

ગુજરાત શૈક્ષણિક સંશોધન અને તાલીમ પરિષદ, ગાંધીનગરના પત્ર-ક્રમાંક  
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# Environment Looking Around

## Standard V

રાજ્ય સરકારની વિનામૂલ્યે યોજના હેઠળનું પુસ્તક



राष्ट्रीय शैक्षिक अनुसंधान और प्रशिक्षण परिषद्  
NATIONAL COUNCIL OF EDUCATIONAL RESEARCH AND TRAINING



**Gujarat State Board of School Textbooks**  
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### Translators

Mrs. Namrata A. Bhatt

### Reviewers

Dr. I. M. Bhatt

Dr. Vikas M. Raval

Mrs. T. Kalaiselvy

Mrs. Marggi Gujral

Ms. Rinku C. Suthar

Mrs. Mittal A. Amin

### Language Correction

Dr. Rucha Brahmhbhatt

### Co-ordinator

Dr. Chirag H. Patel

(Subject Co-ordinator : Physics)

### Preparation and Planning

Dr. Kamlesh N. Parmar

(Dy. Director : Academic)

### Lay-out and Planning

Dr. Kamlesh N. Parmar

(Dy. Director : Production)

### PREFACE

In accordance with the Central Government's policy to implement uniformed curriculum at National Level under the Resolution No : JSHBH/1217/single file-62/N dated 19/07/2017; it was decided by the Government of Gujarat as well as by Gujarat Council of Educational Research and Training to introduce NCERT Textbooks at School Level. Hence, Gujarat State School Textbook Board is highly obliged in translating **Std.V** NCERT Textbook on **Environmental studies** into Gujarati; subsequently translating the Gujarati draft into English especially for the students of Gujarat.

A team of highly learned teachers and professors have reviewed translation of the textbook and after incorporating modifications recommended by the reviewers in the manuscript; a special State Level Committee for approval has been formed for the publication of this textbook. A two-day workshop of experts was organized by the Committee along with the representatives of NCERT from RIE, Bhopal and consequently the draft was finalized. Experts like Dr. S. K. Makvana (RIE, Bhopal), Dr. Kalpna Maski (RIE, Bhopal), Dr. Akhil Thakar, Shree Rinkuben Suthar, Shree Nimesh Bhatt, Shree Minesh Vanand and Shree Namrata Bhatt attended the workshop to offer their valuable inputs and suggestions.

Though Board has taken utmost care, qualitative suggestions are also solicited from those who are interested in education.

We are very thankful to NCERT, New Delhi for their kind co-operation.

**H. N. Chavda**

Director

Date : 05-07-2021

Executive President  
Gandhinagar

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## FOREWORD

The National Curriculum Framework (NCF) 2005, recommends that children's life at school must be linked to their life outside the school. This principle marks a departure from the legacy of bookish learning which continues to shape our system and causes a gap among the school, home and community. The syllabus and textbooks developed on the basis of NCF signify an attempt to implement this basic idea. They also attempt to discourage rote learning and the maintenance of sharp boundaries among different subject areas. We hope these measures will take us significantly further in the direction of a child-centred system of education outlined in the National Policy on Education (1986).

The success of this effort depends on what steps that school principals and teachers will take to encourage children to reflect on their own learning and to pursue imaginative activities and questions. We must recognise that, given space, time and freedom, children generate new knowledge by engaging with the information passed on to them by adults. Treating the prescribed textbook as the sole basis of examination is one of the key reasons why other resources and sites of learning are ignored. Inculcating creativity and initiative is possible if we perceive and treat children as participants in learning, not as recipients of a fixed body of knowledge.

These aims imply considerable change in school routines and mode of functioning. Flexibility in the daily time-table is as necessary as rigour in implementing the annual calendar so that the required number of teaching days are actually devoted to teaching. The methods used for teaching and evaluation will also determine how effective this textbook proves for making children's life at school a happy experience, rather than a source of stress or boredom. Syllabus designers have tried to address the problem of curricular burden by restructuring and reorienting knowledge at different stages with greater consideration for child psychology and the time available for teaching. The textbook attempts to enhance this endeavour by giving higher priority and space to opportunities for contemplation and wondering, discussion in small groups, and activities requiring hands-on experience.

The National Council of Educational Research and Training (NCERT) appreciates the hard work done by the textbook development committee responsible for this book. We wish to thank the Chairperson of the Advisory Committee for Textbooks at the primary level, Anita Rampal, Professor, CIE, Delhi University, Delhi, Chief Advisor, Farah Farooqi, Reader, Jamia Millia Islamia, New Delhi, for guiding the work of this committee. Several teachers contributed to the development of this textbook. We are grateful to their principals for making this possible. We are indebted to the institutions and organisations which have generously permitted us to draw upon their resources, material and personnel. We are especially grateful to the members of the National Monitoring Committee, appointed by the Department of Secondary and Higher Secondary Education, Ministry of Human Resource Development under the Chairpersonship of Professor Mrinal Miri and Professor G.P. Deshpande, for their valuable time and contribution.

As an organisation committed to systemic reform and continuous improvement in the quality of its products, NCERT welcomes comments and suggestions which will enable us to undertake further revision and refinement.

*Director*

New Delhi  
30 November 2007

National Council of Educational  
Research and Training

## A NOTE FOR THE PARENTS AND TEACHERS

The National Curriculum Framework (2005) integrates Environmental Studies (EVS) in Classes III to V with the concepts and issues of science, social science and environment education. A separate textbook for this subject is not prescribed in Classes I and II, but the issues and concerns related to it, are meant to be a part of Language and Mathematics.



The child is at the center of the book's content, so that children have the opportunity to research and are not compelled to learn by rote. There is no place for mere information and definitions in this book. But the real challenge is to provide children with opportunities to study through activities, for ask questions and experiment. The language of this book is not kept formal but the one that is used by children. Children see a whole page of a book as a holistic 'visual text' and not separately as words and illustrations. Each page has been designed keeping this in mind. The textbook is not the only medium of knowledge, but should support children to construct knowledge through all sources around them, such as people, their environment, newspapers, etc.

The chapters in this book contain real life incidents, everyday challenges and live contemporary issues such as petrol, fuel, water, forests, protection of animals, pollution, etc. There are ample opportunities for children to freely debate, engage with and develop a sensitive understanding about these. The writing team views not just children but teachers too as people who promote knowledge and expand their experiences. Thus it is necessary for teachers also need to use this book as a teaching-learning resource.

The new syllabus consists of six themes – (1) Family and Friends, which consist of four subthemes – (1.1) Relationships, (1.2) Work and Play, (1.3) Animals and (1.4) Plants. Others are – (2) Food; (3) Water; (4) Shelter; (5) Travel and (6) Things We make and do.

What do we understand by a syllabus? The list of chapters in the textbook is often mistaken to be a syllabus. If we look at the NCERT syllabus, we find that an attempt has been made to develop a deep and inter-related understanding of all subjects. Each theme begins with key questions in a language suitable for children. The whole syllabus is available on the NCERT website [www.ncert.nic.in](http://www.ncert.nic.in). A printed version can also be obtained. On reading it you will enjoy teaching the subject with a deeper understanding.

### Theme 1– Family and Friends

#### *Subtheme(1.1) – Relationships*

**Chapters 18** and **22** contain experiences of families' migration in search of work. Children need help to understand the difference between 'transfer' and 'displacement' so that they become sensitive towards problems faced by the urban and rural poor. **Chapter 21** focuses on how our identity is shaped by traits we inherit from our family and also emphasises the opportunities that are gained from the environment. The purpose of giving Mendel's story (the son of a poor farmer scared of examinations!) is not to focus on the principles of genetics but to draw inspiration by the process of scientific experimentation and his perseverance.

#### *Subtheme (1.2) – Work and Play*

In **Chapter 15**, the interesting story of Dr. Zakir Hussain is used to develop an understanding of the process of breathing. Instead of dealing with the abstract concepts of 'water cycle' and 'condensation,' it is suggested to use everyday experiences of children such as why a mirror becomes hazy when we blow on it. **Chapter 16** stresses on the dignity of labour and that no work is good or bad. Also, why certain communities continue to do scavenging through generations and do not get opportunities to make their own choice. **Chapter 17**, 'Across the Wall,' consists of a real story of the 'girls' basketball team', presented in their own words, on the issue of gender (racism).





### Subtheme (1.3) – Animals

**Chapter 1** sensitises children to the amazing world of animals – how they hear and see, smell and sleep. They also have the right to live and suffer, on not getting food.

**Chapter 2**, takes a closer look at the close relationship between animals and humans beings through issues related to the life of snakecharmers,.

### Subtheme (1.4) – Plants

**Chapter 5** shows experiments with seed germination, the idea of seed dispersal and shows how some plants have come from far off countries and today we cannot imagine our food without them. **Chapter 20** depicts the life of tribals, through the real story of Suryamani in Jharkhand and Zoom farming of Mizoram. It also addresses some popular beliefs and biases about tribal communities.

### Theme 2 – Food

The theme on ‘Food’ integrates all these – tasting, digesting, cooking, preserving techniques, farmers and hunger. **Chapter 3** does not contain information about the digestion but children’s experiences have been used to build an understanding that the process of digestion begins in the mouth itself. This chapter includes an amazing real story through which the world first came to know about the role of the stomach in digestion. Later in the chapter, through a description of the food habits of two children – one who doesn’t get enough food to eat, and the other who takes only cold drinks and chips, the chapter tries to raise questions about what is ‘good food’. Also, why do people who grow crops not get enough food to eat? It is also described.



In **chapter 4**, through the story of *aampapad*, children understand the technique and skills involved in cooking and preservation. The **chapter 19** ‘A seed tells a farmer’s story’ addresses some questions of the syllabus like how changes in farming are linked to the changes and difficulties in the lives of farmers. Later you will see how the theme (2) on Food is linked with the subtheme on Plants (1.4).

Questions	Key Concepts/Issues	Suggested Resources	Suggested Activities
<i>When food gets spoilt</i>			
How do we know that food is spoilt? Which food spoils sooner than the others? What can we do to prevent food from getting spoilt? What do we do to keep it fresh during travel? Why do we need to preserve food? Do you waste food?	Spoilage and wastage of food, Preservation of food, drying and pickling.	Sharing family experiences; interaction with a person involved with food production/ preservation.	Keep some bread or, – other food for a few days – see how they spoil.
<i>Who produces the food we eat?</i>			
Do you know about different types of farmers? Do all farmers own land? How do farmers get the seeds they need to plant every year?	On different types of farmers. Hardships faced in subsistence farming, including seasonal migration, need for irrigation, fertilisers.	Farmers’ narratives – could take an example from Punjab and Andhra Pradesh. Story of a child missing school because of seasonal migration. Visit to a farm.	Experiment to know the conditions suitable for germination; observations on a farm.

