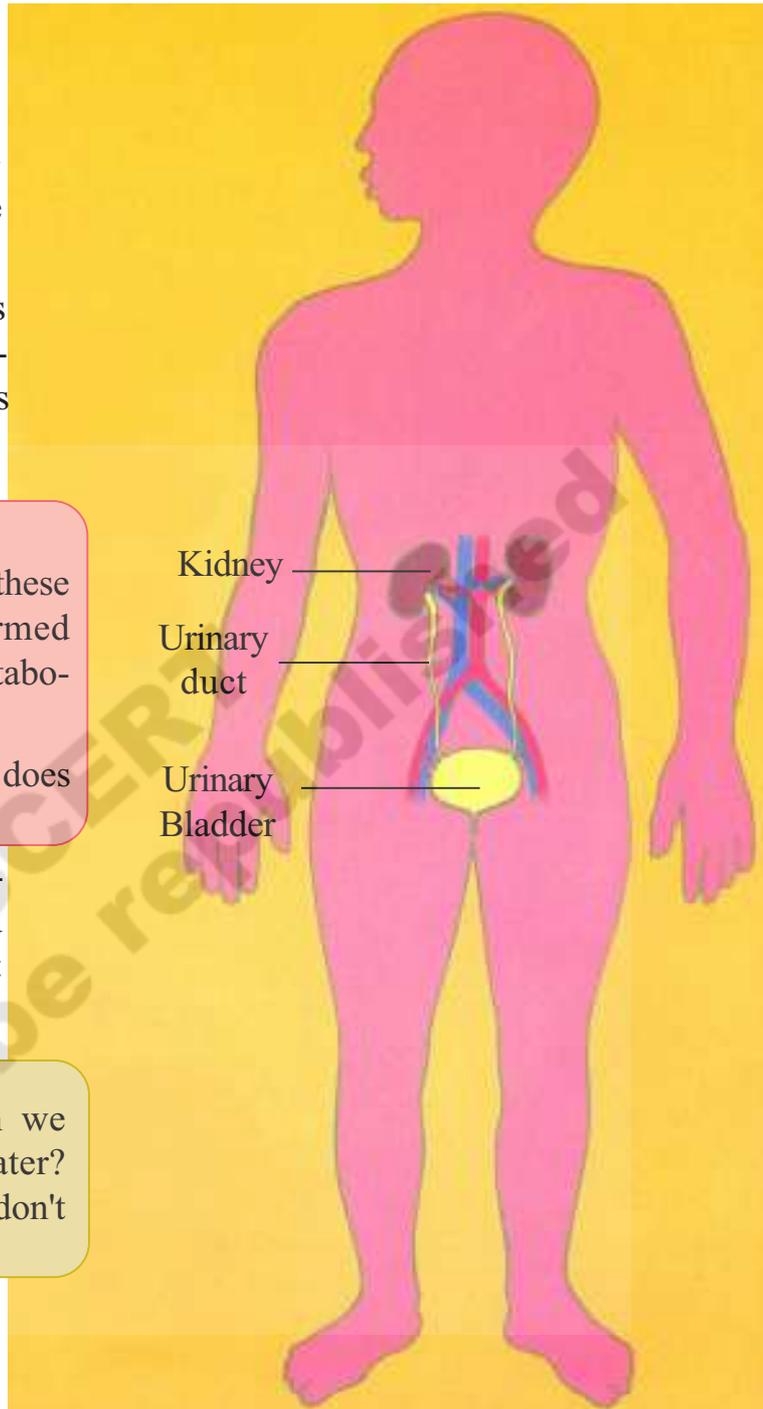
### Think and say

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

Two kidneys are situated at the back in the waist region. One on either side of the spinal cord 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. Skin is 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 'Urologist'*

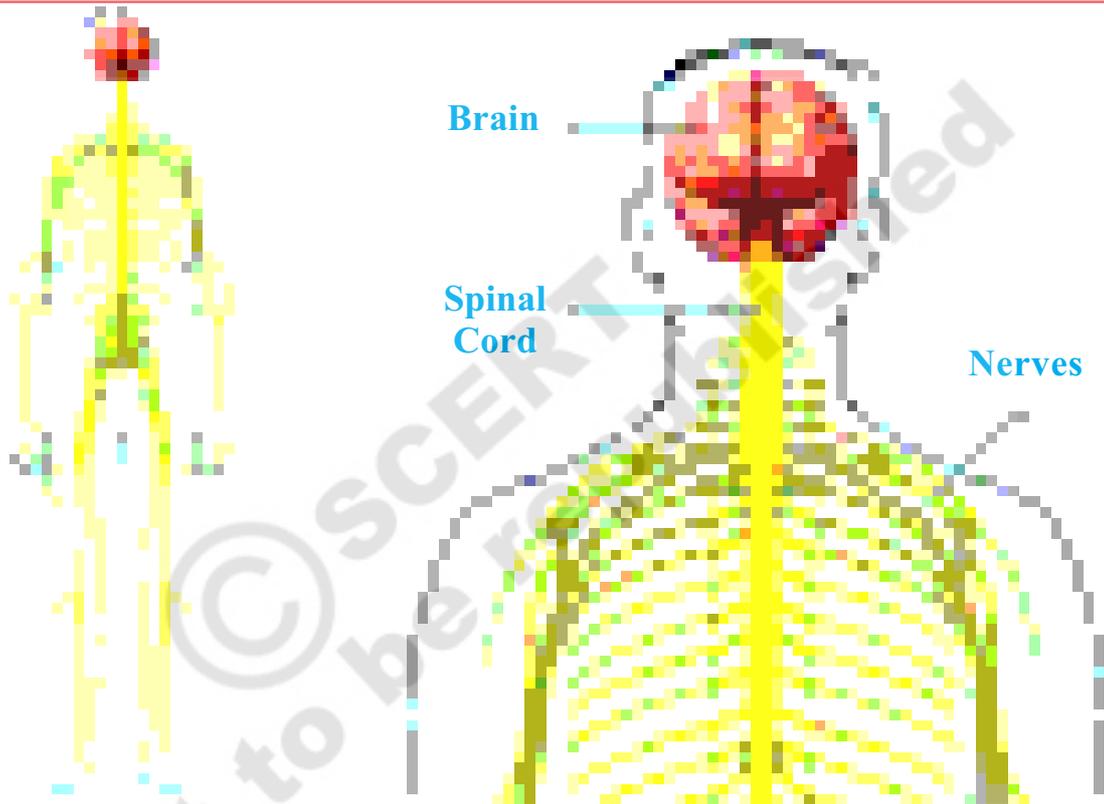


## 6.6. Nervous system

### Group work



- ◆ How do you know that a thorn pricked the foot?
- ◆ How can you recall things after many years?
- ◆ What do you do when you get hurt? Who orders the parts of the body to do so?
- ◆ How can we feel the pain? Think.



Observe the above pictures.

Each and every part of our body has nerves. They pass on the information obtained from the sense organs to the brain. Brain analyzes the information and gives instructions to the parts of the body through nerves. For example when a dog barks at you (or) when you ride a bicycle, immediately, the brain co-ordinates with the different body parts and it orders the nerves to take necessary action. Brain functions properly only when you take nutritious diet i.e., all types / kinds of food must be taken in right amounts. The doctor who treats the diseases related to the nerves and brain is called a 'Neurologist'.

The organs visible outside maintain the metabolism of various organ systems present inside the body. For this the body needs a balanced diet and healthy life style. We need to follow the healthy habits given below to have a healthy body.

### Healthy habits:

- Wake up before sunrise.
- Exercise daily, play, run, spend sometime in the sunlight.
- Wash hands neatly with soap before eating and after the toilet.
- Eat clean and healthy food. See that the food we eat must contain fruits, vegetables, leafy vegetables, pulses etc.
- Milk, eggs, fruits are important for the growth and health of the body. Take local and seasonal fruits and vegetables for good health.
- Care must be taken to prevent diseases.
- Keep the surroundings clean & neat.
- Have meals on time.
- Do not eat excess food. Drink plenty of water, when you are thirsty.
- Do not eat too much of chutneys / pickles, which contain salt.
- Do not eat burgers, pizzas, samosas etc as they spoil our health or eat them sparingly.
- Do not buy and eat food sold on the road side, chances of catching diseases increase with this type of food.
- Do not take soft drinks (beverages), instead drink coconut water, fruit juices and buttermilk 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	Life processes
	Carbondioxide	Nerves
	Kidneys	



### 1. Conceptual understanding

- a) What are the different organ systems of our body?
- b) What are the organs of the digestive system?
- c) What are the uses / functions of blood in our body?
- d) What function does the lungs perform?
- e) Write the stages in the process of digestion in order.
- f) What are the organs of the excretory system? What is their use & function?

### 2. Questioning and hypothesis

- a) Raheem is suffering from stomach ache. What would be the reason? What questions the doctor may ask Raheem when consulted?
- b) Observe the patients of the heart, digestive system and nervous system. What questions would you ask to know about the disease - discuss in the class?

### 3. Experiments - field observations

- a) Place your hand on the heart and listen to the heart beat carefully. Run and listen again after running. Did you find any difference. Write the differences & why?
- b) When does the Heart rate increase. Observe and write.

### 4. Information skills, projects

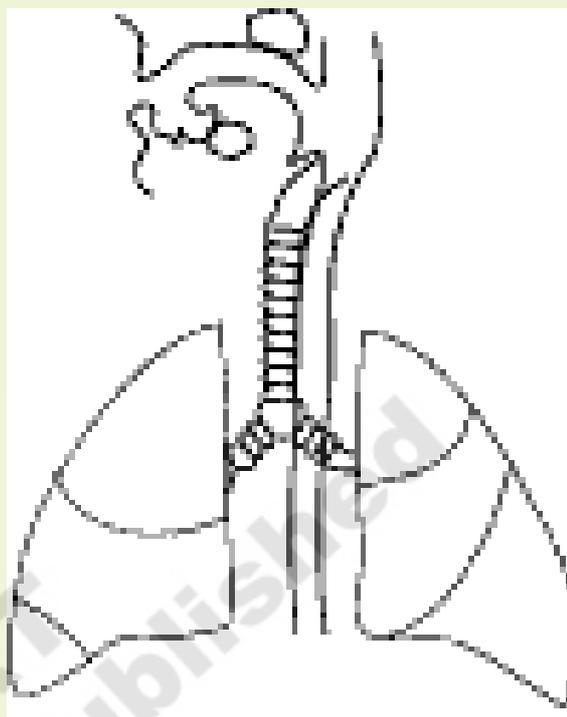
- ◆ Visit a doctor or health volunteer near by. Find out the rate of heart beat for the different age groups of people. Tabulate the information.

	Age	Rate of heart beat
Infants		
Children		
Adults		
Old people		
Athletes		

Whose heart beat rate is more? Whose heart beat rate is less? Find our the reason?

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

- a) Draw a diagram of the heart and colour it.
- b) Prepare a model of the Renal System and draw it.
- c) Make a model of the stethoscope.
- d) Draw the organs in the figure given beside and write their names.



## 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) Heart which is the size of one's own fist pumps blood to different parts of the body day & night. How do you appreciate the function of the heart?

### Can I do this?

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

## 7



# FORESTS - TRIBES



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 of the forests.

## 7.1. Observe the picture and say



Women performing the  
'Dhinsa Dance'

- Who are there in the picture? What are they doing?
- Where do they reside?
- How is their dressing? Name their dance form?
- What is their lifestyle?
- Differentiate between them and us. Do you know about them?

## 7.2. Life style of the tribes

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 'Araku' village near Visakhapatnam to participate in the state level science fair. The women dancing in the photo are the tribals residing at Araku. Their dance is called "Dhinsa". It is the special dance of Araku tribes.

### Think and say

- ◆ Who are the tribal people? Where do they reside?
- ◆ What are the different types of tribes in your region?
- ◆ Do you know their dance forms? Name them.
- ◆ Name the dances you perform in your region.

On that day Cultural programmes were arranged in the evening. The tribal people gave their traditional dance performance wearing their traditional costumes. Everyone enjoyed it. As I was tired due to a long journey I retired early and went to my room for rest. Two more girls, 'Barjutayi' from Adilabad and 'Chomcharu' from Mahaboobnagar 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 were different from the other people. I was surprised to know all this. So, I asked her for more information.



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

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

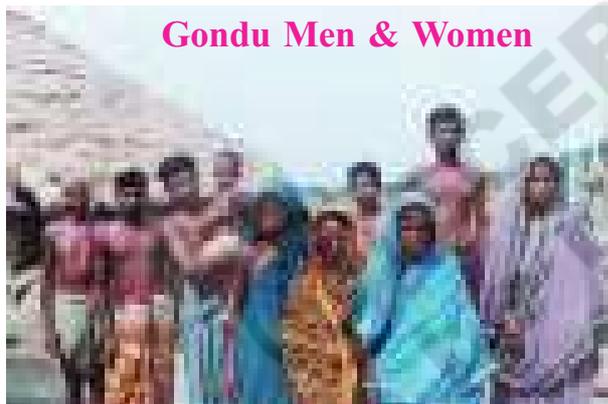
The women draw and paint beautiful pictures on the walls and the floor with the colours prepared from different plants.

They decorate the puja rome with special interest. They consider their house as most sacred. Hence, they consider entering the house with footwear is regarded as a sin. They serve the guests fruits and tobacco cigars and thus show their hospitality.

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**



**Gondu 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 Gond's.

"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. Five days 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 enter in to a new world. Would the life style of all the people living in forests be the same?

### Think and say

- ◆ Why people attend fairs? How they enjoy?
- ◆ Write the precautions that should be taken while visiting fairs.



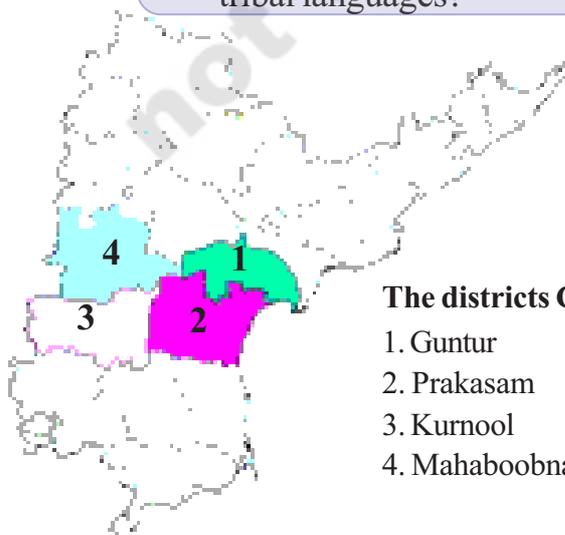
## 7.4. Life style of Chenchus

I enquired chemchoru, whether they have the same customs as of 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 our state. Mainly, we are to be found in the districts of Mahaboobnagar, Kurnool, Guntur and Prakasham. They speak Chenchu which is similar to Telugu.

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



### The districts Chenchus live in:

1. Guntur
2. Prakasham
3. Kurnool
4. Mahaboobnagar



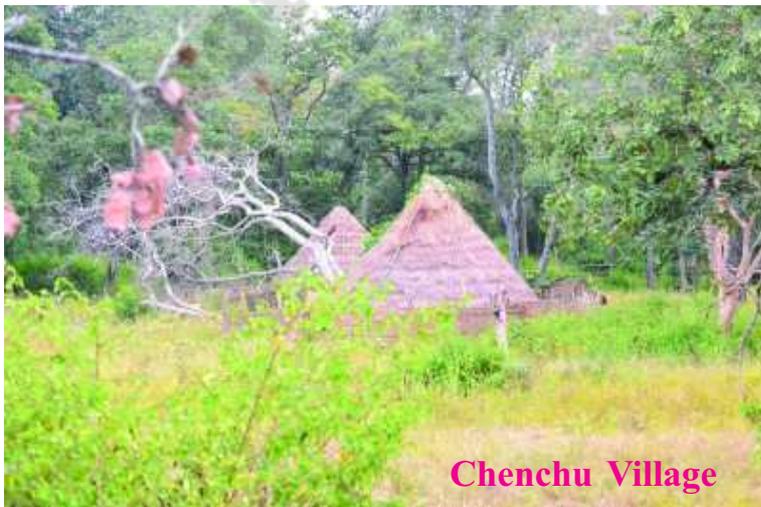
Chenchu's food is quite different from our food. She gave a lot of additional, interesting, information. They depend mainly on forest for their food. That is why they worship the forest as 'Adavi Thalli'. They collect different fruits like pomegranate, mango, roe apple (Neredu) etc., different roots and Tamarind from forests and eat them as food. Chenchus are experts in collecting honey. Parents and elders hunt the forest pigs, deers etc., with the help of small arrows and knives and share the meat with all. But, they never hunt small animals like rabbits and sparrows.

The food items collected from forests is sold at the weekly fair and the required grains like Jowar etc., are purchased. 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.

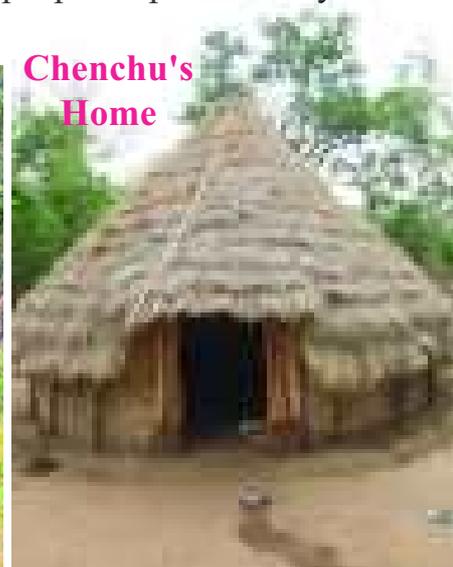
### Think and say

- ◆ How do you appreciate chenchus life style?
- ◆ Ask your elders and know about the custom of worshipping trees in your area. Also know 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' like sunni penta. Some pentas together are known as villages. Each village will have a head. He is called the 'Head man'. (pedda Manishi). He looks after the village and see 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 daities are god 'Lingaiah' and the goddess 'Chenchu'. They perform pujas in the month of Magha and Children, elders and all the people participate actively in these pujas.