Questions	Key Concepts/Issues	Suggested Resources	Suggested Activities
<b><i>Our mouth—tastes and even digests food!</i></b>			
How do we taste food? What happens in the mouth to the food we eat? Why do we give glucose to patients? What is glucose?	Tasting food; <i>chapati</i> /rice becomes sweeter on chewing; digestion begins in the mouth; glucose is a sugar.	Children’s earlier experiences; samples of food items; story of someone on a glucose drip.	Tasting activity – action of saliva on rice/ <i>chapati</i> .

### Theme 3 – Water

**Chapter 6** gives a glimpse of traditional sources and the techniques of water arrangements in Rajasthan. It uses a recent example of a village doing water management by taking inspiration from history. **Chapter 7** has experiments with water which are related to our everyday life. Real dialogues of children are used in **chapter 8** to bring out the relationship between stagnant water, mosquitoes, malaria, blood testing, etc.



### Theme 4 – Shelter

Using Gaurav Jani’s amazing journey to the Himalayas, **Chapter 13** shows variations in the types of shelters in one state, food habits, living conditions, language and clothes differ. In **chapter 14** through narratives of calamities like flood or earthquake, an understanding is developed about why people live in neighbourhoods and describe which agencies are responsible for such a situation.



### Theme 5 – Travel

Some questions of the syllabus related to this theme are:

- Where have you seen petrol and diesel being used?
- Why some people like to climb high mountains or cover difficult terrains? What do you think?
- Have you ever read or heard about someone’s experiences of space travel?
- Have you ever visited a historical monument? What do you think about the design of the building and other arrangements in it?

In **Chapter 9**, a teacher’s mountaineering adventure raises the question as to why people take risks. It also gives a feel of high, snow covered and challenging mountain terrains, without knowing the reality of any kind of geographical information. **Chapter 10** uses a historical monument to introduce children to the techniques, designs, uses of metals, water arrangements, etc. of earlier times. An attempt is made to understand how ‘war and peace’, then and now, are a part of social and political life. **Chapter 11** engages with the challenging concepts of the ‘shape of the earth’ and ‘gravitation’ using children’s intuitive ideas. **Chapter 12** presents debates around the burning issue of limited quantities of petrol and diesel. The theme ‘Travel’ is not limited to ‘transport’ but is presented in a wider and more interesting perspective.

### Theme 6: Things We Make and Do

This theme is integrated with all the other themes and emphasises methods and techniques. Wherever there are experiments in a chapter or things to make and do, children need to be given opportunities and space to engage with them.

#### What will Children Learn in EVS?

In this book there is a separate section ‘What we have learnt’ at the end of each chapter. These questions suggest how to evaluate children’s learning and take examinations after studying a chapter. Answers should not be assessed in terms of only ‘true’ or ‘false’. Childrens’ ideas, observation reports, expression of their experiences, art integrated learning, process of experiments, etc. are all opportunities for qualitatively assessing children’s learning. This list of indicators for assessment in EVS can be used to record how children are learning. This textbook also includes activities that a differently abled child can do.










## Indicators for Assessment in EVS

1. Observation and Recording – Reporting, narrating and drawing; picture-reading, making pictures, tables and maps.
2. Discussion – Listening, talking, expressing opinions, finding out from other people.
3. Expression – Drawing, body movements, creative writing, sculpting, etc.
4. Explanation – Reasoning, making logical connections.
5. Classification – Categorising, grouping, contrasting and comparing.
6. Questioning – Expressing curiosity, critical thinking, developing good questions.
7. Analysis – Predicting, making hypotheses and inferences
8. Experimentation – Improvisation, making things and doing experiments.
9. Concern for Justice and Equality – Sensitivity towards the disadvantaged and differently abled.
10. Cooperation – Taking responsibility and initiative, sharing and working together.



Based on these indicators, teachers can observe 3-5 children everyday and record their comments in order to better understand children's abilities and to encourage them accordingly. For better understanding on assessment, practices and procedures in EVS, NCERT has developed a sourcebook on this area for primary stage. It will be useful if you go through this document as well.

## Symbols and Icons used in the Textbook

 <b>Discussion</b>	 <b>Narrate/Tell</b>	 <b>Write</b>
 <b>Think</b>	 <b>Do/Make</b>	 <b>Find out</b>
 <b>For the Teacher</b>		

## CERTIFICATE OF THE MAPS

The following foot notes are applicable :

1. © Government of India, Copyright 2020
2. The responsibility for the correctness of internal details rests with the publisher.
3. The territorial waters of India extend into the sea to a distance of twelve nautical miles measured from the appropriate base line.
4. The interstate boundaries amongst Arunachal Pradesh, Assam and Meghalaya shown on this map are as interpreted from the “North-Eastern Areas (Reorganisation) Act. 1971,” but have yet to be verified.
5. The external boundaries and coastlines of India agree with the Record/Master Copy certified by Survey of India.
6. The spellings of names in this map, have been taken from various sources.

# TEXTBOOK DEVELOPMENT COMMITTEE

## **CHAIRPERSON, ADVISORY COMMITTEE FOR TEXTBOOKS AT THE PRIMARY LEVEL**

Anita Rampal, Professor, Department of Education (CIE), University of Delhi, Delhi

## **CHIEF ADVISOR**

Farah Farooqi, Reader, Faculty of Education, Jamia Millia Islamia, New Delhi

## **MEMBERS**

Aparna Joshi, Lecturer, Gargi College, Delhi University, New Delhi

Mamata Pandya, Programme Director, Centre for Environment Education, Ahmedabad

Poonam Mongia, Assistant Teacher, Sarvodaya Kanya Vidyalaya, Vikas Puri, New Delhi

Reena Ahuja, Research Student (Education), Delhi University, Delhi.

Sangeeta Arora, Primary Teacher, Kendriya Vidyalaya, Shalimar Bagh, Delhi

Simantini Dhuru, Director, Avehi Abacus Project, Mumbai

Smriti Sharma, Lecturer, Lady Shri Ram College for Women, Delhi University, Delhi.

Swati Verma, Teacher, Kendriya Vidyalaya, Bareilly, Uttar Pradesh

## **MEMBER-COORDINATOR**

Manju Jain, Professor, Department of Elementary Education, NCERT, New Delhi





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- Lesson – 12** ‘What if it Finishes...?’ – TERI (reference material), Petroleum Conservation Research Association (reference - poster).
- Lesson – 13** ‘A Shelter so High!’ – Gaurav Jani’s documentary film, *Riding Solo to the Top of the World*, Dirt Track Productions (excerpts from this film). Nighat Pandit, Srinagar (photographs and information on Jammu & Kashmir). M.K. Raina, Delhi and INTACH, Jammu & Kashmir (reference material).

- Lesson – 15** ‘Blow Hot, Blow Cold’ – A story written by Dr. Zakir Husain ‘Blowing hot, Blowing cold,’ published by Young Zubaan and Pratham Books.
- Lesson – 16** ‘Who will do this Work?’ – Children of a Bombay Municipal Corporation School – Priya Narbahadur Kunwar, Sandeep Shivprasad Sharma, Manisha Madhavdas Dharuk, Sonu Shivalal Pasi and Mehejabeen M. Ansari – courtesy Avehi Abacus (drawings for page – 150). Sant – Charan – Raja Sevitam Sahaja, a book written by Narayan Bhai Desai in Gujarati (excerpts from this book). India Untouched, a documentary film by Stalin K., Drishti and Navasarjan Production (photos and excerpts of interviews from this film).
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- Lesson – 20** ‘Whose Forests?’ – ‘Girl Stars’ a project of ‘Going to school,’ supported by UNICEF, (true story documented by the organisation). The Last Frontier – People and Forests in Mizoram, a book written by Daman Singh and published by TERI (reference material).

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# INDEX

## Forward

*iii*

A Note for the Parents and Teachers

*iv*



1. Super Senses



1

2. A Snake and Snake Charmer

15



3. From Tasting to Digesting

22



4. Mangoes Round the Year !

35



5. Seed, Seed, Seed

42



6. Water is Life

51



7. Experiments with Water

60



8. Mosquitoes : Diseases and Treatment

67



9. Climbing High !

76



10. Story of Walls

87



11. Sunita in Space

99



12. What if this will be Finished ?

110



13. Shelter High !

120



14. When the Earth Shook ! 131



15. Cold or Hot ? 139



16. Cleaning is our job 147

17. Across the Wall 154



18. Where do we go now ? 165



19. A Seed Tells Farmer's Story 174



20. Whose Forests ? 182



21. Like Father, Like Daughter 192



22. On the Move Again 200

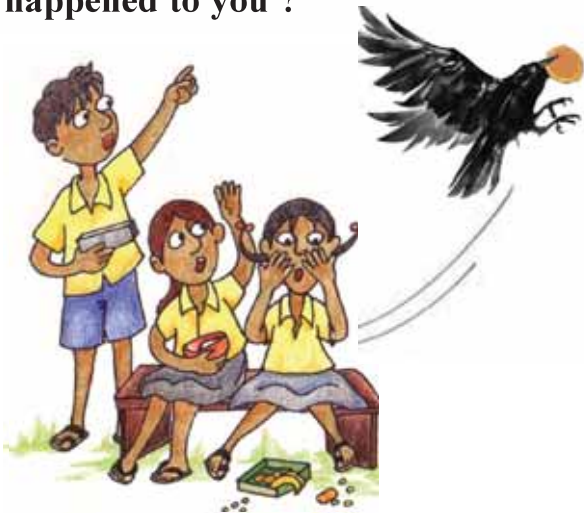
23. We are Gujarati... 205



# 1. Super Senses



Has this ever happened to you ?



You were eating in the playground, a crow flew down and took away your *roti*.



As you walked softly past a sleeping dog, its ears shot up at once.



You dropped something sweet on the ground and within minutes many ants collected around it.



**Why does it happen ?  
Think and Tell :**

Animals also have different senses. They can see, hear, taste, smell and feel. Some animals can see their prey (food) from very far. Some can hear even the faintest sound (buzzing). Some animals can find their friends by their smell. The animal world is full of examples of amazing senses.





### How did the ant recognise a friend ?

An ant was going on the ground. It saw a group of ants coming from the other side. The first ant quickly came back to its hole. The ant guarding the hole recognised it and let it in.



### Think and Tell :

- How did the ant know that the other ants were not from its group ?
- How did the guard ant recognise this ant ?



### Try this and Write :

Drop some sugar, jaggery or anything sweet on the ground. Wait until the ants come there.

- How long did it take for the ants to come ?

---

- Did one ant come first or a group of ants came together ?

---

- What did the ants do with the food ?

---

- Where do they go from there ?

---

- Do they move in a line ?

---



**For the Teacher :** Children of this age are interested in animals. Encourage them to share their experiences. Children should be supported to carry out observation activities, in which patience is required.



Now carefully, without harming the ants, block their path for a while with a pencil.

- Now observe, how the ants move ?



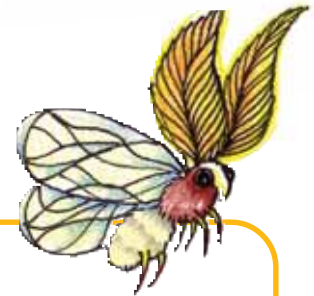
Many years ago scientists did many experiments like this. They found out that as the ants move, they leave a smell on the ground. The other ants follow the smell to find the way.

- Now can you guess why the ants behaved like that when you blocked their path ?

Some male insects can recognise their females by their smell.

- Have you ever been troubled by mosquitoes ? Just think, how do they know where you are ?

Mosquitoes can find you by the smell of your body. They also find you by the smell of the sole of your feet and the heat of your body.



I am a silk worm. I can find my female worm from many kilometres away by her smell.



- Have you seen a dog sniffing here and there ? What is it trying to smell ? Think. Dogs mark out their own area on the road. They can make out if another dog has come into their area by the smell of its urine or potty (latrine).





**Write :**

- In what ways do human beings make use of this special sense of smell of dogs ?  
\_\_\_\_\_  
\_\_\_\_\_
- When do you find your sense of smell helpful to you ? Write some examples. Like – to know by its smell that food became stale or that something is burning.  
\_\_\_\_\_  
\_\_\_\_\_
- Name the animals that you would be able to recognise only by their smell, without seeing them.  
\_\_\_\_\_  
\_\_\_\_\_
- Write the names of five things whose smell you like and five things whose smell you do not like.

I like the smell of	I do not like the smell of
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____



**Do you and your friends have similar answers ? How many ?**







### Find out :

- Do the clothes of any of your family members smell ?
- Have you ever experienced any foul smell in a crowded place such as a fair, bus, train etc. ?

### Why so ?

Today Niru had to go out for some important work. She had to leave her six-month old son Ruchit with her sister Chhaya. Chhaya also has a baby of the same age. It was funny that both the babies did potty at the same time. She happily cleaned her daughter but when she was cleaning her sister's son Ruchit, she covered her nose with her *dupatta* (scarf).



### Think and Discuss :

- Chhaya covered her nose/face when she cleaned Ruchit's nappy, but not when she cleaned her daughter. What do you think why she did this ?
- How do you feel when you pass near by a heap of garbage ? Think of the people who spend the whole day picking things from such garbage.
- Is a smell 'good' or 'foul' for everyone in the same way ? Or does it depend on how each one feels about it ?



**For the Teacher :** Chhaya's example illustrates a common situation in families. Discuss with children how we often find a smell 'foul' when we think it is from something dirty. If we analyse it, we may not be so offended by certain smells.



## Let's see :

- Write the name of a bird which has eyes in front of its head like in human beings.

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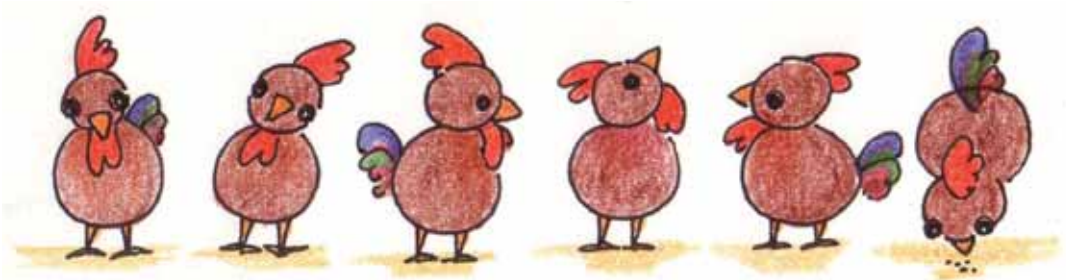
- Write the names of some birds which have eyes on either side of the head. What is the size of their eyes as way of comparison, to the size of their head ?

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Most of the birds have their eyes on either side of the head. Their eyes can focus on two different things at a time. When they look straight ahead, both their eyes focus on the same object.

You must have seen birds moving their neck very often. Do you know why birds are doing this ? Most of the birds eyes fixed and cannot move. So the birds have to turn their heads to see around.



## Looking with one or both eyes :

- Close your right eye or cover it with your hand. Tell your friend to stand to your right, at some distance and ask him to do some action (wave hand, shake head, etc.)
- Could you see your friend's action without moving your neck ?
- Now without moving your neck try to look at your friend's action with your both eyes open.
- What was the difference between looking with one or both eyes ?



**For the Teacher :** When a bird focuses both eyes on an object, it can estimate the distance. When its eyes focus on two different things, it increases its range of vision. Children will understand this better, once they start observing the location of eyes of different birds. While seeing with one eye and then with two eyes, children will understand how with two eyes the span of vision increases.





- Now toss a small ball or a coin and try to catch it. Try this with both your eyes open. Then close one eye and try to catch it. When was it easier to catch ?
- Imagine, how it would be to have your eyes in place of your ears ? What would you be able to do then, which you cannot do now ?

Some birds like kites, eagles, vultures can see four times as far as we can. These birds can see things from a distance of eight metres what we can see from a distance of two metres.



- Now can you guess from what distance can an eagle in the sky can see a *roti* on the ground ?

### Do animals see colours ?

Animals cannot see as many colours as we can. See how things in these pictures will be seen by some animals.



It is believed that animals that are awake in the daytime can see some colours. Those animals that are awake at night can see things only in black and white colours.



## Sharp ear :

In Class IV, you read that we cannot see birds' ears easily. They have small holes in place of ears that covered with feathers.



### Write :

- Write the names of ten animals whose ears can be seen.

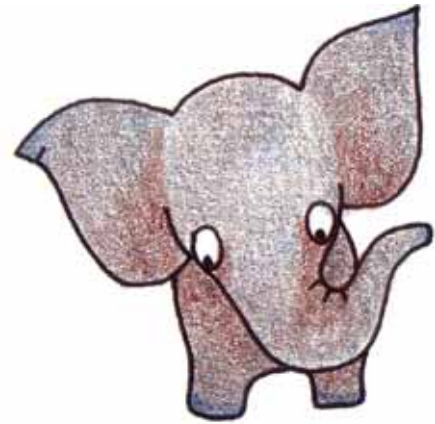
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- Write names of some animals whose ears are bigger than our ears.

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### Think :

- Is there some link / any relation between the size of animals' ears and their hearing capacity ?



### Try this :

For this activity find a quiet place in your school. Tell one of your friends to stand at a short distance and ask him to say something softly. The rest of you should listen it carefully. Then all of you put your hands behind your ears, as shown in the picture. Now the same child ask to say something again as softly as before. In which case was the sound sharper ? Ask your friends too.

- Put your hands over your ears and say something.  
Can you hear your own voice ?



- Sit near a desk. Tap the desk once with your hand.

Listen carefully. Now put your ear on the desk as shown in the picture. Tap on the desk once again with your hand. Listen again. Is there any difference in the sound of the tap ?



This is how snakes hear. They do not have any external ears. They only feel the vibrations on the ground.

### **Sending messages through Sounds.**

- High up on a tree, a *langur* warns other animals of dangers like a tiger or leopard. For this it gives a special warning call.
- Birds also give alarm calls to warn about the danger. Some birds make different sounds for different kinds of dangers. For example, there is a different warning call if the enemy is coming from the sky or if the enemy is on the ground.
- The staff/officers of the sanctuaries and national parks, can also locate the direction of animals like tiger, lion by the sound of alarm calls of birds.
- Fishes give alarm call by electric signals.



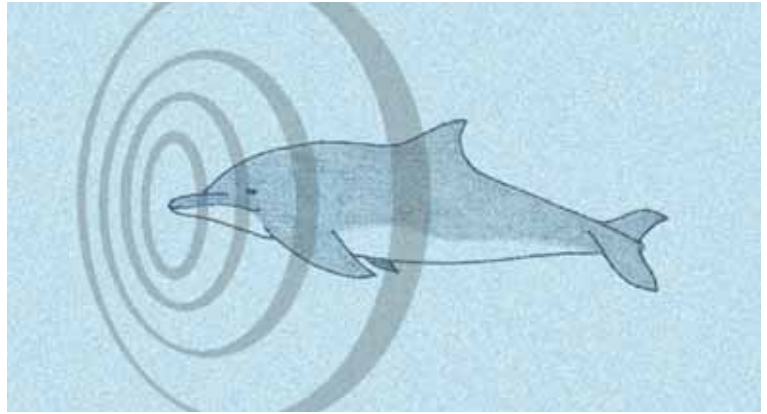
Deepa Balsawar

Some animals start behaving in a different way when an earthquake or storm is about to come. People who live near forests come to know of the danger by observing such behaviour of animals.

In 2004, few tribes that live in the forests of the Andaman Islands noticed the animals behaving in a different manner. They guessed some danger. So they moved away to a safer part of the island. Soon after, the islands were hit by the tsunami but these people were saved.



Dolphins also make different sounds to give messages to one another. The scientists believe that animals have a special language of their own.



**Write :**

- Can you understand the sounds of some animals ? Which ones ?

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- Do some animals understand your language ? Which ones ?

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**Say it with sounds**

Just like birds and dolphins you can also make your own language of sounds for giving news/messages. Remember that you have to talk to your friends with only sounds and no words. How and when will you need to give an alarm call ? For example, when the teacher enters the classroom !



**Waking-Sleeping :**

Some animals go into a long, deep sleep in certain seasons. Then they are not seen for many months.

- Have you noticed that during the cold season you cannot see any lizard in the house ? Where do you think they have gone ?



**For the Teacher :** In this lesson many examples of 'sensitive' senses are given. Encourage children to find out more such examples from newspapers and TV programmes.

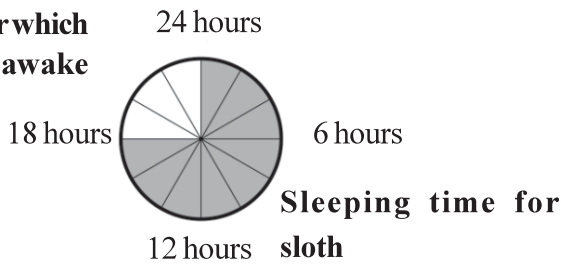


## Sloth

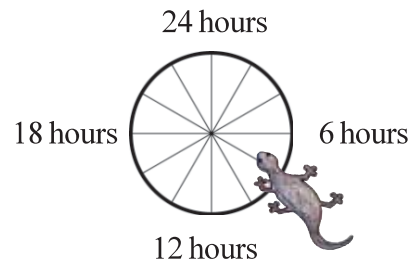
It looks like a bear but is not. It is a sloth. It spends almost 18 hours a day sleeping while hanging upside down on a tree branch. The sloth eats the leaves of the same tree on which it lives. It hardly needs anything else. When it has eaten enough leaves from that tree, it moves to the nearby tree. Sloth lives for about 40 years and in that time it moves around only eight trees. Once in a week it comes down from the tree to relieve itself.