Chenchu Village



Chenchu's Home

## 7.5. Bonda tribes - life style

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

Barjutayi and Chomcharu also were also surprised along with me. People living without money and knowledge about the outside world? We three asked in chorus to tell more about them.

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

They don't like to mingle with the people from town & plain area. That is why, they rarely come out of the forest.



### Do you know?

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

### Think and say

- ◆ What would be the reasons for Bonda tribes not coming to the outer world?



**Bonda Fair**



They attend the weekly fair 'Hatha' more.

They do not allow new comers to enter their villages. They depend on hunting for their food. They collect the forest products and also do Jhumming 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 'Jhumming'.



**Bonda Women**

The grand father continued telling other interesting things.

The Bonda tribals attend the weekly fair and exchange the forest produces collected by them to 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 up of 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 loom. (Maggamu). They stitch tiny and beautiful mirrors to these clothes.

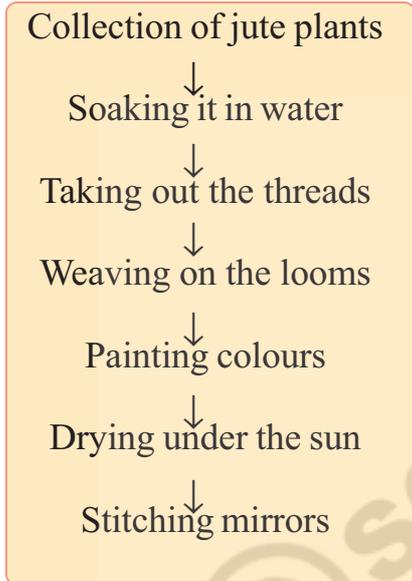
### Group work



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

I still had not come out of my astonishment. It was difficult to believe that there are still people living away from the outside world who do not use money to lead their lives!, that too in 21<sup>st</sup> 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 proceedings of a fair when you visited? Write the differences between Bonda's fair and your fair.

### 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 of trees for use in villages, towns, bridges, industries, roads, railways, fire wood, furniture and for many other needs of the mankind.

The 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 the occurrence of droughts. Thus, there is a growing threat to the earth and it may become a desert.

### Do your know?

Paper is made from trees of bamboo, Eukalyptus, 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. Also, use pencils till its end.

## Group Work



- ◆ Have you seen the forest - share with your friends.
- ◆ You know about the uses of forests. What would happen if forests are not there?
- ◆ Does your district have a forest? Where?
- ◆ Which districts of our state have forests? Identify in A.P. map.
- ◆ What should be done to protect the forests from depleting?
- ◆ Which different tribes are there in the forests of your district?

There are forests in the districts of Adilabad, Karimnagar, Warangal, Khammam, East Godavari, West Godavari, Visakhapatnam, Vijayanagaram, Srikakulam, Kurnool, Prasasam and Mahaboonagar. 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. The tribes Savara, Konda, Adivasi, Oriya, Kuvi, Gadaba are living in the forests of Srikakulam, Vijayanagaram and Visakhapatnam. The tribals belonging to koya live in Khammam, West and East Godavari districts. Konda Redlu and Koya live in Khammam district. The Banjara tribe live in Warangal and in other districts. Many changes have occurred in the life styles of the tribals when compared to the past.

Tribal people are developing due to education. As the tribal villages are in dense forests the transport facilities have not yet fully developed. When compared to people of other regions the tribal people are still quite backward.

## Think and say

- ◆ What difficulties are faced by the tribals due to the lack of transport facilities?
- ◆ What measures should be taken to develop the tribal people?
- ◆ How are others benefitting from the tribal people?

## 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. Our State has 46,389 sq.kms. (16.89%) of forests. Khammam district occupies first place with 43.23% 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.



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

What should we do to conserve the forests.

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

Why are the children planting the saplings?

We all of us should plant trees at least one per head. We should plant them in the available free space and protect them. For every tree that you cut plant another two.

### Kyewords

Forests

Science exhibition

People other than tribes

Tribal people

Decoration of the house

Jhumming

Life style

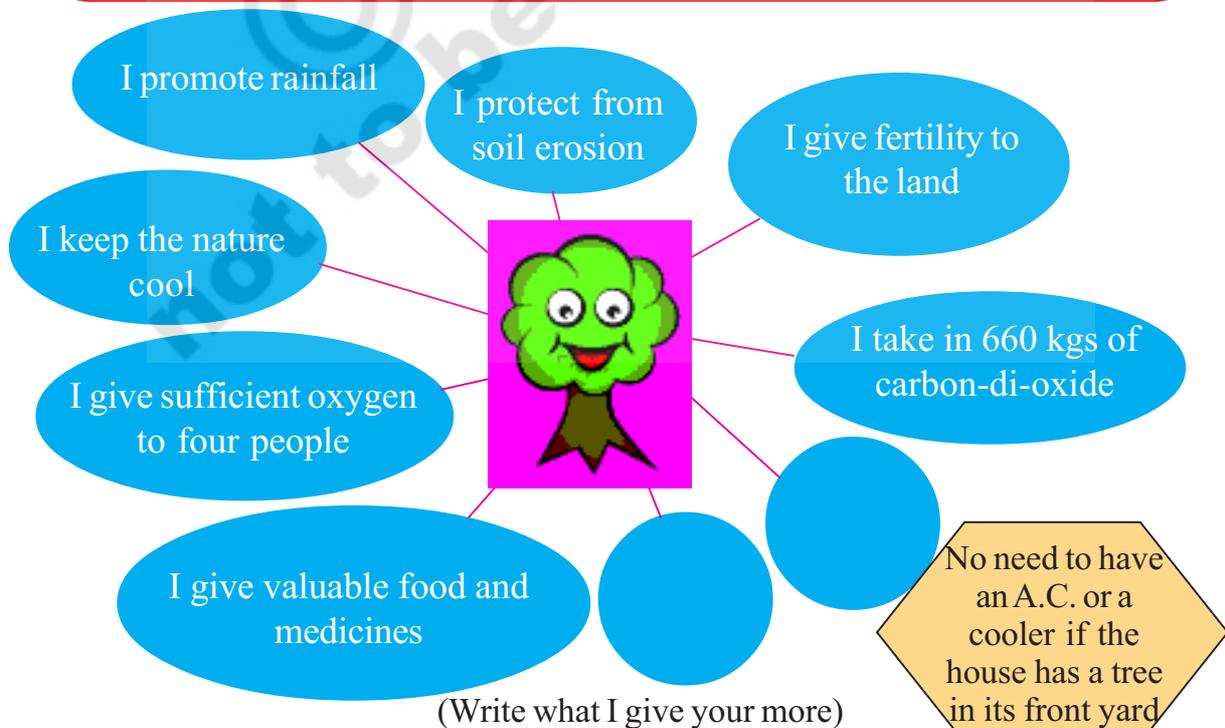
Village God

Forest Products

Tradition

Fair

Forest Conservation





### 1. Conceptual understanding

- a) Tribal people live mostly in the forests. Why?
- b) Tribal people mostly use the natural products. Why?
- c) We should protect the forests. How and why?
- d) Write the differences between the food taken by the Chenchus and you.
- e) Write a note on importance of fairs.
- f) Name some of the products which we get from the forests.
- g) Differentiate between our agriculture and Jhumming. (Podu agriculture)
- h) Forests have more animals. Why?
- i) Is Bio-diversity more in forests or in agricultural fields? Why?

### 2. Questioning and hypothesis

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

### 3. Experiments - field observations

- a) Tribal people make colours with the leaves and seeds available in their surroundings. You also prepare and write down the colours you made with leaves, flowers and seeds available in your area.
- b) 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.
- c) You have seen the pictures drawn on the walls of the Gonds houses. Do the houses in your village also have similar pictures? observe, write and draw the pictures and rangoli in your village.

### 4. Information skills, projects

- ◆ Count the No.of trees in your village / ward and different types of plants & trees. Prepare a table & compare with village particulars as how many trees used.

(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 Andhra Pradesh and mark the forests and the districts where tribal people live, on this map.
- You have seen the pictures of the tribal people in the lesson. They prepare different decorative items with poosalu (plastic pearls) and wear them. Can you make a beautiful garland with the available poosalu and threads?

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

- Write about your feelings when you observe different scenes of the forests / nature.
- Tribal people 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 habitate. How animals might feel on this?
- Which aspects of the tribal people's life you like?

### Can I do this?

- I can describe the life style of tribal people. Yes / No
- I can question to know about the life style of the tribal people. Yes / No
- I can recognize the Bio-diversity of forests. Yes / No
- I can collect the particulars of different forest products and tabulate them. Yes / No
- I can point out the forests areas where tribal people live in on the maps of Andhra Pradesh Yes / No



## 8

## RIVERS - LIVELIHOOD

## 8.1. Observe the picture and say



- What do you see in the picture? What are the people in the picture doing?
- Can you guess which river is depicted in the above picture?
- Did you ever see any such river? How do you feel about it?
- What do the men in the boats do?
- Is the river a means of livelihood? Why?
- Are there people who depend on the river? What do they do?

The bridge on Godavari at Rajahmundry has a railway line below and a road above, vehicles move on both at a time. Its length is 3 km. Its the longest road - rail bridge in India and it is built on the river Godavari.

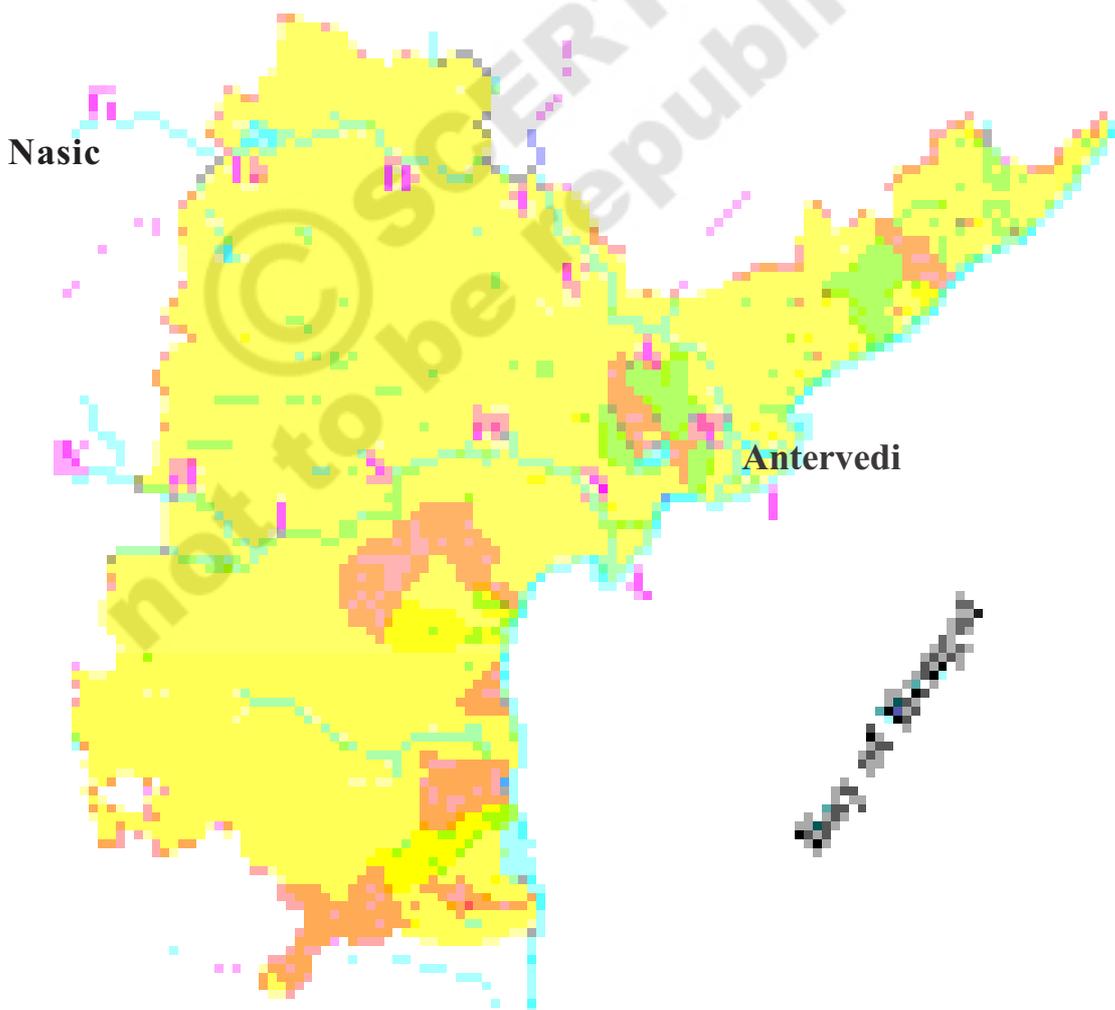
## 8.2. The Godavari, a river

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

Is there any river near your place? Which river? There are many questions which you can answer? Where does a river begin from? Where does it flow along and finally where it end? Where does the water come from? Does it remain there always or will it dry?

Does the river flow throughout the year? Do the rivers merge ultimately with any other river? 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 the rivers.

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



The river Godavari, originate its journey hills from the Brahmagiri of the Western Ghats at Triambakeshwar, in the district of Nasik in Maharashtra. It enters our state at Basar in Adilabad district. To reach our state it travels 1465 kms. In our state it flows through the districts of Adilabad, Karimnagar, Warangal, Khamman, East Godavari and West Godavari. Its flow, separates the districts of Adilabad and Karimnagar, East and West Godavari. This river divides into three parts and lastly meets the Bay of Bengal at Antarvedi, in East Godavari and Yanam. Look at the maps of India and A.P. in the Atlas and answer the questions given below.



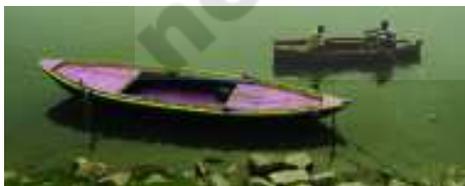
### Group work



- ◆ Where does the Godavari start from? Name the districts through which it flows.
- ◆ Identify the states, through which this river flows, in the map of India in the atlas.
- ◆ Name the districts which are on the bank of the Godavari.
- ◆ Like Godavari, identify the river Krishna on the map of A.P.
- ◆ Identify the cities and the holy places present on the either banks of the rivers.
- ◆ What are the districts through which the river Krishna flows?

### 8.3. Fishermen

Many people make a living by catching fish in the Godavari. They use boats and catch a variety of fishes, crabs, lobsters employing nets. 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 the source of livelihood for the fishermen. They lead their entire lives fishing. They make money for their families by catching and marketing the fish. To catch the fish, they use conventional boats and also the motor boats. During floods, they lose the boats and their nets get damaged. We are able to include the nutritious fishes in our diet due to these 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, under the conditions given below?
  - When floods occur.
  - When cyclones occur.
  - When the river gets dried.

### Do you know?

#### Speciality of the Godavari districts - 'Pulasa' fish

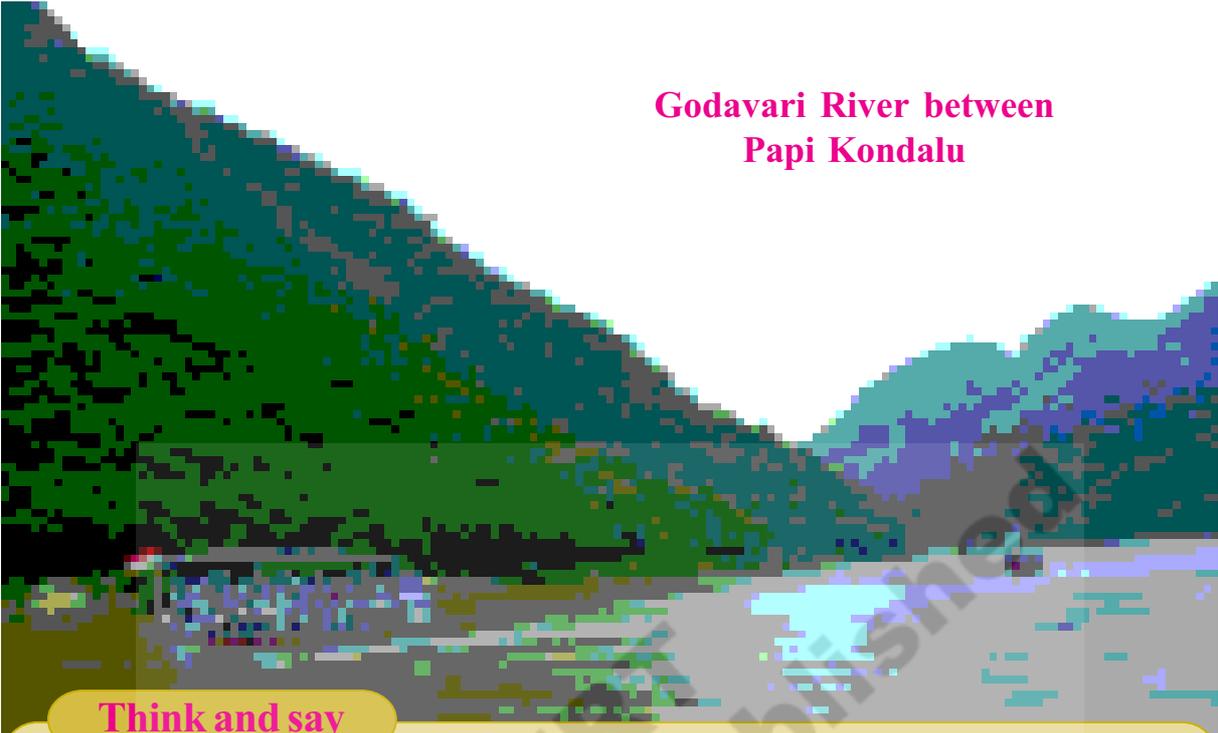
What you see in the picture is the fish called Pulasa. This is one of the rare fishes seen only in the districts of the East and West Godavari.

Its scientific name is Hilsa ilisha. Its a salt water fish. For breeding, it migrates to fresh water. In the months of august-september, the water in the river Godavari turns red due to floods. During this time, these fishes travel 1200 km in the ocean and enters the Godavari districts to lay eggs. Again, in the next two months, the young ones swim back to the ocean. Thus, when they swim to the river, they are caught in the nets. They have a huge demand in the market, the big fish is sold for upto two thousand rupees. The researches prove that, these fishes are rich in omega 2 fatty acids and are good for health.



## 8.4. Water transport

The river Godavari is not only providing livelihood to the fishermen but it also is a tourist destination for the travellers. Many, take pleasure rides on ferries from Rajamundry to Bhadrachalam between the Papikondalu hills. Our state tourism department is operating the launches for tourists.



## Godavari River between Papi Kondalu

### Think and say

- ◆ Did you ever travel on a boat or a launch?
- ◆ Why do the tourists get attracted to travel on the river?
- ◆ Do you like to travel like the tourists as shown in the picture. Why?

## 8.5. Dams - crops

The first dam built on the river Godavari is at Gangapur. It supplies drinking water to the cities of Nasik and Triambakeshwar. The other projects on it are Jayakawadi. Sri Ram Sagar, Dhavaleshwaram. These provide water for irrigation to lacs of acres both in Maharastar & A.P.



### 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 production of electricity. With the Devadula Ethipothala Programme in Warangal we are trying to supply water to Warangal, Karimnagar, and Nalgonda Districts.

Maharashtra and Andhra Pradesh grow crops like sugar cane, paddy, cotton, tobacco, chilly and fruit orchards using the Godavari waters. The land where the Godavari river meets the ocean is very fertile. In this delta land, paddy and coconut are grown. Konaseema, in the East Godavari district is in this delta and is an extremely beautiful place. The Godavari delta in the East Godavari with rich coconut and peedy crops and with its rich greenary called Konaseema. Tourists visits konaseema and Harti culture gardens.



### Scenic beauty of Konaseema

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 these uprooted people.

#### Group work



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

#### Do you know?

The expanded area of the Godavari river and its irrigated area is 3,12,812 sq.km. This is 1/10<sup>th</sup> 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 the humans have been living at the banks of the rivers. They grow crops and develop settlements. This development is natural, as it provides water for drinking and irrigation. They become the natural resources for progress & livelihood. Many ancient cities and villages were located near the rivers. In these places, the people got developed culturally and socially. Most of the human civilization, in the world, started near the rivers. The archeological excavations have revealed many buildings constructed along the rivers.

The land along the Godavari is the centre for spirituality and culture. Kumbha mela is celebrated at Nasik. Triambakeswar is among the twelve important jyothirlingas of lord Shiva. Paithan was the kingdom of the Satavahanas. In Nanded,



**Bhadrachalam Temple on the bank of Godavari River**

the famous Sachkhand Gurudwara is located. The famous Saraswati temple, is located at Basar in Andhra Pradesh. Nirmal is famous for toys. The temples like Laxmi Narasimha Swamy at Dharmapuri, Rama temple at Bhadrachalam and Goutamishwara at Mavithani are the centres of religious importance. Once in every 12 years, Pushkar mela is

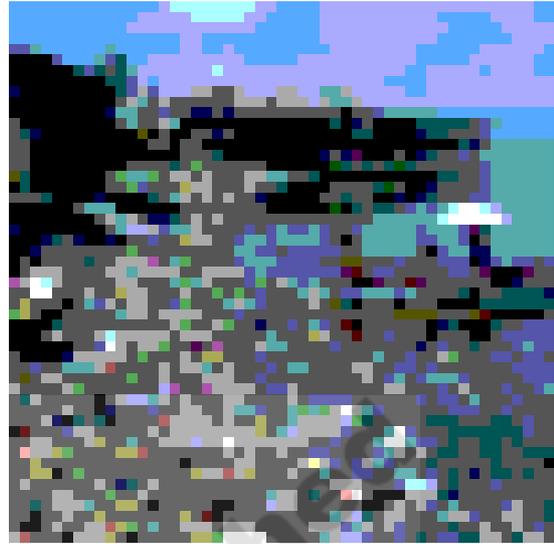
organised on the bank of the river Godavari. It lasts for 12 days. It is considered to be auspicious to take a dip in Godavari water during that time.

### Think and say

- ◆ Why are the villages and cities established along the rivers?
- ◆ Is there any development along the river land where 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 Ramagudam. Paper mills are located at Bhadrachalam, Thermal power station is located at Kothagudem and natural gas power centre is at Vijjeshwaram. Nanded and Aurangabad 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. This results in the pollution of the river and the water becomes unsuitable for drinking. The people who visit the rivers also add to 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 about the causes of water pollution. What are its consequences? How to prevent it?

## 8.8. Drought, floods



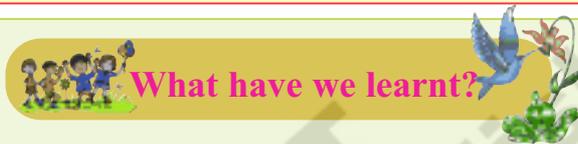
During scanty rains, there is very little flow in the river Godavari. With this the water level in the reservoirs comes down. These type of drought condition leads the farmers and their families to adverse situations and losses.

When there is heavy rainfall, floods occur. The floods inundates the land near the river. The crops and the yield get swept into 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, may occur. Due to floods lot of water is lost to the ocean. Embankments have been built to avoid flood water from river & canals. These embankments saved hundreds of villages from flood water.

*What should we do in order to use the flood water?*

## Keywords

Livelihood	Western Ghats	Tributaries
Industries	Tourists	Dams
Migration	Refugees	Ethipothaala Programme
Delta	Paper Industry	Civilisation
Thermal Power Station	Breeding	Excavations
Pollution	Drought, Floods	Established
Spiritual Centre	Bund	Acquatic life



### What have we learnt?

#### 1. Conceptual understanding

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

#### 2. Questioning and hypothesis

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

#### 3. Experiments - field observations

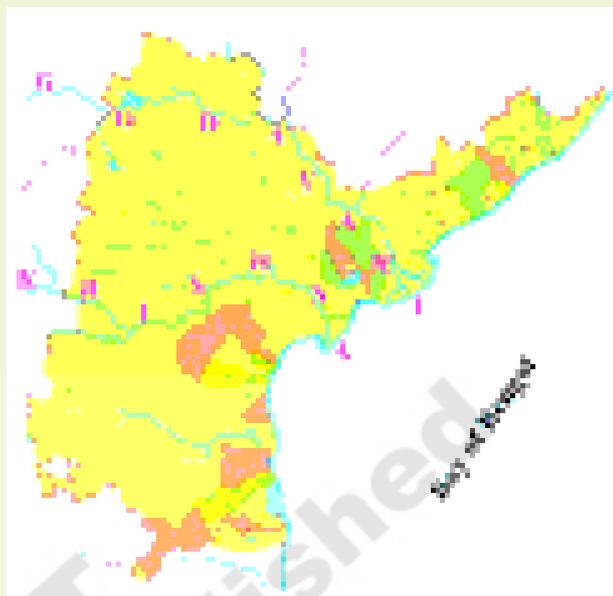
- Visit a river or a canal or a lake near your place. Observe the various activities being polluting the water. Explain the ill effects of those activities.

#### 4. Information skills, projects

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

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

- Observe the map given here. Write the name of the 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?

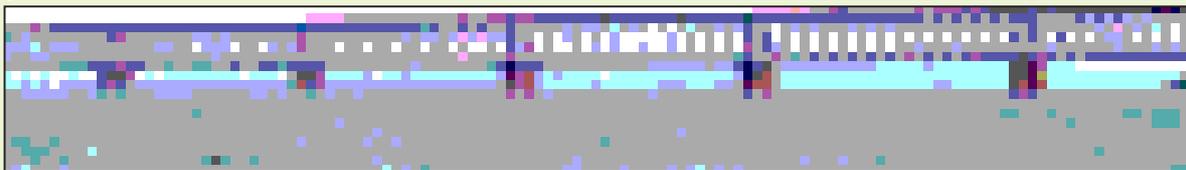


## 6. Appreciation, values and creating awareness towards bio-diversity

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

### Can I do this?

- I can explain about the impact the rivers on civilization agriculture etc. Yes / No
- I can ask questions on rivers. Yes / No
- I can identify the river flowing through regions on the map of our state. Yes / No
- I can explain about the significance of the river Godavari. Yes / No
- I can collect information and explain about the industries and temples on the banks of the rivers. Yes / No



### 9.1. Blowing of wind

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

*Observe the figures given below and identify in which direction the wind is blowing.*



#### Group work



- ◆ In the same way you draw more figures and ask your friend to identify in which way or direction the wind is blowing.

Due to gravitational force, rotation and revolution of the earth, the wind always blows from one place towards 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.

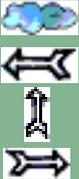
## 9.2. Atmosphere

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. You can listen to the news to know about the weather. Does weather have stability? Is it the same every day? Do you remember what was the weather one week before? Was it hot or cold? Was it a windy day? or was it cloudy? We observe the weather daily and note them down the details you would become more knowledgeable.

Some symbols are given below to note the atmospheric or weather report

1. When the sky is cloudy 
2. When the sky is sunny 
3. If it rains 
4. If there is a hail storm 
5. If wind blows from east to west 
6. Wind blows from west to east 
7. Wind blows from south to north 
8. Wind blows from north to south 
9. If weather is cold 
10. If sun is it sunny 

Keval, Samhitha, Manogna, Pragna are studying in V<sup>th</sup> standard. They noted the weather report for one week.

Day	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday
1 week							

### Think and say

- ◆ Have you seen the weather report table given? How is the weather according to you?
- ◆ On how many days was it cloudy and how many days was it cold in the last week?
- ◆ In which direction does the wind blow most of the time in a week?
- ◆ Is the weather cold on a cloudy day?
- ◆ On which day of the present month there was rainfall and what type of rainfall was it?
- ◆ Can we say that it will definitely rain on a cloudy day?
- ◆ According to the report what could be the season.

### Do this



- ◆ You have seen in the above table how to denote weather report with symbols isn't it?
- ◆ 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 <sup>st</sup> week							
2 <sup>nd</sup> week							
3 <sup>rd</sup> week							
4 <sup>th</sup> week							

### Group work



Answer the following using the atmospheric table prepared by you

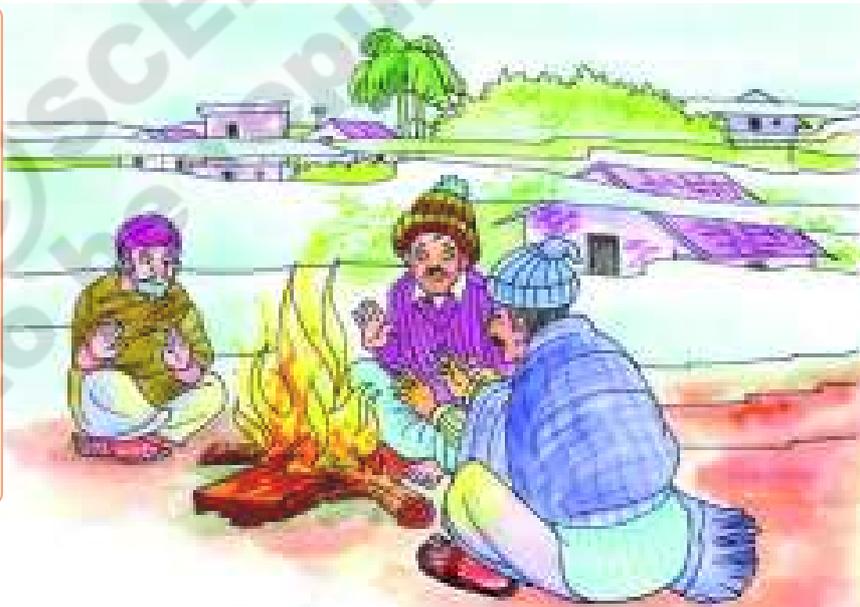
- ◆ How many days are cloudy in the month?
- ◆ How many days the wind blew strongly and in which direction?
- ◆ How many days were sunny or cold in the month?
- ◆ How many days had rainfall? What was the type of rainfall?
- ◆ According to the details observed what could be the season? Guess?
- ◆ Is your guess right?

### 9.3. Seasons

According to the climate the year is divided into three seasons. They are winter season, summer season and rainy season. Now, let us know about the seasons.

#### 9.3.1. Observe the picture and say

- What is there in the picture?
- What are the people in the picture doing?
- Why are they doing so?
- What could be the season?



### Group work



- ◆ How is the winter season?
- ◆ What do you do to protect yourself from the winter season?
- ◆ What type of clothes do you wear?
- ◆ Animals also feel cold in winter? What will they do to protect themselves from cold? What will you do for them?

## Winter season

Weather will be cool in winter season. We find the coconut oil to be frozen, sun rise is delayed and it sun sets sooner in this season. We like to sit in the sun during this season. Everyone wears colourful, sweaters, rugs and shawls. People return home as the sunsets. We find comfort in the sun. Butterflies sit on flowers. Nightingale's sing in winter season. Mango trees start blooming. We find fragrance of flowers all round. Yellow flowers of mustard bloom. Nature looks beautiful with all these things.

### 9.3.2. Observe the picture and say



- What are the people doing in the picture?
- Why are they doing so?
- What could be the season?
- What will you do in this season?
- Summer season falls in which months?
- How is the weather in summer season?
- What type of clothes should be used in summer season.
- Birds may not find water in summer, what do they do? What should we do?

## Summer season

Hot breeze blows. Crops are ready for harvesting. It is the harvesting season for wheat and also the season for mangoes. Mangoes are delicious fruits. Gradually the weather becomes hotter. Severe hot breezes makes the environment uncomfortable weather is more hot in April, may and june months. We like to swim or stay in the shade. We like to drink cold water and wear light cotton clothes. If we go out in sun there is always a danger of sun stroke / fever etc. Still children love the summer season. Do you know why?

### 9.3.3. Observe the picture and say

- What is the picture about?
- What is the boy doing? Why?
- What could be the season?
- How can we guess that it is going to rain?
- What will you do in the rainy season?
- How do you feel when it rains? What will you do?
- How is the weather in rainy season? In which month does the rainy season start?



#### Rainy season

Dense clouds, rains, thunder, lightning, rain water, paper boats, umbrellas, earthworms and raincoats are the characteristics of the rainy season. The sky becomes cloudy. There is thunder and lightning before the rainfall starts. It is a joy to play in rains. Ditches get filled with water, children play with paper boats, peacocks dance, frogs croak, wells, lakes, rivers, canals get filled with water and grass grows. Rainy season extends from July to August. Then the rains stop, gradually the temperature decreases and winter season begins. When rains are plenty, crops grow in plenty and everyone is happy.

#### Group work



- ◆ You have learnt about the three seasons, How is the weather in each season?
- ◆ What type of clothes should be worn in each season?
- ◆ What are the vegetables and fruits available in the respective seasons?
- ◆ In which season do we plant trees? Why?
- ◆ What measures are to be taken in different seasons? 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.

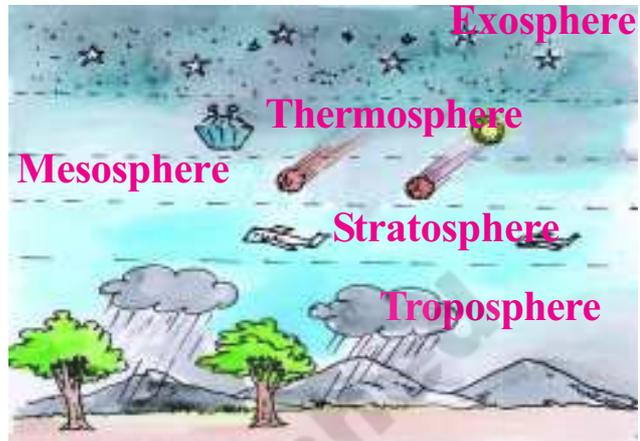
The layers of air around the earth is called atmosphere. Earth's atmosphere is classified into 5 layers based on differences in temperature. They are (1) Troposphere, (2) Stratosphere (3) Mesosphere, (4) Thermosphere and (5) Exosphere

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. Some times sky is cloudy, water vapour is high in the air, cool breezes blow and some times air is dry and hot breezes blow. On some days it rain and some times the days are hotter.

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 temperatures causes wind flows and changes in atmosphere.