**Time for which sloth is awake**

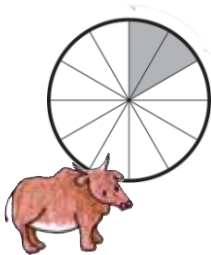


If you were to show a sloth's daily routine (sleeping and waking) in a 24-hours clock, this is what the clock would look like.

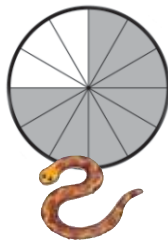


How will you show the clock for a house-lizard in winter?

Given here is the sleeping time of some animals. Write below each picture for how many hours a day that animal sleeps.



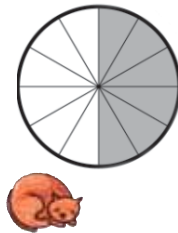
Cow \_\_\_\_\_



Python \_\_\_\_\_



Giraffe \_\_\_\_\_



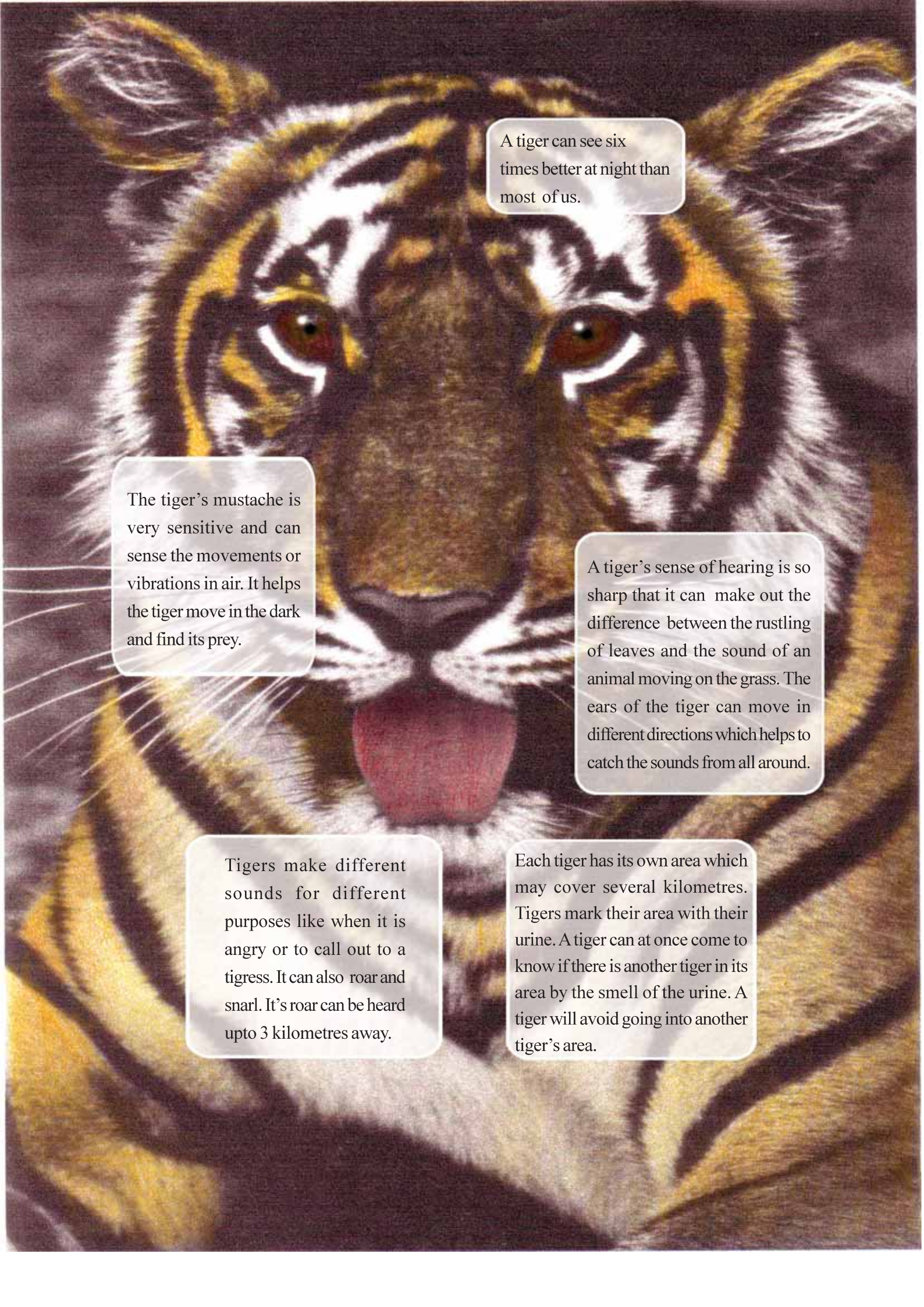
Cat \_\_\_\_\_

- When you see different animals, do you have any questions about them? Make a list of ten such questions.



**For the Teacher :** Children can be encouraged to think about fractions (one-third, one-fourth etc.), by the sleeping and waking routine of animals given in a 24 hour clock. Explain phrases like 'call of nature', 'relieve itself' etc.





A tiger can see six times better at night than most of us.

The tiger's mustache is very sensitive and can sense the movements or vibrations in air. It helps the tiger move in the dark and find its prey.

A tiger's sense of hearing is so sharp that it can make out the difference between the rustling of leaves and the sound of an animal moving on the grass. The ears of the tiger can move in different directions which helps to catch the sounds from all around.

Tigers make different sounds for different purposes like when it is angry or to call out to a tigress. It can also roar and snarl. Its roar can be heard upto 3 kilometres away.

Each tiger has its own area which may cover several kilometres. Tigers mark their area with their urine. A tiger can at once come to know if there is another tiger in its area by the smell of the urine. A tiger will avoid going into another tiger's area.



The tiger is one of the most alert animals and yet, today tigers are in danger.

- What do you think, are there dangers to the existence of tigers in the jungle ?
- Are human beings also a threat to animals ? How ?

Do you know that today many animals are killed and their body parts are sold ? Elephants are killed for their tusks, rhinoceros for its horn, tigers, crocodiles and snakes for their skins. Musk deer are killed just to make a little scent from its musk. People who hunt animals are called hunters.

Like tigers and lions the number of many other animals in our country is reducing. There is a danger that some of them will soon disappear. To protect the animals, our government has declared some forests as protected areas. Some of them are the 'Jim Corbett National Park' in Uttarakhand and 'Ghana' in Bharatpur district of Rajasthan. 'Gir National Park', 'Kaliyar National Park', 'Marine National Park' (Bay of Kutch) and 'Vansada National Park' are in Gujarat. In these areas nobody can hunt animals or destroy the jungle.



### Find out :

- Where are other such National Parks and Sanctuaries in India ?
- Collect information on these and write a report.

### What we have learnt

- Have you noticed that sometimes singers put their hand on their ear when they sing?  
What do you think, Why they are doing this ?
- Give examples of animals that may have a very strong sense of sight, hearing or smell.



**For the Teacher :** Discuss with children the various threats to the tiger—poaching, destruction of forests for roads, dams, human settlements, forest fires, etc.

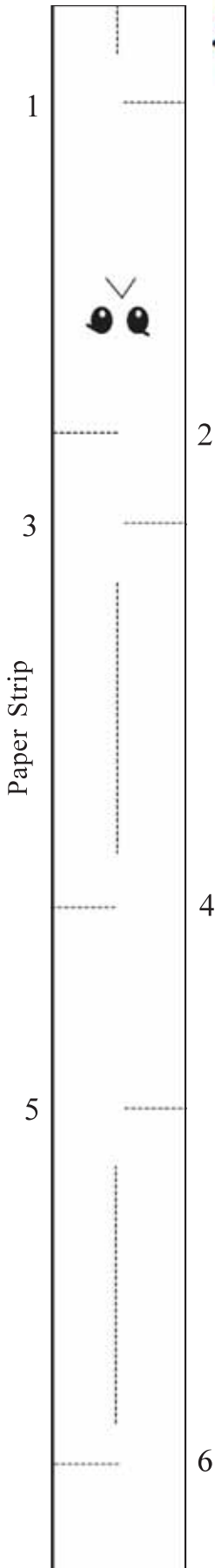




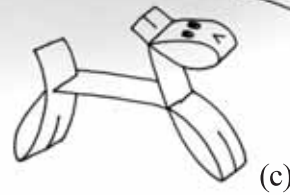
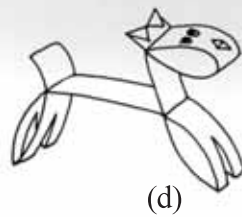
## Let's make a paper dog :

Required things for it :

thick paper, pencil, scissors, sketch pen.



**Bow, Wow !  
Give your dog a name !**



- Cut a long strip of thick paper. Mark the strip as shown here.
- Make small cuts on the lines marked 1 to 6.
- Hook together the cuts on the number 1 and 2 (see picture a).
- In the same way, hook together 3 and 4, and 5 and 6 (see picture b and c)
- Make a cut in the mark on the leg (see picture c).
- Turn down the corners of the strip on top of the head, to make the ears (see picture d)
- Mark the eyes and nose with a sketch pen.

Wasn't that fun !



## 2. A Snake and Snake Charmer



### I am Aryanath.

I can do something special which none of you can do ! Do you know what ? I can play the 'been'. You must be surprised. Yes, I can make snakes dance by playing the 'been'. I have learnt this art from my family members. We people are known as *Kalbeliyas* (a tribal community).

My grandfather Roshan Nathji was famous amongst our people. He could easily catch many poisonous snakes. He tells us many stories about his past.

Come, listen to his story in his own words !

### NAAG GUMPHAN

These kinds of designs are used in rangoli, embroidery and as wall decoration in Saurashtra, Gujarat and South India.

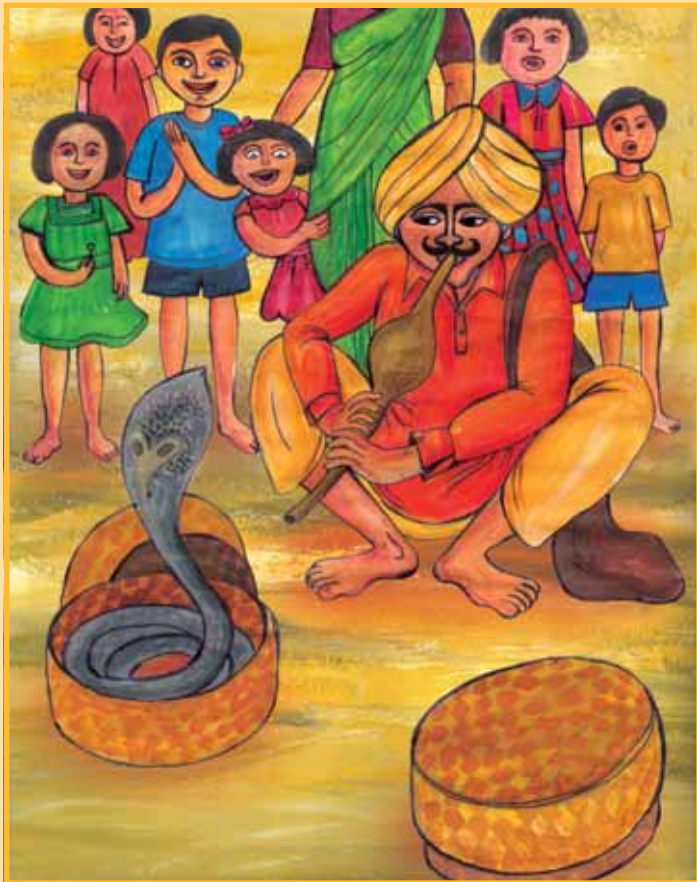


**For the Teacher :** Talk to the children about their experiences related to snakes before starting with this narrative. This would make the lesson more interesting.



## Dadaji remembers

From the time of my grandfather and great grandfather, we have been in the profession of snake charming. Snakes have been an important part of our life. We used to move from village to village carrying our snakes in bamboo baskets and whenever we stopped in a village, a crowd would gather around us. We would then take out snakes from our baskets.



Even after the show, people would stay on. They knew that in our tinbox there were many types of medicines. We made these types of medicine from plants collected from forests. I learnt all these from my grandfather. I felt nice that I could help people with my medicines because at that time doctors and hospitals were far off. In return, people would give us some money or foodgrains. In this way we could manage our life.

Sometimes, I was called to places where someone had been bitten by a snake. From the marks of the bite, I tried to find out which snake had bitten the person. I would then give a medicine for that. But I have not always been on time to help. As you know, some snakebites can even cause death on the spot. But not all snakes are poisonous.

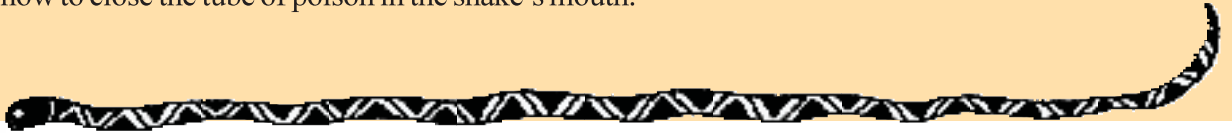
Sometimes, when some farmers would rush for help shouting “snake... snake...”, I would catch that snake.



After all, catching snakes was something I had been doing since my childhood.

Oh, good those days were ! and we could help a lot of people in many ways. We also entertained them. It was not like today when everyone watches TV for entertainment.

When I grew older, my father taught me how to remove snakes' poisonous teeth. He also taught me how to close the tube of poison in the snake's mouth.



### Think and Tell :

- Have you ever seen a snake ? Where ?
- Were you scared by it ? Why ?
- Do you think all snakes are poisonous ?
- Have you ever seen anyone playing a 'been' ? Where ?
- In chapter 1 you read that snakes do not have ears. Does the snake hear the 'been' or does it dance when the 'been' moves? What do you think ?



### What can we do ?

Aryanath ! your father used to travel with me ever since he was a young child. He learnt to play the 'been' without being taught.

Now a days it is difficult. Now the government has made a law that no one can catch wild animals and keep them. Some people kill the animals and sell their skins at high prices. So government has formed a law against them. Now, with this law, how will we earn our livelihood? People say that we keep the snakes in bad conditions. But we have never killed snakes and sold their skin.



**For the Teacher :** If possible, explain about poisonous fangs, ducts and their removal by showing visual aids to the students.



Had we wished, we too could have earned a lot of money by killing snakes. But we had never done that and never will do. Snakes are our treasure that we pass on from one generation to another. We even gift snakes to our daughters when they get married. In our ‘*Kalbeliya*’ dance we also have

movements similar to the dance of the snake. Aryanath, you have to make a different life for yourself. You have inherited the gift of playing ‘*been*’ from your father. You and your cousins can entertain people by playing ‘*been*’.

But do not waste this knowledge about snakes you have received from your elders.

Share your knowledge about snakes with children who live in villages and cities.



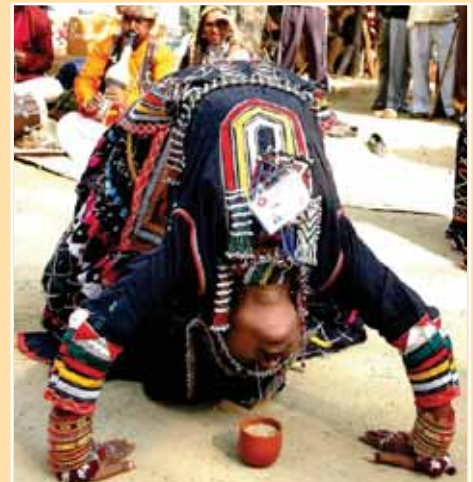
Pankaj Gorana

**Musical instruments used :**

‘*Been*’, *tumba* (one kind of drum) *khanjari* and *dhol*. Except *dhol* all the other three instruments are made from dried bottle gourd.

Tell them, that they should not be scared of snakes. Help them to recognise poisonous snakes.

Tell them how snakes are friends of the farmers. They eat the rats in the fields, otherwise rats would eat the crops. Now, you tell our story and also make a new story of your life to tell your grandchildren.



**Kalbeliya dance**

Mani Babbar



**For the Teacher :** This narrative focuses on the relationship and interdependence between snakes and snake-charmers. By talking about more such communities it can be clarified that most of them do not treat animals badly (which is a common perception). We should also not hurt or tease animals.





**Write :**

- Have you ever seen animals being used for entertainment ?  
(For example, in a circus, on the road, or in a park)
  - Have you seen this ? When ?
  - Which animal show did you see ?
- How do people behave with the animals in the show ?
- Was anyone teasing the animals ? How ?
- What kind of questions came to your mind after seeing that animal show ?

Imagine that you are an animal in a cage. Think how you would feel. Complete the following sentences :

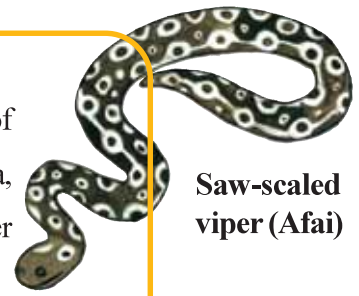
- I am afraid when \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_
- I wish that I \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_
- I am sad when \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_
- If I had a chance I would \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_
- I do not like it at all when \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_



### Do you know ?

Many kinds of snakes are found in our country. Out of them only four types of snakes are poisonous. They are: Cobra, Common Krait, Russel's Viper (Duboiya), Saw-scaled Viper (Afai).

A snake has two hollow teeth (fangs). When it bites, the poison enters the person's body through the fangs. There is a medicine for snake bites. The medicine is made from the snake's poison only. Generally it is available in all government hospitals.



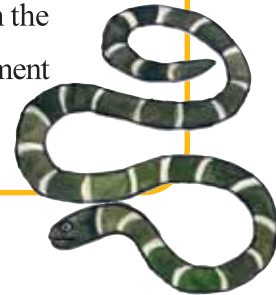
Saw-scaled viper (Afai)



Cobra



Russel's Viper (Duboiya)



Common Krait



#### Write :

- Like snake-charmers, which other people depend on animals for their livelihood ?

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#### Survey—People who keep animals

Talk to some people in your neighbourhood who keep one or more animals for their livelihood—for example, a horse for a horse cart, cows for milk, hens for eggs, etc.

- Name the animal they keep.
- How many animals are there ?
- Is there a separate place for these animals ?



**For the Teacher :** Make crossword puzzles on animals and ask them to collect more details of these animals and discuss.



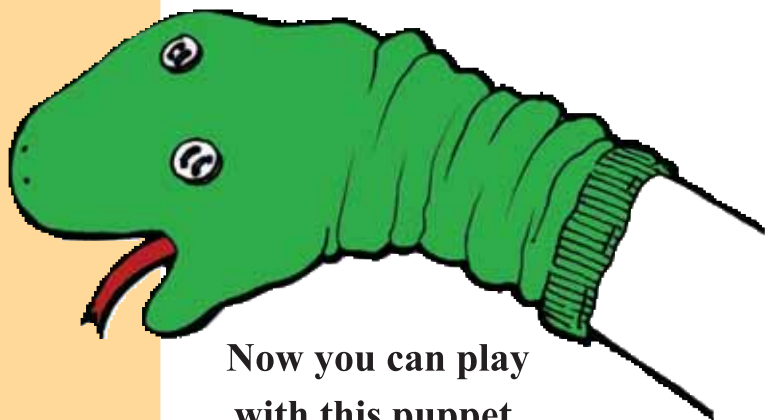


- Who looks after them ?
- What do these animals eat ?
- Do the animals ever fall ill ? What does the keeper do then ?
- Make some more questions and discuss.
- Make a report on your project and read out in the class.



### Make a snake puppet

- Take an old pair of socks.
- Put one on your arm.
- Stick buttons or *bindis* for the eyes.
- Cut out a long red strip of paper for using as the tongue and stick it in the place as shown in the picture.
- On the other side of the paper make a 'V' shaped cut.
- Your snake is ready !



Now you can play with this puppet.

### What we have learnt

The government has made a law that no one can catch or keep snakes. What do you think about this law ? Give reasons for your answer and write in your own words.



### 3. From Tasting to Digesting

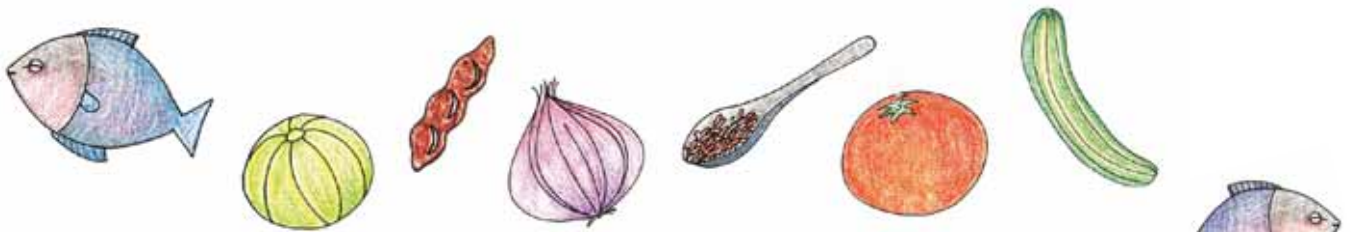


#### Different tastes

Hency ran into the kitchen and grabbed her mother and said, “Ma, I am not going to eat this bitter *karela* (bittergourd). Give me *gur* (jaggery) and *roti*.” Ma smiled and replied, “You ate *roti* and sugar in the morning.” Saroj teased Hency, “Don’t you get bored of only one kind of taste ?” Hency replied quickly, “Do you get bored with licking *imli* (tamarind) ? I bet your mouth is watering just by hearing the word *imli*.” “Sure, I love the sour *imli*. But I eat sweet and salty things too. I even eat *karela*,” replied Saroj and looked at her mother. They both laughed heartily.