Sunrays, wind, seas, rivers, trees, earth surface, the terrain, altitude etc are the causes of 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 news and from the news papers find the temperature in the morning, afternoon, evening and at night. Collect information, discuss it and display it your classroom.

## 9.5. Game with wind

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. You can also do so.

### 9.5.1. Can air make sound?

#### Do this



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

#### Think and say

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

#### Do this



#### Tup... Tup!?

What will you do with the wrapper after eating biscuits? Take one such wrapper. See whether it is empty. Make it wrinkle free by pressing it against a table.

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.

#### Think and say

- ◆ Can you flatten the air filled cover? Why not?
- ◆ When you burst the cover what happened?
- ◆ Did you hear the sound? From where is this sound produced?
- ◆ Did the cover tear? Why?
- ◆ Blow air into the balloon fully and prick it with a pin : What happened? Discuss after observing?

## 9.6. Musical instruments that work with the help of air

Observe the following figures and say their names.



### Think and say

- ◆ How will you play them?
- ◆ What is their relationship with air?
- ◆ Names 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 sticks. 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 sound. Coconut shell and the glass is empty inside. Hence, they make sound when beaten with sticks. So, air makes sound and occupies space.

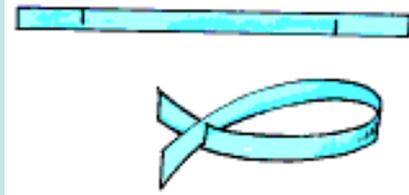
## 9.7. Air pressure

### 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 is the distance?

Children you play with ball isn't it? In the same way shall we 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 paper ball of that loosely, and throw. Note down the distance. Now make a ball tightly 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 falling at a greater distance when thrown?

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

- ◆ What happens when the threads are not of the same size.
- ◆ When does the cover open while throwing up or while falling down.
- ◆ What is the reason for the cover opening up?



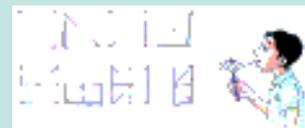
Observe the figure given. This is called a parachute. Parachute will fall slowly to the ground because air will stop them from falling freely. That is why the person holding the parachute will descend slowly to the ground. Airforce planes and helicopters have parachutes. They are used in emergency situations.

## 9.9. Power of air - wind mill

### Do this



Take a square shape 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. What do you observe.



### Group work



- ◆ Your wind mill rotates in which direction?
- ◆ Does it rotate in all directions?
- ◆ How long does it rotate?
- ◆ Why do wind mills and paper flowers rotate?
- ◆ What should 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 the wind mill.



### Do you know?

Air has many gases mainly, nitrogen, oxygen, carbon dioxide, water vapour etc. They don't have any taste or colour. In the same way air also has no taste or colour. These gases are present in air in the form of minute particles. Nitrogen is present in higher quantity, followed by oxygen and carbon dioxide.

## 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 a long time.
- ◆ Take a balloon and blow air in to 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 the air. Oxygen in the air helps organisms to live. Carbon dioxide in the air is used in the preparation of food materials by plants. Plants release oxygen. Plants and animals take in oxygen and release carbon dioxide. 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 vehicles tyres are filled with air?
- ◆ In what other objects do we fill air?

## 9.11. Air pollution

Observe the picture and say

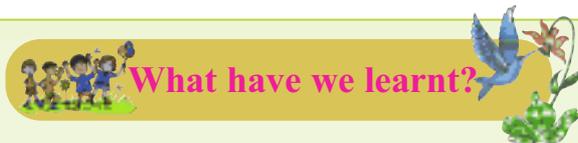


- What did you observe in the above picture?
- What happens due to that? What will happen to the air?
- What is air pollution? What should we do to stop air pollution?
- How do dust particles enter air?
- Let the sunlight fall in a room with the help of the reflection made by a mirror or the surface 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 up with air. Smoke from kitchens, factory chimneys and burning wood pollute the air. Health is affected when we breathe the polluted air. Some people smoke beedi, cigarette and release smoke into the air. By breathing this kind of air also we become ill and get diseases. Not only people who smoke but also people who breathe in that smoke get diseases of lungs, T.B., cancer etc. That is why we should take precautions to prevent air pollution, which is our responsibility. For this we have to plant trees. We should strictly punish the industries which emit dangerous smoke.

## Keywords

Atmosphere	Rainy season	Pressure / Force of of air
Wind flowing	Clothes according to the seasons	Air pollution
Atmospheric table	Air makes sound	Parachute
Winter season	Air has weight	Pure air
Summer season	Air occupies space	Wind electricity



### What have we learnt?

#### 1. Conceptual understanding

- How can you say that wind is blowing?
- How is the weather in different seasons?
- What measures are to be taken in summer season?
- What type of clothes should be worn in different seasons?
- In which season does the environment look green and beautiful? Why?
- Give examples to prove that air makes sound?
- Why does air become 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 will happen? Why it happens?
- Pour water on a brick? What did you observe? Why it happens?

#### 4. Information skills, projects

- ◆ Collect information about the things which work with air. Write their names and write their relation with air in two sentences.

#### 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

- Which instruments sound you like? How do you feel on hearing it?
- Polluted environment is harmful to health? What will you do to have a healthy environment?
- There are many industries around Sultanpur which are emitting (giving out) harmful smoke. By breathing this smoke people are becoming 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 denote the necessity of trees and display.

#### Can I do this?

- |                                                                                 |          |
|---------------------------------------------------------------------------------|----------|
| 1. I can explain clearly 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.      | Yes / No |
| 4. I can write a letter to pollution control board to prevent pollution.        | Yes / No |
| 5. I can make a poster with a message to plant trees to get fresh air.          | Yes / No |
| 6. I can explain about the properties of air.                                   | Yes / No |

**10**

## SUN AND PLANETS

It was the month of June that day, the weather was very sultry. Nithya and Radhika went to the terrace to sleep. They started talking to each other and looked at the magnificent night sky. Oh! How beautiful the sky is!' said Nithya.

### Think and say

- ◆ Why did Nithya say that the sky was beautiful? Think and give an answer.
- ◆ What are the heavenly bodies that you can see at night in the sky?
- ◆ Are these objects visible at day time?
- ◆ What are the objects which you can see in the sky during day time?

Observe the following figures



Picture-1



Picture-2

### Group work



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

### 10.1. Solar system

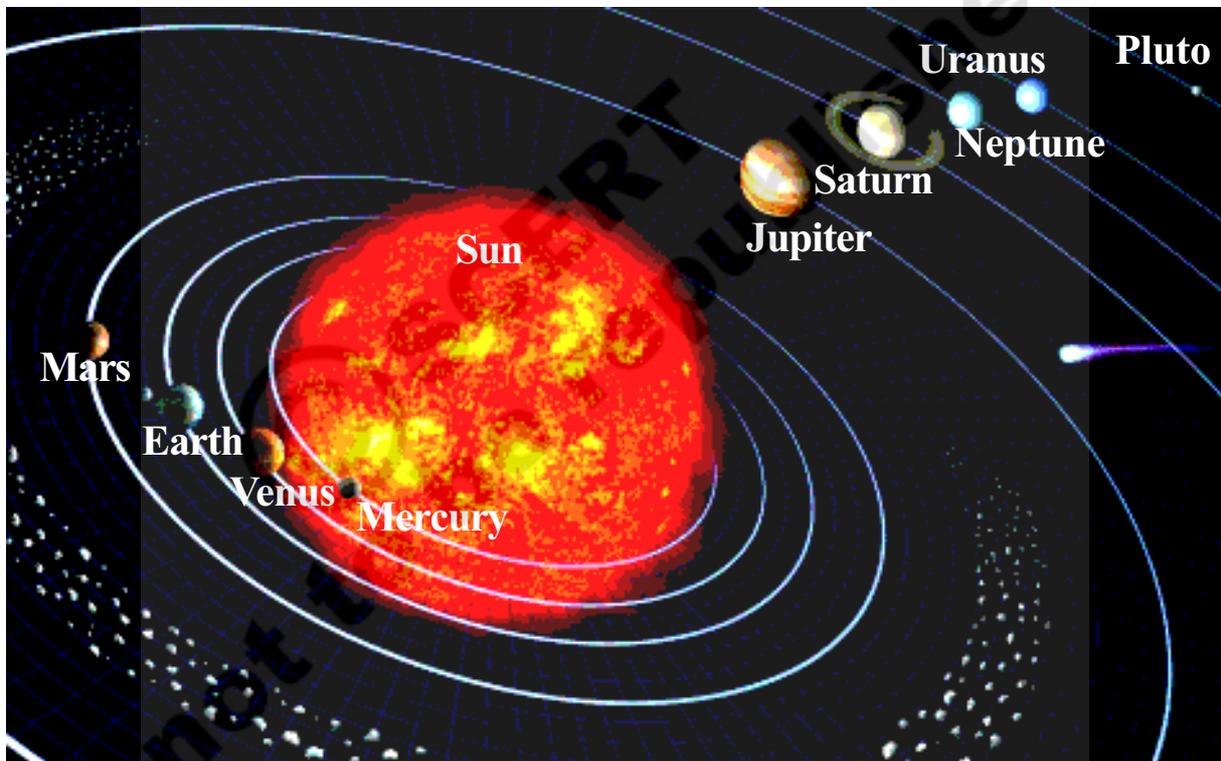
Along with the clouds, sun, moon, stars and our galaxy called the milky way we also have planets in the sky. Some can be seen easily but some cannot be seen without a telescope. The stars which twinkle in the sky at night appear small because they are far away from us. Every star is actually a sun. The aeroplane which can accommodate 250-500 passengers looks very small when it flies in the sky. Why? Think.

### Do you know?

Sun is a star. It is nearer to the earth when compared to all the other stars in the sky, hence it appears bigger. It constantly emits light and heat. Sun appears like a burning ball of fire. Sun is the only star in the solar system. Sun's rays travel in all directions. It is the main source of energy for all the planets in the solar system. Some portion of this energy in the form of light and heat reaches the earth's surface. Earth and other seven planets revolve round the sun, in elliptical orbits.

## 10.2. Sun-Nine planets

Observe the following figure:



### Group work



- ◆ Which of the objects is the largest in the figure?
- ◆ When compared to the sun what is the size of the earth? Which is the biggest planet?
- ◆ Which planet is nearest to the sun?
- ◆ What is the position of earth from the sun?
- ◆ Apart from the sun what are the other objects which you can observe in the figure? What are they called?

The objects that revolve around the sun are called planets. Earth is also a planet. Including the earth there are eight planets in all revolving around the sun. The sun and the planets put together form the solar system. "Pluto" which is seen in the figure was also considered a planet previously. But now it is not considered as a planet. Previously there were nine planets, but now there are only eight of them.

### Do this



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

### Think and say

- ◆ What is the position of venus from the sun?
- ◆ Which is the biggest planet?
- ◆ Which planets are nearer to the earth on its either sides.
- ◆ Which planet has rings around it?
- ◆ Which planet is farthest from the sun?
- ◆ Is mercury hotter than Earth? Why?
- ◆ Which planet takes maximum time to revolve round the sun and which planet takes minimum time?

### Do you know?

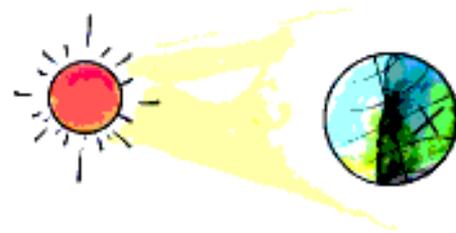
Never look at the sun directly. It will harm your eyes severely.

## 10.3. Day, night

By looking at the sky Nithya got some doubts

- Why is the dark night always dark?
- How are days and nights caused?

Look at the figure given, and give the answers



### Think and say

- ◆ Observe the part with 'x' in the figure.
- ◆ What is the difference you observe in the parts with 'x'.



Earth is almost spherical in shape though its shape is not like a perfect sphere. It rotates about an imaginary straight line passing through the north and south poles, once in 24 hours, causing day and nights. It is day time on the side of the earth which faces sun and the opposite side has night.

The movement of earth around itself is called "Rotation". Earth rotates at a speed of 30 km. pr second in the universe. No other planet of the solar system has the same mean orbital speed. Earth not only rotates around itself but also, revolves round the sun. This is called "Revolution".

Earth takes 24 hours for one rotation. This 24 hours is called a day. The 24 hours in a day is divided roughly into 12 hours of day time and 12 hours of night time.

### Think and say

- ◆ What is the position of the sun when it is afternoon time for us?
- ◆ Why the appears to be hotter than the evenings?

*The Globe in your school is also in the shaped of a sphere and like the earth.*

### Do this



With the help of your teacher demonstrate how day and night is caused using a Globe and a candle. Day is caused in the side A, which is facing the candle and for the B which is on the opposite side it is night. Torch light can also be used instead of a candle.

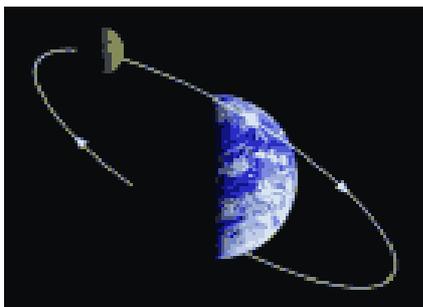
Earth rotates from west to east that is why the sun rises in the east and sets in the west. This also can be shown with the help of the Globe and the torch light. Focus the torch light on the rotating Globe for this activity.

### Group work



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

## 10.4. Earth - moon



Moon is the natural satellite of the earth. An object which revolves around a planet is called its satellite. Moon rotates in a fixed circular orbit around the earth. It takes 28 days for one revolution. Moon is a non-luminous body and moon takes reflect the

light of the sun falling on its surface. When the moon is orbiting its illuminated half is towards the sun. Only on full moon day we can see the whole of moon, on other days only a part of it is visible. Moon takes 28 days to orbit the earth taking different shapes. Like earth, moon and other planets also rotate around themselves. Moon revolves around Earth and Earth revolves around the sun.

### Do This

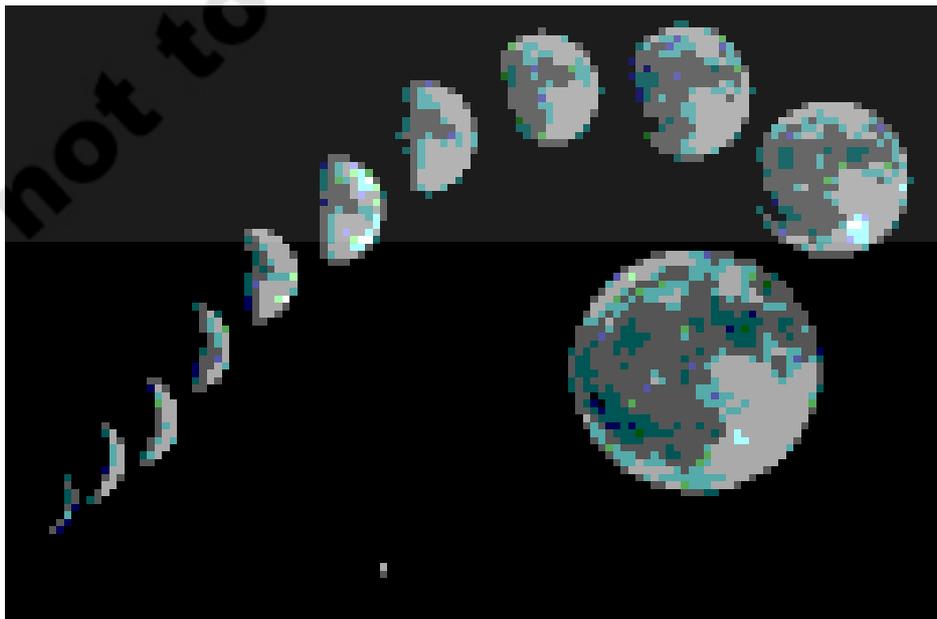


Observe the moon for one month and record your observations

- ◆ On how many days do you find the moon with perfect round shape.
- ◆ On which day did the moon appear completely spherical?
- ◆ Why moon is not on some visible days?
- ◆ When is the moon not seen at all?
- ◆ Find which festivals are celebrated when the moon is seen fully 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 frequently. It appears from the earth that moon takes its shape according to the changes in the absorption of sunlight by the moon's surface.



## Keywords

Sky	Night	Sunrise
Stars	Planets	Sunset
Orbit	Satellites	Earth's rotation
Day	Solar System	



### What have we learnt?



#### 1. Conceptual understanding

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

#### 2. Questioning and hypothesis

- What happens if the earth does not rotate?
- What happens when there is no rainy season?
- What questions would you ask 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 and record your observations.

#### 4. Information skills, projects

- Collect information regarding the time of sunrise and sunset for a week, and discuss the information gathered.
- 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?

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

- a) Draw a painting to show sunrise.
- b) Prepare a model to show the sky at night.
- c) Draw the different shapes of the moon that you see in the sky for 15 days.
- 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 sun and moon?
- d) Observe the sky at nights and write your experiences.