Saroj said to Hency, “Let’s play a game. You close your eyes and open your mouth. I will put something to eat in your mouth. You have to tell what it is.” Saroj took a few drops of lemon juice in a spoon and put them in Hency’s mouth. “Sour lemon !!” Hency replied quickly.





Saroj then picked up small pieces of jaggery. Her mother suggested, “Crush it, otherwise she will know what it is?” Saroj crushed the jaggery but Hency easily guessed it. They played the game with different food items. Hency could tell the fried fish even before tasting it. Saroj said, “Now close your nose and tell me what this is?” Hency was confused, “It is a little bitter, a little salty and somewhat sour. Give me one more spoonful.” Saroj took another spoonful of the cooked *karela*, uncovered Hency’s eyes, and said, “Here it is, eat!” Hency laughed, “Yes, give me more.”



**Discuss and Write :**

- Saroj’s mouth started watering when she heard the word *imli*. When does your mouth water ? List five things you like to eat and describe their taste.

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- Do you like only one kind of taste or different ones ? Why ?

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- Saroj put a few drops of lemon juice in Hency’s mouth. Do you think we can make out the taste with just a few drops ?

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- If someone to put a few seeds of *saunf* (fennel seeds) on your tongue, would you be able to tell with your eyes closed ? How ?

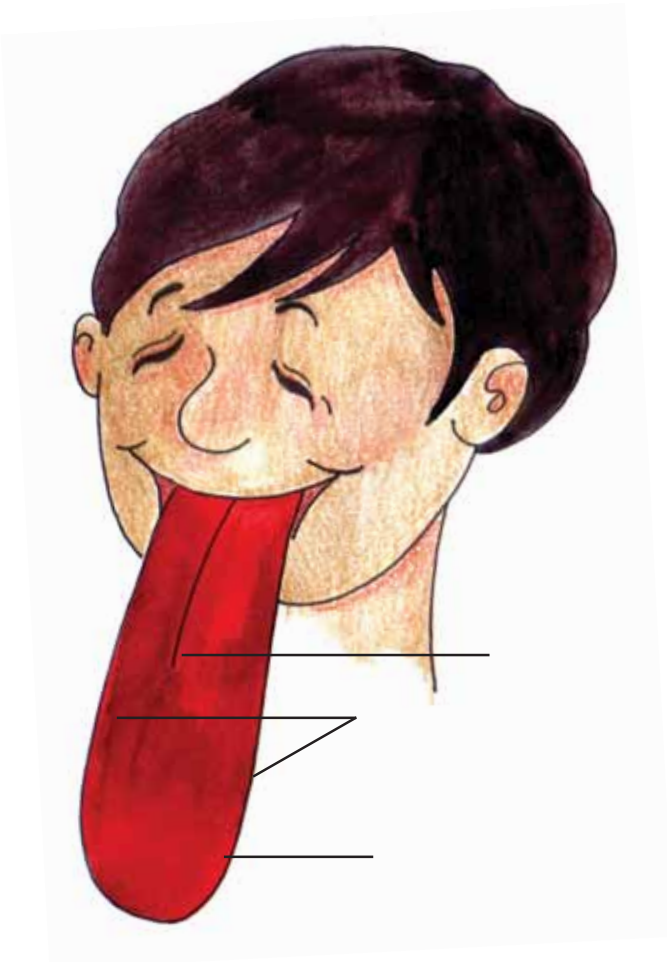
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- How did Hency make out the fried fish ? Can you guess the names of certain things only by their smell, without seeing or tasting them ? What are these things ?
- Has anyone ever told you to hold your nose before taking a medicine ? Why do you think they tell you to do this ?



### Close your eyes and Tell

Collect a few food items having different kinds of taste. Play a game with your friends like Hency and Saroj did. Tell your friend to taste the food and ask :

- How did it taste ? What was the food item ?
- On which part of the tongue could you get the most taste ? In front, at the back, on the left or right side of the tongue ?
- Which taste could be made out on which part of the tongue ? Mark these parts in the picture given.
- One at a time put some things to eat in other parts of your mouth. Like, under the tongue, on the lips, on the roof of the mouth. Did you get any taste there ?

### Label the parts of the tongue



**For the Teacher :** Encourage children to be creative and to explore their vocabulary to describe different kinds of flavours. Explain how the combination of different flavours brings so much variety in our food. Different combinations of tastes (such as sweet-sour, hot-spicy) discussed in the class to develop this understanding.





Use a clean cloth to wipe the front part of your tongue so that it gets dry. Put some sugar or jaggery there. Do you taste anything? Why does this happen?

- Stand in front of a mirror and look closely at your tongue. How does the surface of it look? Do you see any tiny bumps on the surface?



### Discuss and Write :

- If someone asks you to describe the taste of *amla* or cucumber, you might find it difficult to explain.
- How would you describe the taste of these items—tomato, onion, *saunf*, garlic.
- Think of words that you know or make your own words to describe the taste.
- When Hency tasted some of the things, she said “Sssee..., sssee..., sssee..., sssee...” What do you think she might have eaten?
- Why don't you make sounds that describe some tastes?
- From your expressions and sounds ask your friends to guess what you might have eaten.



### Chew it and chew it well: What's the difference ?

Try this together in class :

- Each of you take a piece of bread or a piece of *roti* or some cooked rice.



**For the Teacher :** Children will need help because it is sometimes difficult to identify exactly which part of the tongue can sense a particular taste.

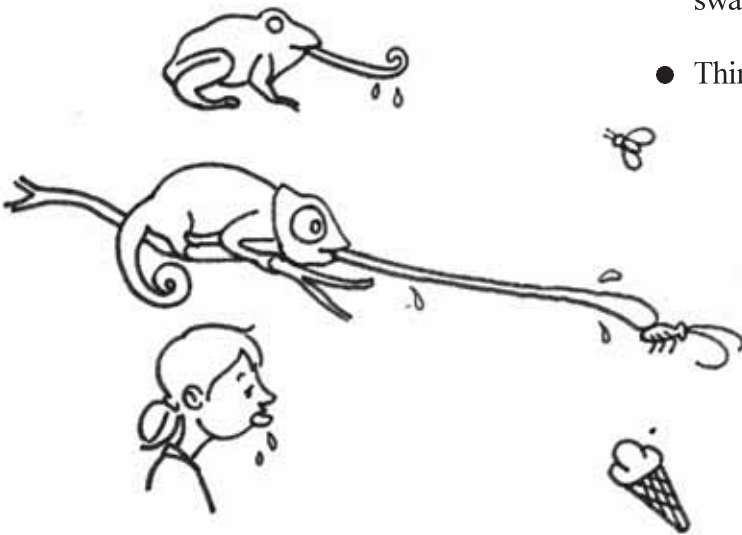


- Put it in your mouth, chew three to four times and swallow it.
- Does the taste change when you chew it ?
- Now take another piece or some rice and chew it thirty to thirty-two times.
- Is there any change in the taste after chewing so many times ?

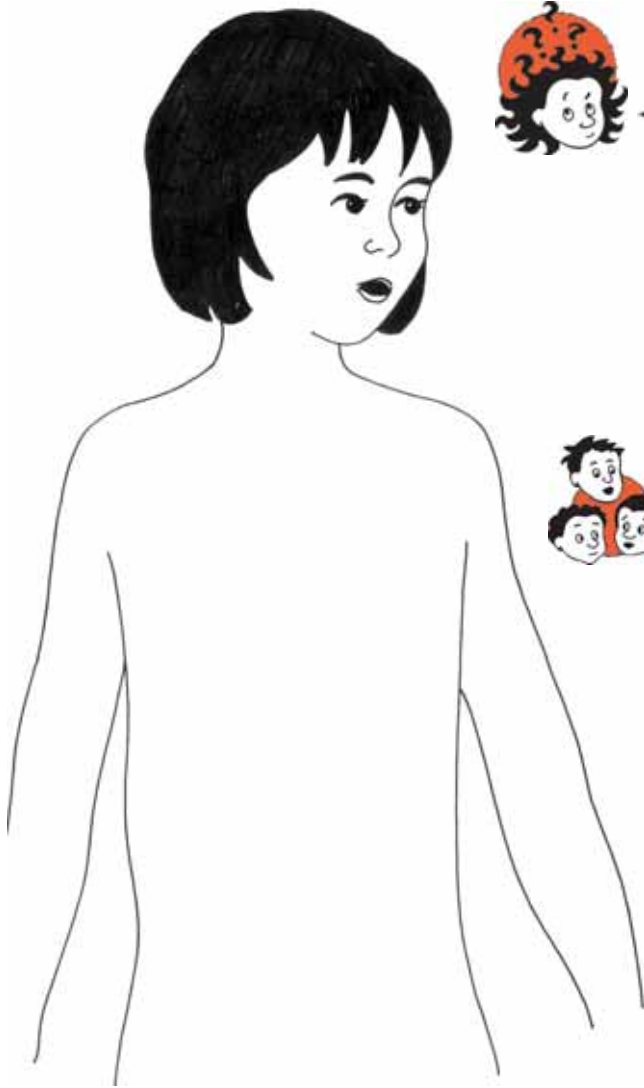


### Discuss :

- Has anyone at home told you to eat slowly and to chew well so that the food gets digested properly ? Why do they say this ?
- Imagine you are eating something hard like a green guava. What kind of changes take place in it—from the time you bite a piece and put it in your mouth to swallow it ?
- Think, what does the saliva do in our mouth ?



**For the Teacher :** On page 27, children are not expected to draw the ‘digestive system.’ Encourage children to imagine and express their own ideas about what happens to the food in our body. Encourage sharing of pictures and free discussion, without any judgement of right or wrong.



### Think and Tell :

Where does the food must be going after you put it in your mouth and swallow it ? In the picture given here, draw the path of the food through your body. Share your picture with your friends. Do all of you have similar pictures ?



### Discuss :

- How do you feel when you are very hungry ? How would you describe it ?

For example, sometimes we jokingly say, “I am so hungry that I could eat all!”

- How do you come to know that you are hungry ?
- Think what would happen if you do not eat anything for two days ?
- Can you stay without drinking water for two days ?

Where do you think the water that we drink goes ?

I have a headache when I feel hungry.



I get angry when I am hungry.



When my sister is hungry she cries.



I cry when I am hungry.



When I am hungry I feel tired.





## Saniya was given a glucose drip

Saniya was very sick. The whole day she was vomiting and she also had diarrhea. Whatever she ate, she vomited. Her father gave her sugar and salt solution. By evening Saniya was feeling weak and dizzy. When she got up to go to the doctor she fainted. Her father had to carry her to the doctor. The doctor said that Saniya should get admitted to the hospital. She needs to be given a glucose

drip. Hearing this, Saniya got confused. She knew that during the games period in school, the teacher sometimes gave them glucose to drink. But what was a glucose drip? Doctor aunty explained, “Your stomach is upset. Your body is not keeping any food and water and it has become very weak. The glucose drip will give you some strength quickly, even without eating.”