### Can I 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 to show the formation of day and night.                     | Yes / No |
| 4. I can analyse the information collected regarding sunrise and sunset for a week. | Yes / No |
| 5. I can draw the shapes of clouds, sky, sun and moon.                              | Yes / No |
| 6. I can prepare a model of solar system and display in the class room.             | Yes / No |
| 7. I can explain about the rotation of the earth.                                   | Yes / No |
| 8. I can say why the nights are dark.                                               | Yes / No |
| 9. I can explain the importance of sun in human life.                               | Yes / No |

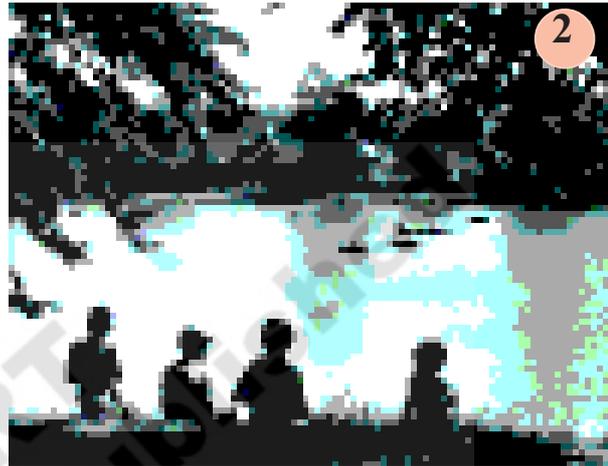
11



### 11.1. Observe the picture and say



1



2



3

- What do we see in the picture? What are the people in the picture doing.
- Where are the children sitting in the first picture? What could happen due to that?
- Where are the children sitting in the second picture what accident could possibly happen because of that?
- Where are the children playing in the third picture? What could happen?
- What did you understand from the above pictures? What should be done? What should not be done?

Sometimes accidents may happen because of the things we do. Sitting on the railings, playing on the roads or on bunds of tanks, getting down from a moving bus, travelling more than the capacity of a vehicle etc are the causes of accidents. The measures taken to avoid accidents are called "Safety Measures" safety measures are essential daily rather than on occasions like playing or travelling.

## 11.2. When is safety needed?

Murali got ready to go to a Jatara with his family. They planned to go to the Jatara which was being held at a location 50 km away from their home, on a two wheeler. They prepared food items for lunch and filled water in bottles, they switched off the electrical appliances and the gas cylinder, they closed all the doors and windows before locking the house. Murali started off with his family. They followed the rules while travelling. He stopped at all red light signals. He parked his vehicle in the parking zone, when he stopped for any purchases.

### Think and say

- ◆ What did Murali do before locking up the house?
- ◆ Why did he do so? What happens if they are not done?
- ◆ What are the other precautions to be taken when you are planning to travel?
- ◆ Where and when should precautionary measures be taken?

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

We should follow safety measures at home also. Very small children, usually put whatever things they see, in their mouth. Parents should 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 both to elders as well as children and should be handled carefully. Recently we watched on news that children were killed because of falling into sumps / tanks. What are the other ways in which the accidents may happen? Think of them and decide what safety measures should be taken up?

## Group work



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

Some time ago there was a fire accident in a school in Tamilnadu many children were injured. Some children died in this accident. The TN government then thought of several precautions be taken in schools to prevent fire accidents or any other accidents. 1) Children should go in groups to school or they should be accompanied by the elders. 2) They should not take to or go with strangers. 3) Sometimes people who kidnap children give drugged biscuits or chocolates to the children. 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 the children 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 what will happen. We should not cross the roads at such places. We must cross the road only at Zebra crossing and where there are traffic signals. While going in



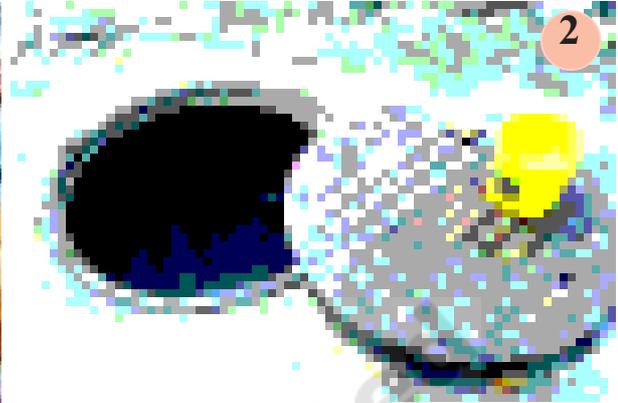
city buses we should get in or get down only when the bus stops completely.

### 11.3. Accidents - preventions

Observe the picture and say



1  
Opened hole of borewell



2  
Manhole kept open on a road



3  
Talking on cellphone while driving



4  
More people than the capacity of an auto



5  
Travelling on a bus



6  
Fire accidents in an apartment



7  
Road accident

#### Group work



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

We should take measures to prevent fire accidents. 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 during a fire accident. Fire engine controls the fire during the accident.



A pipe must be fixed and closed after a borwell is dug. A danger sign must be kept. There is a danger of children and elders falling into the open manholes. There are people who get lost after falling into the manholes, because, they could not see the open man holes when the roads were flooded with water in 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. you 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 cars must wear seat belt. As overspeeding is one of the reasons for accidents we should drive with in the speed limit. We should not drive fast to over take the vehicles.

#### 11.4. What type of safety measures are needed?

Crowded places need 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 should be taken up.

##### Group work



- ◆ What type of accidents might take place in crowded places?
- ◆ What precautionary measures do you take up?

##### Safety measures in Jataras

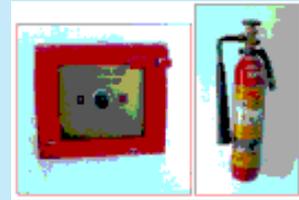
- Safe drinking water, parking place, hygienic food materials, health camp, toilets, fire engines, police help centre and arrangements to avoid drowning, barricades and announcements.

## Do you know?

### Fire extinguisher in Cinema Halls?

As part of preventive measures to avoid fire accidents in cinemahalls, offices and multistoreyed buildings fire extinguishers are fixed. Some are trained in using them.

Why do cinema halls have fire extinguishers. They are used at the time of accidents.



## 11.5. Water Accidents

Some students in Visakhapatnam went on a picnic to Rishikonda beach. They played in the sand for a long time. Then they wanted to bathe in the sea. They got into the sea. Four students drowned. In this way many students and youngsters meet with accidents in water.

### 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?

There is a lot of importance of water and water resources in our life. We need to go near 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 happen if more people get to the boat we must learn swimming to save our lives. Proper care must be taken at the time of picnics and attending Pushkaras.



## 11.6. Earthquake

Observe the picture and say



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

When the earth shakes violently we call it as earthquake. The tremors or vibrations of the earth are noted on a Richter scale. If the intensity of these vibrations cross seven points, earthquakes occur. 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 property loss. Government undertook many activities to help the victims of earthquake. People of the country extended their cooperation through donations.

### Things to be done during earth quakes.

- Do not move here and there, sit near the objects that do not move easily keeping four head between your hands.
- Be away from breakable things like mirrors windows etc.
- People who live in multistoreyed buildings shouldn't use lift.
- If you are out, stand away from the buildings bridges, trees etc.
- If you are travelling drive your vehicles slowly away from the above said things.
- Try to help the injured people.
- Observe whether there are any chances of trees getting uprooted, buildings and pillars collapsing. Only then go near them.
- Stop the Electricity supply.

## 11.7. Floods

Observe the picture and say



- What is seen in the picture? When do such things happen?
- Do you know about such happenings? What loss do the people incurred due to this?
- What precautionary measures does the government take up at such times?
- What care should be taken in such situations? What help can we do?

Sometimes due to sudden and heavy rains water accumulates in rivers and canals and they overflow. At times seas also overflow. Houses, roads, trees and pillars drown or get carried away. Such a situations is called flood. People become shelterless because of floods. Things in the houses get drowned in water. There will be no water to drink or food to eat. Small 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 our state in Diviseema in 1977 Mahabubnagar and Kurnool in 2009.



### Things to be done at the time of Floods

- Keep track of government warnings through radio and T.V.
- If you have to walk in the flood, do so by checking the way with the help of a long stick.
- Switch off all electricity supply.
- Go to the camps arranged by the government as a part of precautionary measure. Important things, like clothes, bedsheets must be taken along.
- Keep the things in the house in attics or high and dry places.
- Be careful while drinking water and eating food. Drink only chlorinated water.
- Do not neglect the warnings from the government.

### Think and say

- ◆ How the people in the flooded regions can be helped?

### 11.8. First Aid

Accidents may happen even after taking precautionary measures. First aid must be provided in such situations. Only those who know how to give first aid, must try it. The aid / help given to the patient or the victim before taking him/her to the doctor is called first aid. Along with providing proper treatment to save their lives.

### Do you know?

Medical personnel in 104 vehicle visit a village daily and conduct medical tests on the villagers. They give the required medicines freely, explain the care to be taken for their health. There is a doctor and other staff in the vehicle. They explain the precautionary measures to be taken for their health. If you dial 104, free medical suggestions are given.



### Group work



- ◆ Have you ever done first aid? When and Where, What did you do?
- ◆ What first aid is usually given to the injuries in 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 things needed are there in the box. Buses also have first aid boxes, have you observed?



People who give first aid must wash their hands and if possible wear gloves before cleaning the wounds. We should not directly use antiseptic lotions like dettol.

They should be added to water and then used to clean the wounds. Ointment must be applied to the wound sufficient cotton must be put on it and then it should be plastered with a guaze. In case of sprains ice must be applied after it is wrapped up in polythene covers. Do not apply ice directly.

### Do you know?

1. Flash flood of half a feet depth can make a person fall.
2. 1 feet deep flood can make the vehicles like car fall.
3. Flasht flood of 2 feet depth can carry cars away.

## Life saving principles

We should follow three life saving principles.

### First life saving principle

Make the patient lie on the back and loosen the clothes, remove blocks in the air passage. Bend the head to a side as per the situation.

### Second life saving principle

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

### Third life saving principle

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.

## Think and say

- ◆ What should you do in case of Sprains?
- ◆ What should you do in case of fractures?
- ◆ What should you do in case of burns?
- ◆ What should you do in case of poisoning?
- ◆ What should you do in 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. Tie a crape bandage available in medical shops. Untie only at bed time. Keep the sprained part up.

### **In case of burns**

Keep the burnt part under cold running water for 15-20 minutes. If the burns are too severe, only then ointment must be applied. Remember - never pinch the blisters, never tie a bandage, never rub, never apply ice. Do not run in case of fire accidents but stop, drop and roll.

### **In case of poisoning**

Give lots of water to the person to decrease the intensity / severity of the poison before taking the person to the hospital. If the person either vomits or become unconscious, it indicates a medical emergency and doctor's help would be needed immediately.

### **In case of unconsciousness**

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

### **In case of heart attack**

Pain in the chest is thought to be 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 fracture**

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

## Group work



- ◆ How to recognise paralysis in old people?
- ◆ What should be done incase of dog bite?
- ◆ What first - aid should be given to a victim of snake bite?
- ◆ What do you do incase of a sun stroke?
- ◆ What should be done if a chemical falls into the 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 his mouth is crooked and he cannot speak properly and is unable lift his hand, we should take him to the hospital in the first hour (Golden hour).

### In case of dog bite

Wash the bitten area (monkeys bite, cats 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 take care 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, vommitings and severe headache. Do not allow the person 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 electrol water.

### In case of chemical falling into the eyes:

If any chemical falls into our eyes while experimenting in the lab or in the house, we should clean the eyes with cool running water for 15-20 minutes. But we should not rub the eyes even if there is sever burning sensation. We should bend our head to a side so that the affected eye is cleaned without casusing any trouble to the uneffected eye. Affected eye should be treated with cool running water for 15-20 minutes

### **In case of nausea (vomiting)**

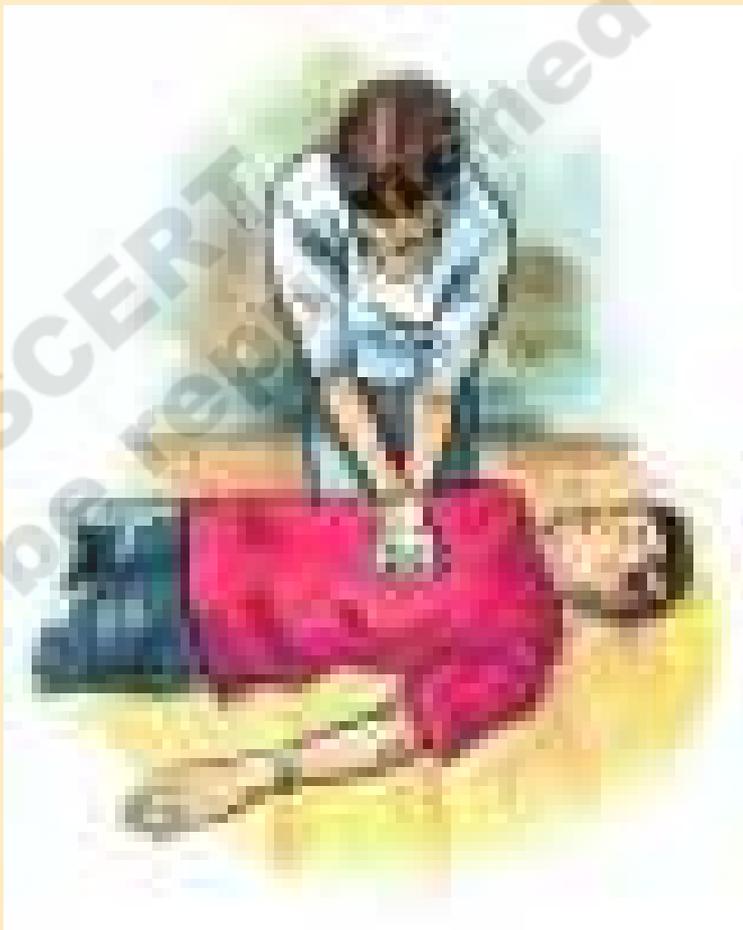
When we stand in assembly for a long time without eating properly there are chances of us becoming unconscious due to exhaustion. In such a case instead of slapping him if you keep his legs up and bend his head sideways there is a possibility of that person gaining consciousness. Usually a person becomes 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 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 - Ressuscitation 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 him oral respiration twice. Thus we should try thrice in a minute till the heart beats again. Do not forget to close the nostrils & lift his head during artificial respiration.



## Group work



- ◆ What do you do if anything blocks the throat?
- ◆ It bleeds when injured, how to stop the bleeding?
- ◆ What to do when the nose bleeds?
- ◆ What should we do in case of 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 when hit. 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 there is a little chance of bleeding being stopped, 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 press. Do not try to stop bleeding in the person is suffering from B.P. The bleeding stops as it works as a safety valve in them.

### In case of electric shock

In case of a 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 suggestions of WHO we should not tie, cut or suck the blood in case of snake or scorpion bite. There is a possibility of blood circulation being blocked if you tie. Tetanus injection must be taken in case you get cut by a blade or a knife. There is danger of the persono who is sucking the bitten persons blood also becoming pensioned.

## 11.9. Who helps?

If you happen to be near the accident spot try to help the patients. Use the facilities provided by the government. Government is providing 108 vehicle to render immediate help to the persons who get involved in accidents.



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, ambulance or police as per the need. They help immediately, so 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. The members of St. John's Ambulance are creating an awareness on first-aid among school children. If they are consulted, they will give a presentation on first-aid at the Schools.

We should not neglect the road accidents. Many people do not care for the wounded people. This is highly objectionable and unpardonable crime. We or our friends and relatives also may meet with accidents. What would happen if no one cares? Think...

Even crows also gather around their fellow crow when something untoward happens. We should be better than crows. We should take the wounded person to hospital by keeping a side all our work. Thus we become life savers. Their family will be grateful to you.

### Key words

Safety measures	Natural calamities	Water accidents
Accidents	Fire accidents	Road accidents
Earthquake	First aid	108 Vehicle
Floods	Life saving principles	104 Vehicle



## What did we learn?

### 1. Conceptual understanding

- a) Why should we take safety measures?
- b) When is first aid needed?
- c) What precautions should be taken in a journey?
- d) Whom do you call if a house is on fire in your street? Why?
- e) Ramesh's grandfather was bitten by a snake. His father took him to the people who recite mantras? What will you do? Why?

### 2. Questioning and hypothesis

- a) What questions will you ask to know more about 108 services?
- b) What questions will you ask the electrician to know more about the care to be taken to avoid electric shock.
- c) Fire engine came to 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) Visit an accident spot which is nearby. Record your observations.
- c) Visit an office, cinema hall or industry nearby. Observe the safety measures taken.

### 4. Information skills, projects

- a) Collect the details of the 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.

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) what help would you do?
- What is the need of first aid? What can you do if you learn it?

#### Can I do this?

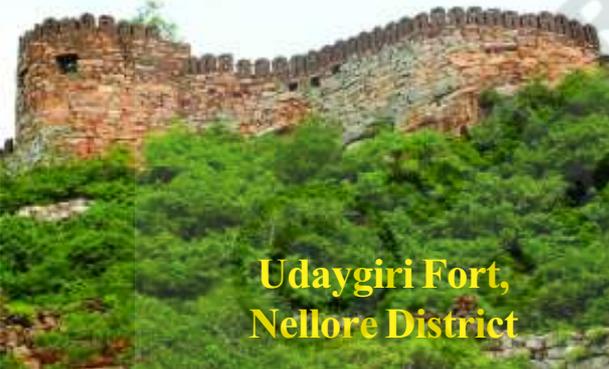
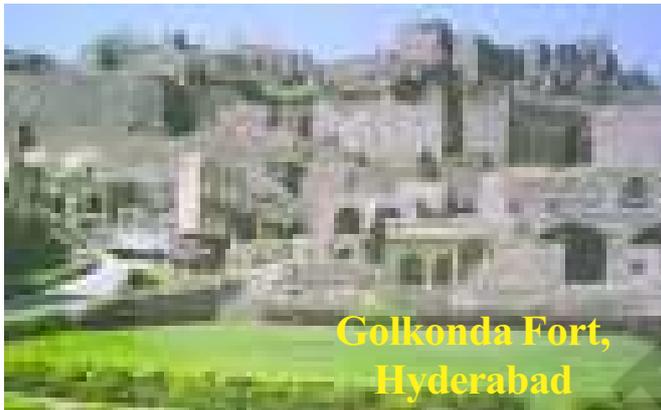
- I can talk about safety measures. I can explain where and how to take safety measures. Yes / No
- I can observe and record the details of an accident. Yes / No
- I can collect the details from health workers. I can collect the emergency services phone numbers. Yes / No
- I can help in a natural calamity.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

12



## HISTORICAL SITES - CHANDRAGIRI FORT

### 12.1. Observe the picture and say



- Do you know any of the above forts and where they are? 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 on either seeing them or studying about them?
- Identify the above forts / sites on the map of our state.

## 12.2. Chandragiri fort

There are many forts like Golkonda, Penugonda, Gadwal, Orugallu, Chandragiri etc. in our state. They were constructed by the kings for protection from the enemies and also as a mark of victory and glory. Today they remain as evidences for the hundreds of years of history. Shall we learn more about those rulers and their constructions?



What, you see above is the Chandragiri Fort. It is located in the Chittoor district of our state. It is 14 km. away from Tirupati. Are you interested to know, how the fort got its name? The local myth says that once, the moon (Chandra) did penance on this hill. Lord Shiva was pleased and gave him boons. Hence the name, Chandragiri.

### Collect...



- ◆ Enquire, how your village got its name, from the elders.
- ◆ List the historical places near your place.

### 12.3. Gateways of the Chandragiri fort

The fort has two gateways.



Gateway - 1



Gateway - 2

The two gateways are 1km apart from each other. The way leading to these gateways is in the shape of the letter 'Z'. Huge fort walls, exist on either side of both the gates.

We can reach Chandragiri Fort after crossing these two gateways. Would you like to know about the ruler, who built this fort? He was, Immadi Yadava Narasimha Rayalu and the fort was built in 1000 A.D. He used to rule over Narayanavanam, near the city of Chandragiri.

#### Think and say

- ◆ Can you guess, why the way leading to the main gateways is in the 'Z' shape?
- ◆ How old is the fort?

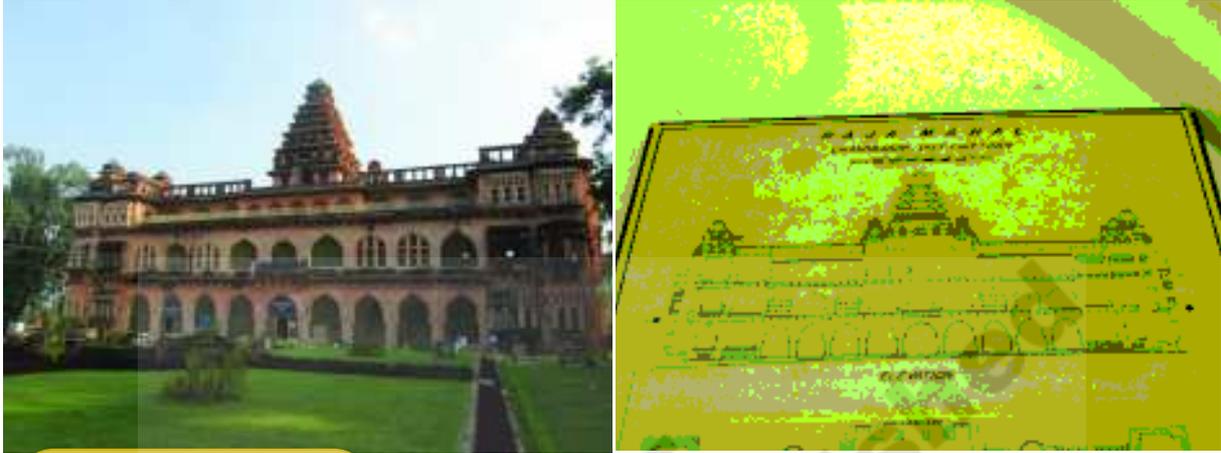
Around, 500 years back, the Saluva Kings of the Vijayanagara Empire, took over this fort. King Narasimha Raya of Saluva dynasty ruled Chandragiri and stayed in this fort. During his period, the city developed rapidly. Chandragiri served as the capital city for the Vijayanagara Empire, till they were defeated in the war of Tallikota (Rakshasa Tangadi). Initially, Hampi was the capital city. It was shifted to penugonda and from there to Chandragiri.

Later, the Araveti dynasty ruled the Vijayaagara Empire, with Chandragiri as their permanent capital city. Further, during the reign of Sri Venkatapathi Deva Raya of Araveeti dynasty, this fort became famous.

*Think of the reasons for these forts being ruined which were the much glorified places of the past.*

## 12.4. Raj mahal

The Chandragiri Fort has several huge buildings. The most important among them is the Raj Mahal. Look at the pictures below.



### Think and say

- ◆ How many stories does the Raj Mahal have and how many arches does it have?



There are three Gopurams on the Raj Mahal. The middle one is taller than the other two.

The base of every Gopuram is broader and they become thinner towards the apex. This is called the Dravida style. The walls are made up of stones while the roof is built with brick and lime. There are verandhas and rooms in the mahal. This resembles the Indo-Turk style of architecture.

### Do you know?

- Sri Krishna Devaraya and a part of Manucharitra by Allasani Peddana were scripted during their stay, here.
- This is the birth place of Tenali Ramakrishna, the court poet of Vijayanagara Kings.

### Do this



- ◆ Observe the picture of the building carefully and try to draw it.
- ◆ Draw the plan of your house.

*Tenali Ramakrishna has written many stories on wit and humour.*

## 12.5. Rani mahal

Now that you know about Raj Mahal, lets know about Rani Mahal also!

Observe the picture, below, carefully.



### Group work



- ◆ How many floors does the Rani Mahal have?
- ◆ How many arches are there?
- ◆ Write the similarities of both the mahals.

The top floor of Rani Mahal was used when the King and the Queen wanted to address their people and for the meetings with the soldiers. Soldiers used to stay there.

## 12.6. Architechtural skills

You have learnt about, both the buildings - the Raja Mahal & the Rani Mahal. Now, lets recall, is their roof similar to that of your house? Its different. In the Raja Mahal, the roof is divided into many squares. In each square, there is a design. This design is called stucco. Stuccos remains as an example of the engineering skills of these people of those days.



### Think and say

- ◆ Observe the roof in the picture say the differences between these and the roof of our houses.
- ◆ See the picture given beside. Comment on the style of construction.
- ◆ Which material is used more?
- ◆ Why did they use it?



Stone is the basic material used for the construction. The windows on the four sides, the stair case and the arches of the Raj Mahal were built with the stone.

### Group work



- ◆ Can you tell what was the time taken for the construction of these buildings?
- ◆ How many people might have built this?
- ◆ Presently what materials are used to build the houses?
- ◆ How many workers are involved in it?

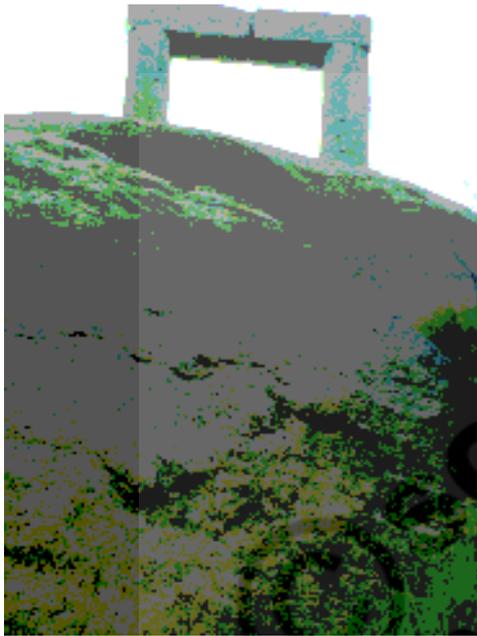
### 12.7. Fort walls



The Fort wall surrounds the entire fort. This wall is huge and wide. In between there are watch towers. Adjacent to the fort wall, is there a hill, on which there is a mandapam. Today, during the month of karthika people light lamps in this mandap.

### Think and say

- ◆ Why the was watch tower built on the fort?
- ◆ Why does the watch towers have holes?
- ◆ In the second picture why did they build them on fort walls?
- ◆ The mandapam is seen the picture below. What might be the purpose of the mandapam?



Sri Krishna Devaraya used to visit Chandragiri fort to worship Lord Venkateswara. Then he used to reside in the Raj Mahal. During the rituals while worshipping the diety the bell was rung at the temple shrine of Tirumala. This was followed by the ringing of the bell in the Kalyana Venkateswara Swamy Temple, at the foot hills, in Tirupati. When this bell was heard at Chandragiri, then they would ring the bell at the mandapam. Then Sri Krishna Devaraya would perform puja in the Raj Mahal and would take his meal as prasadam.

There is another legend to it.

The punishments, in those days, were severe. The accused were hanged. For this a mandapam was built on the hill on one side in the fort, so that it was seen by everyone in the city.

### Think and say

- ◆ The punishments were severe. The culprits were hanged! It is right to do so?
- ◆ What do you suggest, how the culprits could be made to accept the crime and change their conduct?
- ◆ What else could we learn from the study of the Chandarigi fort and its buildings?

## 12.8. A rich heritage and culture

The then rulers constructed great buildings, temples, etc., These constructions reveal the rich heritage and culture of our country. They provide us best of the workmanship and the architechtural skills of those people. They guide us. In addition, they also tell us about the life style of the king and his people, their festivals and their rituals; the customs and the traditions; the mode of entertainment; the clothing of the pople etc., Hence we have to protect these historical sites.

## 12.9. Temples

The Chandragiri Kings built the temples of Lord Shiva and Lord Rama in the fort. The temple of Rama is in ruins whereas that of Shiva is in better shape and is visited by people even today. Here also, they used huge stones for the construction, except for Gopurams, which were built with bricks.



Lord Shiva Temple

The forts and the temples are huge and were built with the materials available locally. The workers were also local. Think of its significance.

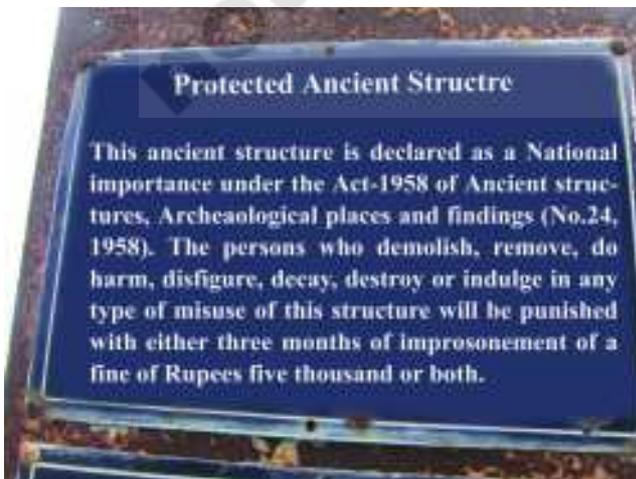
### Think and say

- ◆ What is the importance of the old and ancient temples?
- ◆ What are the differences between those and the present day temples?
- ◆ A few old temples are in ruins. How to protect them?

## 12.10. Save the forts from getting ruined

The relics of the Vijayanagara Empire and the sculptures in stone and metal from the temples were preserved in the museum. This museum is maintained by the Archeological survey of India (ASI).

It is our responsibility to protect the old structures as they reveal our culture and its greatness. Stop harming. Start saving!! Share with the future!!! Its our rich hertiage, it should be safely passed on as legacy to the next generation of people.

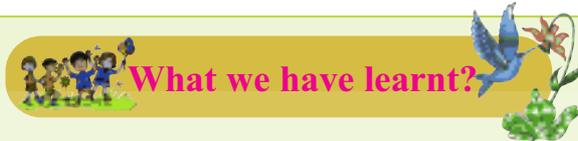


### Think and say

- ◆ List the 'Don'ts' when we visit the important places and the heritage sites / buildings.
- ◆ What is the significance of those buildings?

## Keywords

Fort	Gateway	Arches	Storey
Empire	Gopuram	Watch towers	Architecture
Defeated	Rajmahal	Mandapam	Wit & honour
Glory	Ranimahal	Ruins	Workmanship



### 1. Conceptual understanding

- How did the Chandragiri fort get its name?
- What information do we get from the old / ancient buildings and the forts?
- Describe the construction of the Raj Mahal.
- Write are the differences between the Raj Mahal & the Rani Mahal.
- Why were the forts built?

### 2. Questioning and hypothesis

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

### 3. Experiments - field observations

- Visit any building or an ancient temple nearby, observe and write a note on it.
- Archeological department displays a board near the historical sites and temples. Read it and explain it to your friends.

### 4. Information skills, projects

- Gather information about the historical buildings or the old temples of our state, in detail and tabulate it.

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

- a) Sketch the structure of the Raj Mahal.
- b) Point out the places - Tirupati and Chandragiri on the map of Andhra Pradesh.
- c) Prepare a model of a dome.
- d) Mark the districts where the forts, you have seen in the beginning of the unit, are located on the map of Andhra Pradesh.

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

- a) What are the important aspects of the Chandragiri Fort.
- b) The construction of the fort involved the labour of many people. Write a note appreciating their hard work.
- c) Is it necessary to protect the historical buildings? Give reasons.
- d) State, what precautions you take when you would visit the historical places?
- e) How can we protect these places?
- f) Name the materials used in buildings the forts. Where do they get these from?

### Can I do this?

1. I can explain the importance of the ancient buildings and forts. Yes / No
2. I can pose questions to know more about the ancient buildings. Yes / No
3. I can tabulate the information about these buildings, after seeking it. Yes / No
4. I can mark the places of these historical sites on the A.P. map. Yes / No
5. I can prepare sketch of these places and can prepare their models too. Yes / No
6. I can explain the necessity of protecting the historical buildings. Yes / No



13



### 13.1. Observe the picture and say



- Name the vehicles in the picture.
- 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 use? Which fuel second train uses?

Some vehicles need fuels like petrol and diesel to run. 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 for men and machines work and vehicles to move.

## 13.2. What do these need?



### Think and say

- ◆ What are the things in the above picture?
- ◆ What is needed by a fan to rotate?
- ◆ What is needed by a torch to give light?
- ◆ What is the reason for chilli drying up?
- ◆ What are the different stoves used in the above picture? What is needed by them to burn?
- ◆ How does an iron box get hot?

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

### Group work



- ◆ Write about some activities that use energy.
- ◆ Name 4 different forms of energy resources.
- ◆ Which energy resources do not get depleted even after using them.
- ◆ Which energy resources get depleted when used continuously?

### 13.3. Energy resources

Energy is obtained from different sources like sun, wind, water, petrol, diesel, kerosene, gas and coal etc. Among these petrol diesel, kerosene, gas, coal, water etc get depleted when used in excess. Resources like sun wind never get exhausted. The world needs energy for many things. Energy is needed for any work and for survival. Mankinds need for energy has increased because of the increase in consumption.

#### 13.3.1. Non - renewable resources.

Energy that comes from burning fossil 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 and in transportation, operating the various machines in industries and cooking food in the houses etc. These fuels are extracted from the earth. Trees and animals which were buried for lakhs of years inside the earth ultimately were transformed into fuels. We are using these fuels, petrol, coal and natural gas. In huge quantities and in couple of hundred years they will get exhausted

#### Group work



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

We should use energy resources as carefully as possible. Instead of wood, natural gas must be used. Nowadays gohar gas is produced from dung. This is called 'Gohar gas'. We should save even this. 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. Decrease the usage 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 bower stations using coal and water as their basic resources. By saving electricity, you can save these resources. It is our duty to conserve the non renewable resources.

### 13.3.2. Renewable energy resources

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

How do street lights light up with solar energy? When sunrays fall on the solar cells they and produce (current) electricity. We use the electricity in the battery when needed. Electricity produced during day time is stored in charge in the batteries. Which is use to light up the streets at night.



Solar street light

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



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 be operated using solar energy.

### 13.5. Wind energy

Wind means air. Does it 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 is moving the bulb lights up due to this dynamo. This implies that 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 do they run? Where do you find them?
- ◆ What are the uses of these fans?