### Talk and Discuss :

Do you remember that in Class IV you made a solution of sugar and salt? Saniya’s father also made this and gave her. Why do you think that this is given to someone who has vomiting and loose motion?

- Have you ever heard the word ‘glucose’, or seen it written anywhere? Where?



**For the Teacher :** Discuss with children about how glucose is used. It is too abstract for children to understand how glucose gives energy. You can invite a doctor to talk to the children. It is not expected that children will understand all the details at this stage.



- Have you ever tasted glucose from the first aid box ? How does it taste ? Tell your friends.
- Have you or anyone in your family been given a glucose drip ? When and why ? Tell the class about it.
- Saniya’s teacher used to tell the students to have glucose while playing. Why do you think she did this ?
- Look at Saniya’s picture and describe what is happening. How is the glucose drip being given ?

### ‘Eat Healthy, Stay Healthy’

Fruits and vegetables help our body grow big and strong. Tell the name of each food item shown in the picture. Then follow the fruits and vegetables to find out the way through the maze.



## Story – A Stomach with a Window

Let us find about a soldier called Martin. In 1822, he was eighteen years old and was very healthy. When he was shot, he got seriously hurt. At that time Dr. Beaumont was called to treat him. Dr. Beaumont cleaned the wound and put the dressing. After one and a half years, the doctor found that Martin's wound had healed except for one thing. He had a big hole in his stomach. The hole was covered with a loose flap of skin, like the washer in a football. Press the skin and you could peep into Martin's stomach! Not only that, the doctor could also take out food from the stomach by putting a tube in the hole. Dr. Beaumont felt he had found a treasure. Can you guess how much time he had spent on doing different experiments on his stomach? Nine years. During this time Martin grew up and also got married.

At that time scientists did not know how food was digested? How does the liquid (digestive juices) in the stomach help? Does it only help in making the food wet and soft? Or does it also help in digestion?

Dr. Beaumont took some liquid (juices) out of the stomach. He wanted to see what would happen to a food item kept in a glass filled with it.

Would it get digested on its own? For this, he did an experiment. With the help of a tube, he took out some digestive juice from the stomach. At 8.00 a.m. he put twenty tiny pieces of boiled fish in 10 millilitres of the juice. He kept the glass at the same temperature as that of our stomach – about 30 °C. When he checked at 2 p.m. he found that the pieces of fish had dissolved.



Dr. Beaumont tried this experiment with different food items. He gave Martin the same food at the same time. Then compared how long it took for food to be digested in the glass and in Martin's stomach. He recorded his observations in a table.



Here is a part of his observation table :

Food item	Time taken for digestion	
	In the stomach	In the glass with digestive juices
1. Unskimmed milk	2 hours 15 minutes	4 hours 45 minutes
2. Skimmed milk	2 hours	4 hours 15 minutes
3. Boiled egg	3 hours 30 minutes	8 hours
4. Half boiled egg	3 hours	6 hours 30 minutes
5. Raw egg (beaten)	2 hours	4 hours 15 minutes
6. Raw egg	1 hour 30 minutes	4 hours

So, what does our stomach do ?

Dr. Beaumont did many experiments and found out many secrets about digestion. He found that food digests faster in the stomach than outside. Did you notice this in the table ?

Our stomach churns the food to digest it. The doctor also saw that the food did not digest properly when Martin was sad. He also found that the juice in our stomach is acidic. Have you heard of anyone talking about acidity ? Especially when that person has not eaten well or the food is not digested properly.

Dr. Beaumont's experiments became famous across the world. After this, many scientists did many such experiments. What did you say ? Neither did they not shoot people in the stomach. nor did they wait for a patient with a hole in the stomach. They used other scientific ways to look inside our body.

Did you like the story of Martin ? Can we say that this is the story of our own stomach ?

- Anita Rampal

Chakmak, August 1985

### Think and Discuss :



Imagine if you had been in place of Dr. Beaumont, what experiments would you have done to find out the secrets of our stomach ? Write about your experiments.



**For the Teacher :** This story is to introduce children to the method of science and the passion with which scientists pursue their experiments. It is not necessary that children should understand the story about digestion in all its detail.



## Good food, Good health

Dr. Ruta has two patients – Rashmi and Jayesh. Dr. Ruta talked to them to find out more about them.

Read what the doctor found.



### **Rashmi**, 5 years

She looks about 3 years old. She has very thin arms and legs and a pot belly (stomach like a balloon). She often falls sick.

She always feels tired and cannot go to school regularly. She does not have the strength even to play.

**Food** : The day would be good for her if she gets a little rice and one *roti* to eat during the day.



### **Jayesh**, 7 years

He looks older than his age. His body is fat and flabby. He has pain in his legs. He is not very active. He goes to school by bus and spends many hours watching TV.

**Food** : He does not like to eat food cooked at home/Home made food like *dal*-rice, vegetables and *roti*. The only thing he finds tasty are chips, burger, pizzas and soft drinks from the market.

Dr. Ruta measured the height and weight of both the children. Then she told them, there is only one treatment for both your problems – Balanced diet !





### Discuss :

- Why do you think Rashmi could eat only one *roti* in the whole day?
- Do you think Jayesh would like to play games ?
- What do you understand by balanced diet?
- Why do you think that the food of Rashmi and Jayesh is not proper?



### Find out :

Talk with your grandparents or elderly people and find out what they use to eat and what work they used to do when they were of your age ?

- Now think about your daily activities and daily diet.
- Are these similar or different from what your grandparents did and ate ?



### Proper food – every child’s right ?

You have read about two children. One is Jayesh who does not like home-made food. The other one is Rashmi who does not even get one proper meal a day. About half of the children in our country are like Rashmi. They do not get enough food that they need to grow and develop properly. These children are weak and sickly (often ill in poor-health). But it is the right of every child to get proper food.





P. Sainath

Gomti is thirty years old. Gomti works in the fields of a rich farmer. For all her hard work, she gets paid very little. So little that she cannot even buy enough rice to feed her family. Some months she does not get any work at all. Then she has to eat leaves and roots from the jungle. Gomti's children are always weak and sick due to hunger. A few years ago her husband died of hunger.

Paddy grows in most of the areas of Kalahandi district. Rice is even sent to other states from here. Many times, the rice that keeps lying in the godowns gets spoiled. In the same Kalahandi, there are many poor people like Gomti. Why do people die of hunger in such a place ?

◀ Read about this story of Kalahandi district in Odisha.



### Think and Discuss :

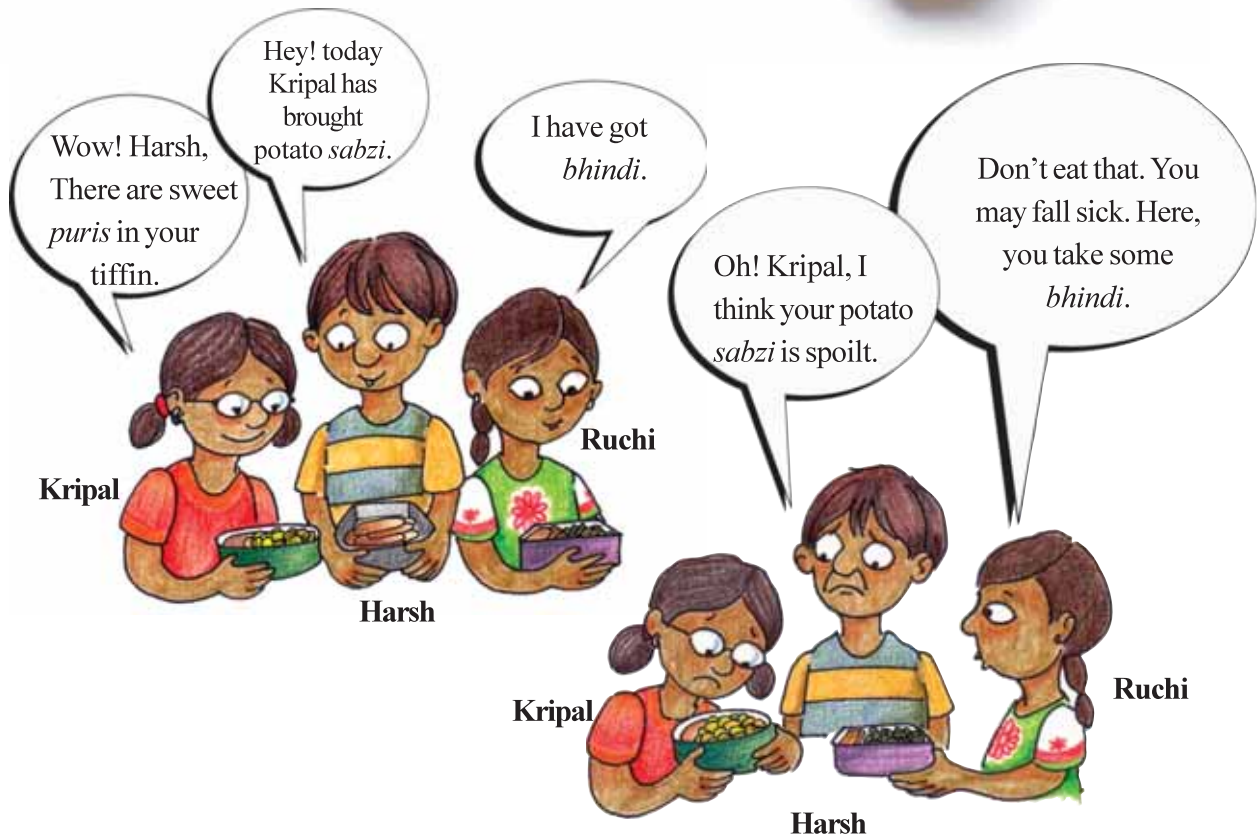
- Do you know any child who does not get enough food to eat in the whole day ? What are the reasons for this ?
- Have you ever seen a ware house where a lot of grain has been stored ? Where ?

### What we have learnt

- Why you cannot taste food properly when you have a cold ?
- We say that "Digestion begins from the mouth." How would you explain this, write.



## 4. Mangoes Round the Year !



### Discuss :

- How did Harsh know that the potato *sabzi* had got spoilt ?
- Have you ever seen some food that has got spoilt ?  
How did you know that it was spoiled ?
- Ruchi told Kripal not to eat the potato *sabzi*. What would have happened if she had eaten it ?



**For the Teacher :** Let children give examples of food spoilage based on their own experiences. It is important to explain the difference between food spoilage and wastage of food. The experiment with bread can be started when you begin the lesson, because it will need to continue over six days at least.





### Write :

- Look in your kitchen and write down names of food items that
  - can get spoilt in 2-3 days \_\_\_\_\_
  - can be kept for a week \_\_\_\_\_
  - would not spoil till one month \_\_\_\_\_
- Look at your friend's list and discuss in the class.
- Will your list be the same in all seasons ? What would change ?
- When food gets spoilt in your house, what do you do with it ?