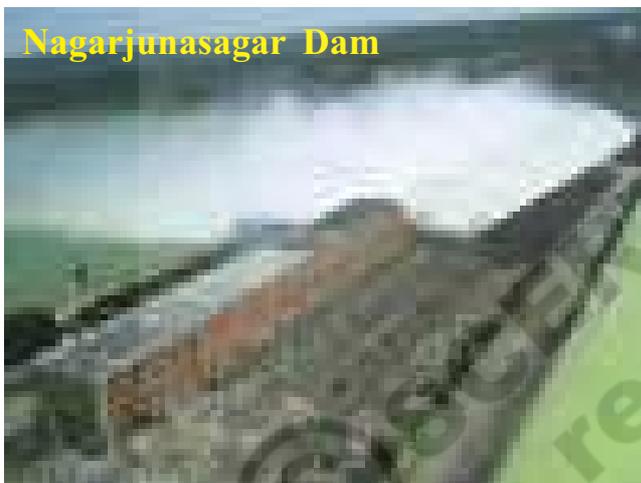
The large fans move when wind blows. When these fans move, electricity is generated due to the energy of the wind. These wind mills are arranged where the wind blows fairly well like on hills or on sea shores. Wind has the capacity to push things. Wind energy is used to rotate the fans, to pull out from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

## 13.6. Water energy

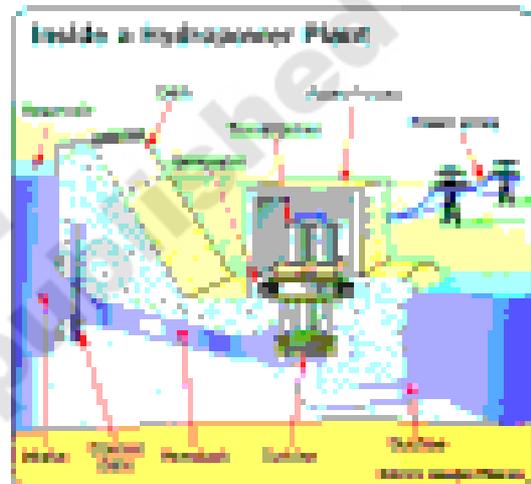
### Think and say

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

Water which is stored at a height and allowed to fall down. This energy water can be used in producing electricity. Electricity is generated in the hydro electric projects by the rotation of turbines by making water fall on them. Observe the picture of Nagarjuna sagar project given below.



**Nagarjunasagar Dam**



Nagarjuna sagar project in Nalgonda district and Srisaillam project in Kurnool district in Andhra pradesh use stored water to generate electricity. See the second picture, electricity generated using the water 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?
- ◆ In which month is electricity generated more? Why.
- ◆ What are the differences between hydro electricity and thermal electricity. Which electricity must be 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 use. Effective methods to use solar energy hydroenergy, wind energy must be found out by experimenting. You should try them in future.

Observe the following table.

S.No.	Diminishing, Depleting Non renewable reserves	Non diminishing, Non depleting Renewable reserves
1.	Petrol, diesel, kerosene, coal are the examples	Solar energy, wind energy, hydroenergy are the examples
2.	Cost High	Cost less
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 say

- ◆ Which resources should be used more from the above table? Why?
- ◆ Suggest same resources / energies in place of non renewable resources.

### 13.8. Conservation of energy resources

Energy is needed for our survival and prosperity. We should think of proper ways of utilising different energy resources in nature. We should try to conserve 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 say

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

### How to save fuels?

- Walk short distances. Thus we can save fuel and enhance our health.
- Use bicycles instead of cars motorcycles and scooters. This is the practice in many European countries.
- Travel in public transport systems like RTC buses and trains as far as possible. Do not use car for short distances. This causes traffic and pollution on roads.
- Do not use electric lamps as far as possible in the daytime. Open windows and doors to keep the house well lit and ventilated.
- Switch off the current while going out of the house and at nights while 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 in case of emergency.
- We should use natural air for cooling our bodies. Use fans only when needed. Air Conditioners won't be necessary 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 through food material. Do not waste food material. Do not over heat material because more fuel is used and the nutritive values are also lost.

### Keywords

Energy	Natural gas	Renewable energy
Current (electricity)	Hydro energy	Fuel energy
Solar energy	Fuel	Wind electricity
Wind energy	Hydro Electricity	Energy resources
	Non renewable energy	



## What have we learnt?



### 1. Conceptual understanding

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

### 2. Questioning and hypothesis

- Ask your parents how do they save electricity?
- Powercuts 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 are spent in a month? Observe and write how many units of electricity is consumed in your house. How much money is paid in a month towards electricity bill?

### 4. Information skills, projects

- Visit four of your friend's houses. 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	How many units are consumed	Electricity bill	Reasons

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

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

- a) Draw a picture on production of hydro electricity and explain.  
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. Wood is mostly used for cooking purposes. What 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, solar energy? Why? Which among the above should be saved? What can we do?  
c) Display slogans to make everyone aware that water and electricity must be saved.

#### Can I do this?

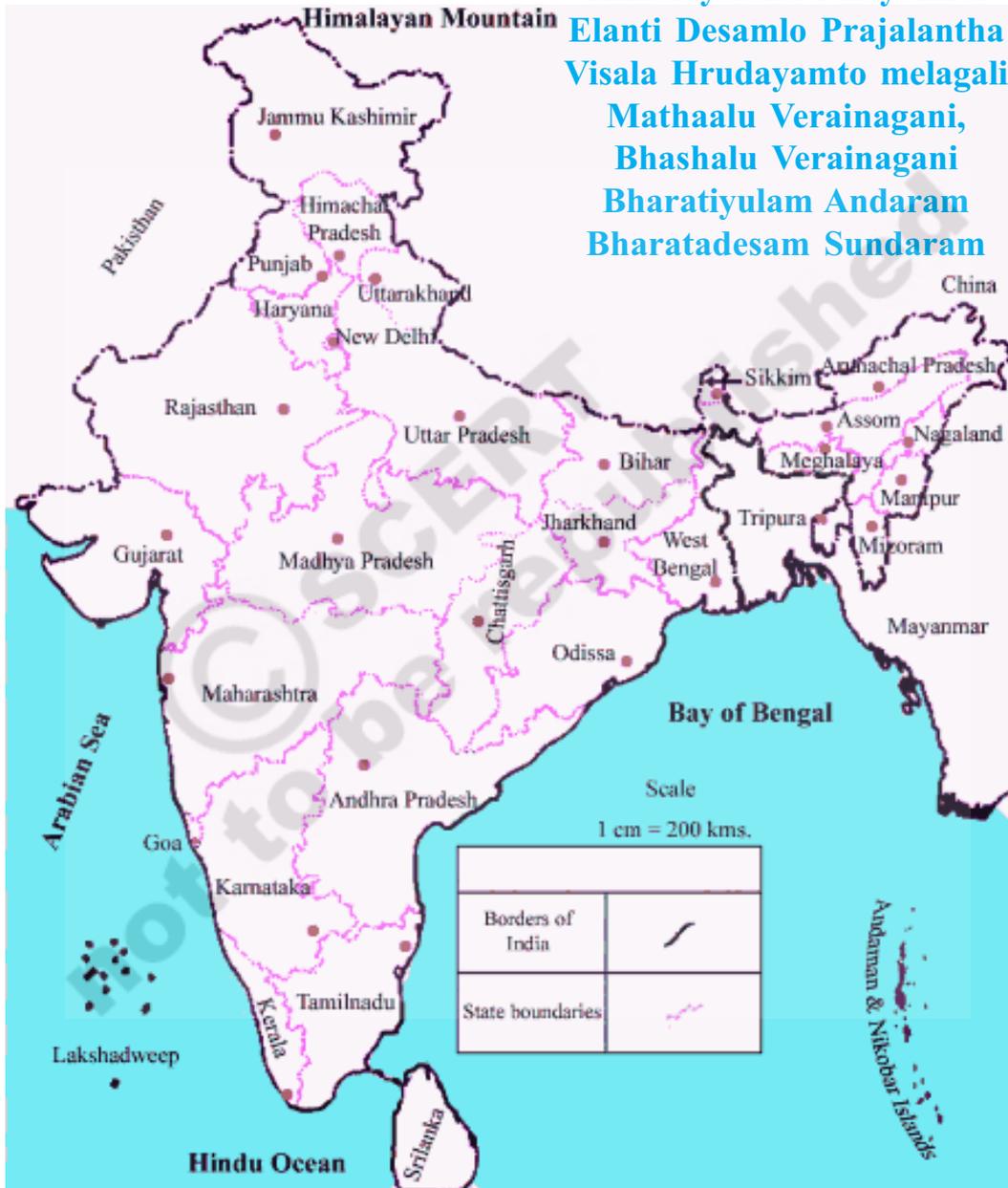
- |                                                                                 |          |
|---------------------------------------------------------------------------------|----------|
| 1. I can explain the activities to save fuel.                                   | Yes / No |
| 2. I can question about saving electricity and power cuts.                      | 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.                                               | Yes / No |





### 14.1. India

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



Children! Have you heard this 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 4<sup>th</sup> 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 in the previous page. Locate our state. Colour it in green.
- ◆ Colour the states which are adjacent to our state with blue colour.
- ◆ Which states are adjacent to the Bay of Bengal.
- ◆ Which states are adjacent to the Arabian Sea?
- ◆ Write the borders (Frontiers) of India.
- ◆ How many states are there in India?

There are 28 states and 7 union territories in India. New Delhi is the capital of India. India occupies 7<sup>th</sup> place in the world on the basis of area. 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 greater in area compared to India.

According to the historians, India is the oldest of all countries in the world. Our country has thousands of years of history. It is popularly known as 'Gyana Bhoomi' (Land of wisdom). It has different religions, castes, 1652 languages, various land forms different cultures and traditions, India has, one government and shows unity in diversity and should become an ideal country in the world. By building peaceful society and practising non-violence, India is extending its helping hand to all people of the world.

### 14.2. India and its regions

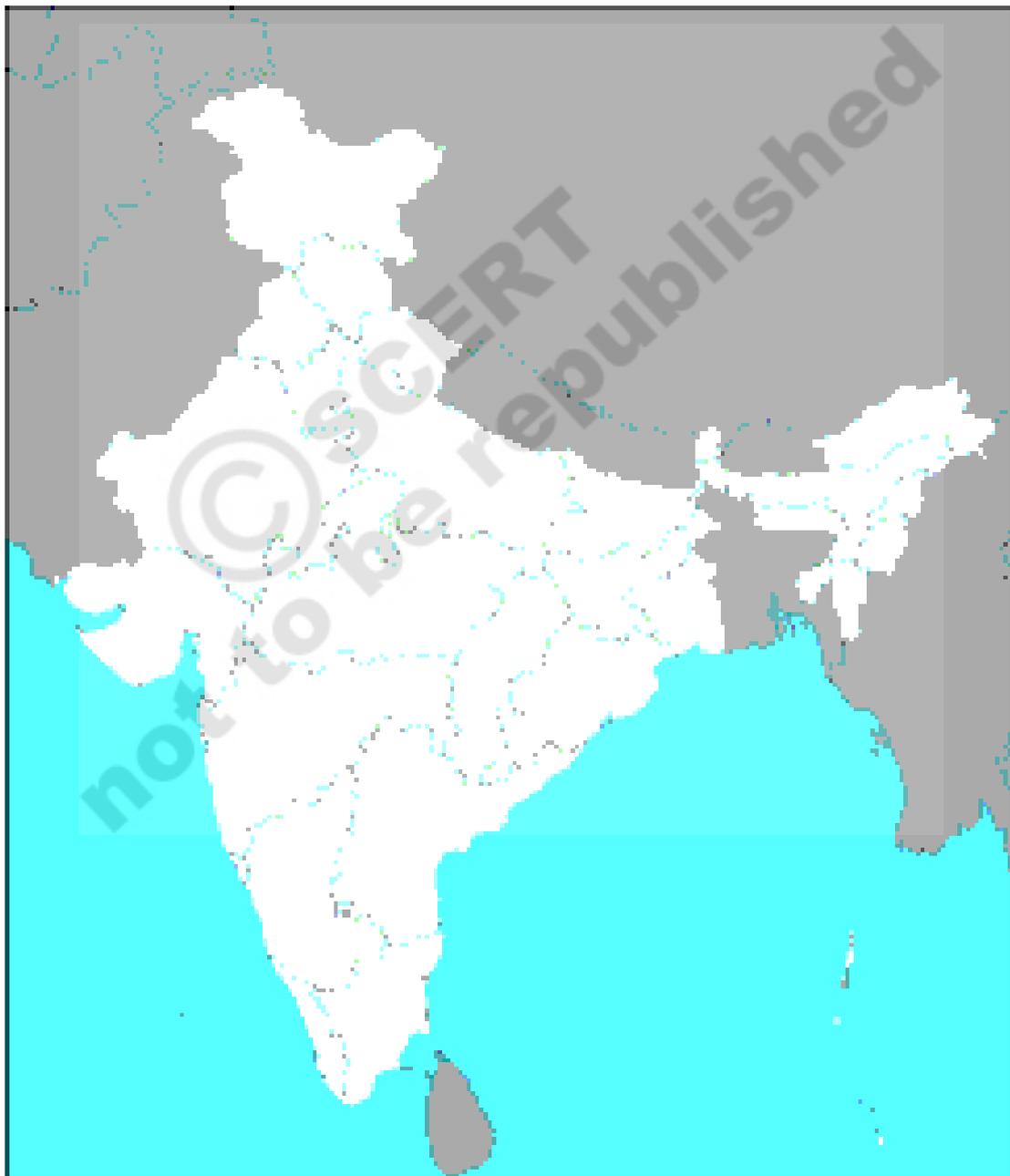
**There are six physical regions in India. They are:**

- |                        |                                                                                                                                      |
|------------------------|--------------------------------------------------------------------------------------------------------------------------------------|
| 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) |
| 4 Southern India       | Andhra Pradesh, Tamilnadu, Karnataka and Kerala.                                                                                     |
| 5 North-Eastern States | Arunachal Pradesh, Assom, Meghalaya, Tripura, Mizoram, Manipur, Nagaland and Sikkim.                                                 |
| 6 Central India        | Madhya Pradesh and Chattisgarh.                                                                                                      |

### Do This



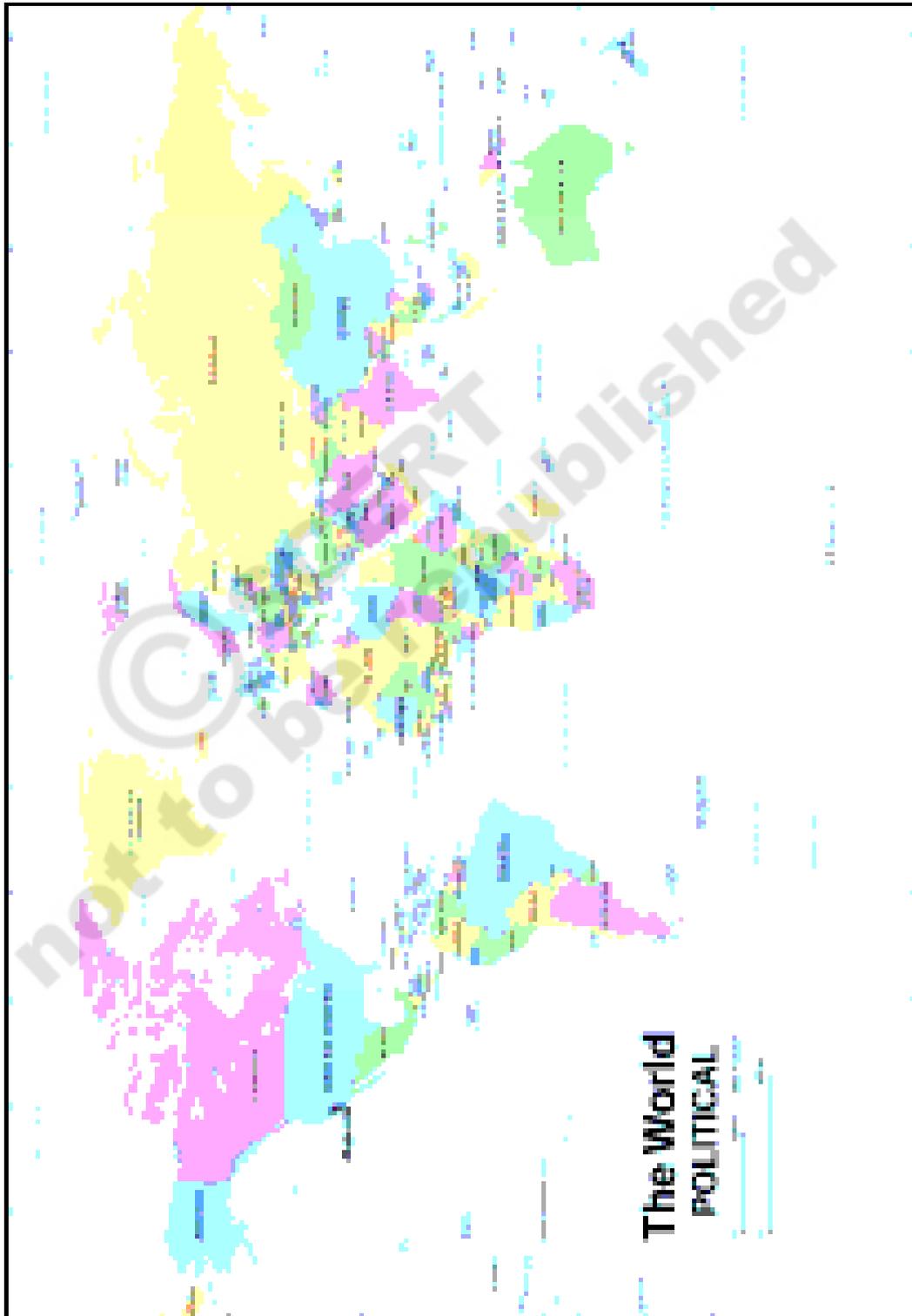
- ◆ You know the six regions of India. Colour the regions in the map of India gives below.  
Eastern India - Blue; Western India - Yellow;  
Northern India - Pink; Southern India - Green;  
North-Eastern States - Red; Central India - Violet.
- ◆ What is there on the four sides of our country? Point out on the map.



### 14.3. Continents - oceans

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

**World Map**



### Think and say

- ◆ How many countries are there in Asia? Name them.
- ◆ Which country is located on the western side of India?
- ◆ Which latitude passes through India?
- ◆ Name a few countries in the continent of Europe.
- ◆ Which oceans are located beside India? Which countries and continents are adjacent to the Pacific ocean?
- ◆ To reach Brazil from India through which Oceans do we have to pass?
- ◆ Write the names of some of the eastern and the western countries by observing the World map.
- ◆ Look at the map and name the continents.
- ◆ Observe the World map and write down the names of the oceans.
- ◆ The equator passes through which countries? Name some of them.
- ◆ Point out Australia. Which side of India is it located?

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. The smallest continent is Australia.

All the continents have mountains. There are plateaus and plains at some places. Some mountains have a great height (Eg: Himalayas of India, Andes mountains of South America) the others are with less in height (Eg: Alps mountains of Europe). Usually, the upper part of the mountains would be very cool and with more slopes. That is why the population will be very less there. Plateaus will be shorter than mountains almost with flat surfaces and sloping edges. The population in plateaus is more than that of mountain regions. Plains are flat. Population will be more in plains. As the atmosphere on the mountains is cool, fog forms.

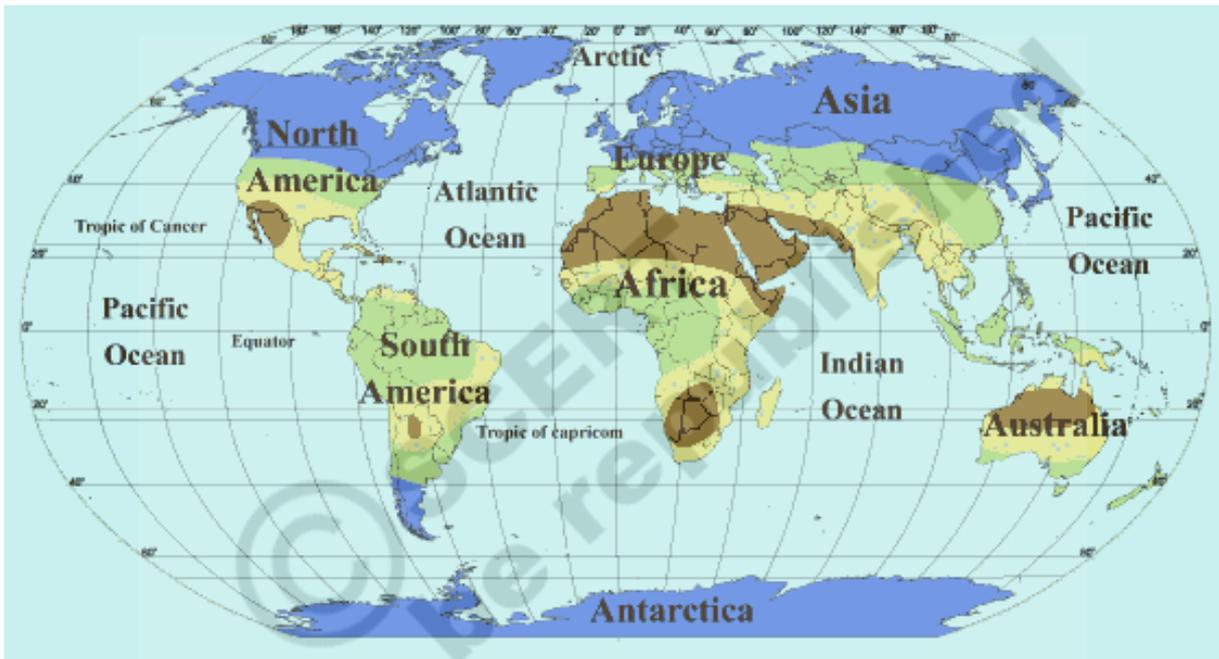
### Group Work



- ◆ Why does ice form on Himalayas?
- ◆ Point out India, Srilanka, England, Brazil, Canada, Russia and Australia on the 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 will be in different shapes and sizes. All oceans are joined with one another around the continents. There are four oceans. They are Pacific Ocean, Indian Ocean, Atlantic Ocean and Arctic Ocean. Pacific is the largest and Arctic is the smallest Oceans. The lands surrounded by 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. Ex: India.



### Group Work



- ◆ What are the advantages of seas?
- ◆ Locate oceans on the world map. Colour them in blue.
- ◆ Which seas are adjacent to India?
- ◆ Is India an Island or a Peninsula? Why?

### Do you know?

When we go upwards from the sea level, for every ascent of 1000 mtrs. temperature reduces by 6<sup>o</sup> centigrade.

Water occupies more area than land on earth. Nearly, 75% of the surface of the Earth is covered by water. Most of the underground water is formed due to this water regions.

The water in the Oceans evaporates due to the heat of the sun. This water vapour goes up and forms clouds. When the temperature reduces the clouds get cooled and it rains. This continuous process is called '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 form. These pits are the deepest parts in the oceans. Some of these are deeper than 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 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.



The 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 Part
Oceans	North-East India	Land Part



## What have we learnt?

### 1. Conceptual understanding

- Define the borders of India?
- Write the names of all the continents and the oceans.
- Differentiate between an Island and a Peninsula. Give examples.
- Which continents are adjoining to 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.

### 3. Experiments - field observations

- ◆ Observe and write a note about the different cultures and traditions followed in your village.

### 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 the map of India and mark the borders of our state.

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

- What do you do to live together harmoniously with everyone?
- On what occasions do you use maps (state/country)?

## Can I do this?

- I can explain the important geographical features of our country. Yes / No
- I can collect and tabulate the information of states and their languages. Yes / No
- I can draw and explain the essential features of the water cycle. Yes / No
- I can point out different states on the map of India. Yes / No

## 15.2. Preamble of 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.



## 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 constitutions is considered to be great. Why?
- ◆ Which words in the preamble are not known to you?

### 15.3. Terms of the preamble and their concepts

Let us read the Preamble of the Indian constitution and to understand it.

#### 15.3.1. We the people of India means...

'We the people of India' means all the children and elders of India.



#### 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 decisions making process of our country. But we maintain good relations with other countries for trading, education etc., and make agreements.

**Socialist means** involving all the people of the country in production and wealth creation processes and enjoying the wealth equally. Everyone should share the wealth. Everyone should have equal opportunities to get sufficient food, live a healthy life, go to school, not get 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 welfare of others.



Let us share our belongings with others



Everyone should be able to go to school

Everyone should be given sufficient food

Everyone should live healthily



Everyone should have safe home



Doctors should be available to all

**Secular means** all religions are looked upon as equal. Equal respect will be given to all religions and beliefs. Government does not give prominence to any single religion. Every citizen will be given freedom to practice the religion he/she likes. Governments will not be 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.

**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 should 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 equal in our country. Everyone should respect each other. What should we do to promote this idea?
- ◆ What is a Government? Why should we elect good people as our leaders?
- ◆ What is a law? Who makes the laws?

### Do you know?

The leaders we elect make the laws. These will be framed in the Parliament. Parliament has two houses namely, Rajya Sabha and Lok Sabha. People elect 543 members to the Lok Sabha by casting votes for them. Two members will be nominated without elections. 233 members will be elected for Rajya Sabha. 12 members will be nominated without elections for Rajya Sabha. The total number of members in Parliament is 790.

Our state has Legislative Assembly and Legislative Council. 294 members will be elected to Legislative Assembly by casting votes. These members are called 'Member of Legislative Assembly' (M.L.A.). 90 members will be elected to Legislative Council. These members are called 'Member of Legislative Council' (M.L.C.).

In our country the people who cross the age of 18 years will get the right to vote. He / she can cast his / her vote as per his wish for a candidate, contesting the elections.

### Think and say

- ◆ People below the age of 18 years will not be given the right to vote. Why?
- ◆ Who is your M.L.A.? Has he ever visited your school or village? Why?

### 15.3.3. Equal justice - social, economical, political justice

Everyone is 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 equal. 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 as equal'?
- ◆ Do the people of your class or home or village treat every one equally?
- ◆ Is everyone provided equal opportunities? What should be done to achieve this?

### 15.3.4. Equality

Every one should be treated equally irrespective of race, caste, language, religion etc. Every one should be given equal respect. Both males and females should be given equal respect, equal opportunities, equal health facilities, should be provided. Every one should have better life and developmental opportunities.



### 15.3.5. Freedom of thoughts, freedom of expressions, freedom of faith, freedom of practice and freedom for worship

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 the course we like. The constitution has given freedom to us till no harm is done to others by us.

#### 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 have? What are the different freedoms you have lost?
- ◆ Do you ask questions freely in your class and school?



### 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. Are we giving equal respect to all or are some given more respect than others? Some people are never given any at respect, think...

#### Do This



Look at the following table. Particulars of some the people of the society are given below. Fill in the particulars regarding the extent to which they are given respect? 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	Illiterate persons				
4	Students				
5	Engineers				
6	Teachers				
7	Senior Citizens				
8	Doctors				
9	Sarpanches				
10	Rich People				

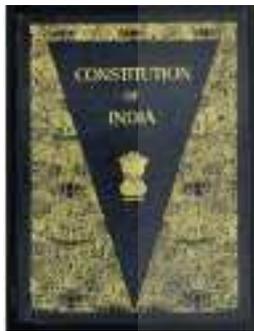
You have marked for different people. Your friends might also have marked. Who is respected the most? Who is respected the least? What did you understand from this?

We all should live as members of a single family with affection, like brothers and sisters. Everyone should be responsible for each other and cooperate with each other. Everyone should strive together for the development of our country, irrespective of religion, language, culture etc. Our country should be strengthened and its unity in diversity should be respected any understood.

Brotherhood means living like brothers and sisters. All Indians should lead their lives as brothers and sisters of a family with affection towards each other. They should help each other and live together. Though languages, religions and food habits are different, still all should live together as Indians.

### Think and say

- ◆ What is meant by brotherhood? What do you do to live affectionately with others?
- ◆ Which languages do you speak? Are there any people in your class, school and village who speak other languages? In which language you speak to them? Do you want to learn other languages? Why you should 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 24 January, 1950, and we started ruling ourselves according to the accepted constitution from 26<sup>th</sup> January 1950. That is why every year 26<sup>th</sup> January is celebrated as the Republic Day. This is a national festival. Our National flag is hoisted at each and every village, institution, school, office etc, on this day.



We should understand and follow our constitution. It will make everyone happy. The constitution has given freedom and equal opportunities to all the children in education, health and development. We should respect and practice it.

But, the reality is this some people don't get proper food. Some do not get on 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 unutilised. Hence, we should make the lives of all the people better by our sincerity, justice and service. 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. Do not pollute them. Practice before you preach others.

## 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 certain duties also.

### Fundamental duties

- a) Respecting the constitution, national flag and national anthem.
- b) Cherishing the noble ideals of the freedom struggle.
- c) Defending the country and rendering national service when called for.
- d) Upholding and protecting the sovereignty, unity and integrity of India.
- e) Promoting harmony and the spirit of common brotherhood amongst 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 and having compassion for living creatures.
- h) Developing scientific aptitude, humanisty and spirit of inquiry for reform.
- i) Safeguarding public property and abjuring violence.
- j) Striving for the excellence in all individual and collective activities.

### Group work

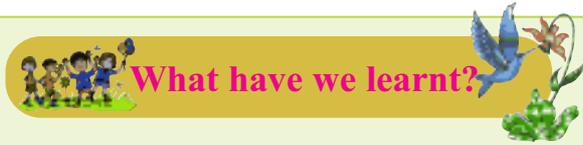


- ◆ Which rights are you enjoying? Which rights you have been denied?
- ◆ What should we do to practice the fundamental duties?
- ◆ What is discrimination?

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 the rights and everyone should develop as far as possible.

### Keywords

Constitution	Socialism	Republican Country
Contituent assembly	Secularism	Freedom, Equality
Preamble / Foreword	Democracy	Brotherhood



## What have we learnt?

### 1. Conceptual understanding

- What is meant by constitution? Who has framed it?
- Write any 4 aspects of the Preamble.
- Write the reasons for why the people need liberty?
- What are your rights and duties?

### 2. Questioning and hypothesis

- ◆ Frame any 5 questions on the preamble of constitution.

### 3. Experiments - field observations

- ◆ The constitution has provided freedom and equality to us. Visit and observe your village and find out whether anybody from your village is not receiving the freedom and equality granted to us by the constitution.

### 4. Information skills, projects

- ◆ Collect information on the latest elections held at your village. Prepare a table on the basis of the particulars given below, write in your note book and analyze it.

Why are elections held, name the contestants, name the winners and services rendered by them to your village

### 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 the 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.

### Can I do this?

- I can explain some important points of our constitution. Yes / No
- I can give the reasons for non achievement of equal justice to all. Yes / No
- I can frame questions on the basis of the Preamble of our constitution. Yes / No
- I can write a letter appreciating the contributions of the architect of our constitution. Yes / No



Today's children are tomorrow's citizens. Today's youngsters are tomorrow's elders. Future of our society depends on the children. Their thoughts are boundless. Indian Constitution has given a few rights to all its citizens. Similarly, children have many rights. Parents, teachers, neighbours and society should be kind and affectionate to the children. Everyone should think about their development. Elders expect the children to be recognized and flourish in life and do take efforts to achieve their objectives. But, is it right to do? So, that are the different activities done in the name of children's development acceptable?

All the children are provided with the rights to education, better life standards, rights to participate in the games with freedom, protection against exploitation and express opinions freely etc.,

**Children! You must try to be happy.**

Record some incidents that make you happy

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Who are the people who make you happy

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What are the places that make you happy

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What are the activities that make you happy

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Children! now you know when you feel happy. Well! you also feel unhappy now and then. Try to remember on what occasions, which persons, things and places make you unhappy.

### Situations that make you unhappy

What are the incidents that make you unhappy

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Who are the people who make you unhappy

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What are some of the places that make you unhappy

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What are some of the activities that make you unhappy

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### 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 her hearing ability also. But her parents did not lose hope. Neither did they ridicule the girl and her disabilities. They tried to make her happy. Helen Keller learnt the Braille script at the age of 8 years. She learnt to speak under the supervision of her teacher, 'Saraputter'. She learnt language by keeping 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 years. Inspired by her determination, many Indian parents of children with disabilities, shifted them back to their homes and started paying personal attention. Helen Keller inspired many people in various ways.

The children who are happy and healthy will 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

1



Right to have complete health

2



Right to have pure drinking water

3



Right to have parental protection

4



Right to conduct associations

5



Right to have the name wanted

6



Right to get nutritious food

7



Right to survival

8



Right to get protected from sexual (Mental & Physical) exploitation

9



Right to adopt any nationality

10



Right to get social safety

11



Right to have fun

12



Right to get free and quality education

13



Right to relaxation

14



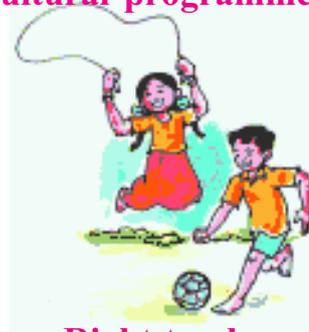
Right to participate in cultural programmes

15



Right to receive love and affection

16



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 get identified as citizen**

22



**Right to get protection from violence**

23



**Right to express one's feelings**

24



**Right to get honoured**

25



**Right to get protection from wars**

26



**Right to get information**

27



**Right to freedom of thought**

28



**Right to have love and friendship**

29



**Right to get equal health opportunities**

30



**Right to behave with self-consciousness**

31



**Right to social equality**

32



**Right to get relief from social discrimination**



**Right to freedom of Religion**



**Right to receive equal educational opportunities**



**Right to get equal cultural opportunities**

### Group work



- ◆ Which of the above mentioned Child Rights you enjoy?
- ◆ What are the rights you want to enjoy now, which are not already provided to you?
- ◆ What do you do to ensure that all the Children enjoy their rights?
- ◆ You want to enjoy Rights. In your opinion, how and who should help you to get these rights.
- ◆ Who are street children? Why did they become street children? What should we do with them?

## 16.2. What should be done at home?

No one should not 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 act and protect their rights.

Good 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. No questions of targets because child labour is illegal and 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?

Child Rights should be identified and effected. 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 for getting the 1<sup>st</sup> rank etc; They should not be forced to accept anything against their will. 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 identified and respected. They should be given preference in every thing. They should be identified as growing people. Equal opportunities should be provided.

Children's rights should be protected every where. At home, school, 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

Child Parliament can be formed with 30 children from the age group of 6 years to 19 years. The children of that area become members. The child parliament 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 programmes. Let us all work together to protect the Child Rights with a confidence of achieving success.



### Do This



- ◆ Establish a Child Rights protection club at your school. Conduct the programmes in full swing.
- ◆ Meet the 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 will take action against the persons who violates child rights and torture 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. Action will be taken. This is a free service. This office is situated at Rajiv Vidya Mission 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. This ward 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.

- Always be happy. Play games. Ask and find out about things without fear. Remember asking questions is your birthright and mankind has progressed only by asking questions. 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?

The centre is 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 the children can dial the tollfree number 1098. Then the information will be passed to the officials on child line. They respond immediately and take proper action for 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.

#### Think and say

- ◆ What should we do for the implementation of Child Rights at the school?
- ◆ Why should we establish Child Rights protection club? What are its programmes?
- ◆ On what occasions the child line should 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 have we learnt?



### 1. Conceptual understanding

- What are the Rights of the children?
- What is right to participation? Where should the children participate?
- 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 and write down the 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-meals? How many children ask questions freely? How many children are called by their names?

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

- By drawing pictures 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 do you do to Re-admit them into the 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.

### Can I 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 to go to school and see that the Child Rights are implemented. | Yes / No |