### Grandma returned the bread

Harsh's grandma went to the market to buy bread. The shop was very crowded. The shopkeeper picked up a packet of bread and gave it to grandma. She looked at it and returned it immediately.

- Look at the picture of the bread packet here and guess. Why grandma returned it ?
- How did she find that the bread had got spoilt ?



### Find out :

Look carefully at two-three packets of food items:

- What can we know from what is written on the packet ?
- When you buy anything from the market, what do you look for on the packet ?



**For the Teacher :** Help children to read and note the information given on the packets like weight, date of packing etc. While doing the experiment, precautions need to be taken depending on the weather conditions – e.g. the bread should not be allowed to dry up, there should be some ventilation in the class room. Do put up the chart in the classroom and remind the children to fill it in every day.







### How does food get spoilt ?

The whole class can do this experiment together. Take a piece of bread or *roti*. Sprinkle a few drops of water on it and put it in a box. Close the box. See the bread or *roti* everyday until you find some changes on it.

Make this table on a chart paper and put it up in the classroom. Fill up the chart every day after discussing the changes seen.



Day	Changes in the bread or <i>roti</i>			
	By touch	By smell	By looking through magnifying lens	By colour
1.				
2.				
3.				
4.				
5.				
6.				

- Find out the reason for these changes. From where did the fungus come on the bread ?
- Different kinds of food items spoil due to the different reasons. Some food items get spoiled soon, some stay good for long. List some seasons and conditions in which food spoils quickly.



**For the Teacher :** Whenever children do this experiment, they should wash their hands after the experiment. If magnifying lens is not available, local things can be used.



- Given below are some examples of food items and some simple methods by which food could be kept fresh for 1-2 days. Match the correct pairs:

Food items	Method
Milk	Put in a bowl and keep the bowl in a container with some water.
Cooked rice	Wrap it in a damp cloth.
Green coriander ( <i>Dhania</i> )	Boil it.
Onion, garlic	Keep it in a dry and open place.

### Summer treat – *Aam papad*

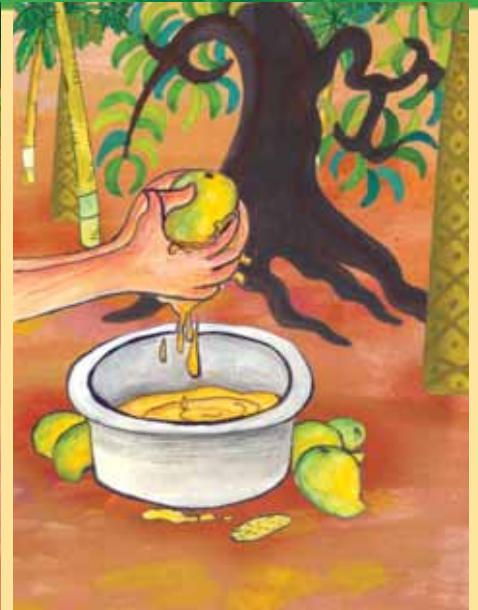
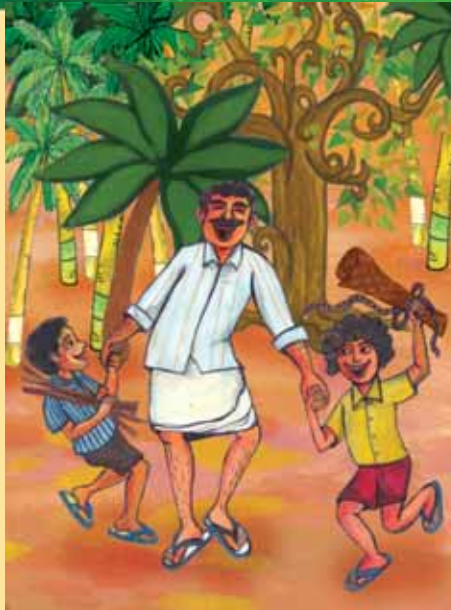
Alpesh and Mahendra live in Junagadh town in Gujarat. Both the brothers spend the summer holidays playing in the mango garden, when the trees are full of mangoes. They also like to eat unripe mangoes with salt and chilly powder.

At home, their mother used to cook unripe mangoes in different ways. She also made many kinds of mango pickles. The pickles lasted through the year until the next mango season.

One evening, while having food Mahendra asked, “*Ma*, we have so many mangoes. Make some *aam papad* from them.”


Their father said, “Making *aam papad* needs four weeks of hardwork. If you both promise to help us everyday for the next four weeks, we can together make the *aam papad*.”

Both the brothers quickly agreed to help. The next day both the brothers went to the market with their father. They bought a mat woven from the leaves of a palm tree, poles of Eucalyptus (Nilgiri) tree, strings made of coconut husk, some jaggery and sugar.



Ma found a sunny place in the backyard. Both the brothers made a high platform by using poles. They spread out and tied the mat on that platform.

The next day, father chose the most ripe mangoes. They took out the mango pulp into a large pot. Then they strained the pulp through a fine muslin cloth, to remove the fibres from the pulp. Then Alpesh crushed the *gur* (jaggery) till there were no lumps. They added the jaggery and sugar in equal quantity to the pulp.



Mahendra mixed the jaggery and sugar well with a big spoon. *Ma* then spread this pulp into a thin layer over the mat. The thin layer was left to dry in the sun. In the evening, they covered the mat with a clean saree to avoid dust.

The next day they again took out some mango pulp. They added jaggery and sugar into the pulp. Then they spread the pulp over the previous day's layer. This work was given to both the brothers. Both of them together spread many layers over it. For the next four weeks they hoped that it would not rain.

For four weeks, they added layer after layer until the jelly grew four centimetres thick and looked like a golden cake. After some days *Ma* said, "The *aam papad* is ready, we will take it out and cut it into pieces tomorrow."

The next day, the mat was brought down from the platform. *Aam papad* was cut into smaller pieces. Both the brothers tasted it. It was tasty. Mahendra said, "Wow! how tasty! After all we have also helped in making it."



### Write :

- Why was jaggery and sugar mixed into the mango pulp and dried in the sun ?
- Why did father first choose the most ripe mangoes to be used for making the *aam papad* ?
- How did both the brothers make the *aam papad* ? What they did for this ?  
Write it down step-by-step.
- Which items are made in your house from ripe and unripe mangoes ?



- Make a list of all the different types of pickles that you know about and share it with your friends.



### Find out and Discuss :



- Is there any kind of pickle made in your house ? What kind of pickle is it ? Who makes it ? From whom did they learn to make the pickle ?
- Write down in detail what are the ingredients needed to make any one type of pickle and how it is made.
- How are these things made in your house ?



–*Papad* –*Chutney* – *Chunks(Badiyan)* – *Sauce* – *Wafers*

- It is a two-day journey by train from Gandhidham to Vapi. If you were to go on this trip, what food items would you carry with you ? How would you pack them ? Make a list on the blackboard of all the packed food. What food would you eat first ?



### What we have learnt

- Glass jars and bottles are dried well in the sun before filling them with pickles. Why is this done ? Do you remember what happened to the bread in the experiment ?
- To eat mangoes round the year we make different items like pickle, *aam papad*, *chutney*, *chikky*, etc.

List some other food items with which we make different things, so that we can enjoy it throughout the year.



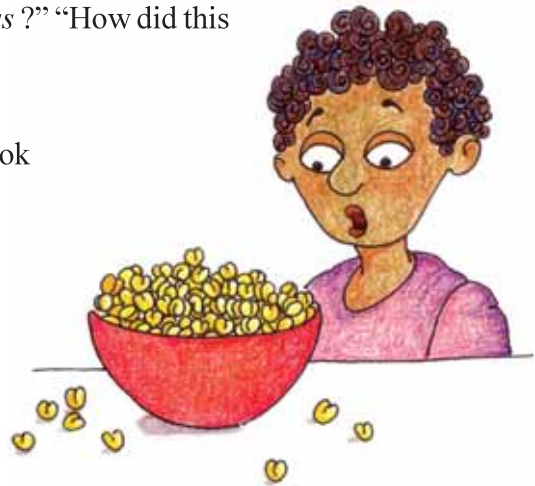


## 5. Seed, Seed, Seed

Gopal was waiting eagerly for his *masi's* family to visit them. They will be coming the next day to spend their holidays. Gopal was very happy thinking that they would make new food items and play a lot. Just then his mother called out, "Gopal, before you sleep, soak two small bowls of *chanas* (grams). I am going to *Foi's* house and will return in the morning."

When Gopal was soaking the *chanas*, he thought that mother had told him to soak two bowls of *chanas*. But how would two small bowls of this be enough for eight persons? Not enough, thinking so, he soaked four bowls of *chanas*. Next morning when his mother returned, she saw that the *chanas* were overflowing from the vessel. She called Gopal and said, "Why did you soak so much *chanas*?" "How did this happen?" wondered Gopal.

Mother said, "It doesn't matter. It is good, now I will cook half of them, and leave the other half to sprout. I will send these to your *Kaki*. The doctor has told her to eat sprouts". Gopal's mother tied half of the soaked *chanas* in a wet cloth, and hung them up to sprout.



### Discuss :

- What things are soaked before cooking in your house ? Why ?
- What things do you eat after sprouting ? How are they sprouted ? How much time does it take ?
  - Has the doctor ever advised you or someone you know to eat sprouts ? Why ?





### Do this :

- Do you remember that in Class IV you did an activity with seeds ?  
Now try another activity with seeds.
- Take some *chanas* and three bowls. Put 4-5 *chanas* in the first bowl and fill it up with water.
- Put a damp piece of cloth or some cotton wool in the second bowl. Now keep 4-5 *chanas* in it. Make sure that the cotton wool or cloth remains wet.
- Put 4-5 *chanas* in the third bowl. Do not put anything else in it.  
Cover all the three bowls.



After two days, observe *chanas* in all three bowls and note the changes made in *chanas*.

	Bowl 1	Bowl 2	Bowl 3
Are the seeds getting air ?	No	Yes	Yes
Are the seeds getting water ?			
What has changed in the seeds ?			
Have the seeds sprouted ?			



### Tell and Write :

- In which bowl did the seeds sprout ? What difference can you see between this bowl and the other bowls ?
- Why did Gopal's mother tie the *chanas* in a damp cloth ?



**For the Teacher :** During this activity, sprouting time of seeds may vary according to the amount of temperature and humidity in the room.



Whole *tuar* can sprout, but *tuar-dal* cannot. Why so?



**Draw :**

Look carefully at sprouted *chanas* and make its drawing.

**Project : Whose plant, how tall ?**

Take a clay pot or a plastic container with a wide mouth. Make a small hole at the bottom of it. Fill it with soil. Put four or five seeds of the same kind in it. Press them gently in the soil. Then pour adequate water in it. All the children in the class can plant different kinds of seeds. Such as mustard (*sarson*), fenugreek (*methi*), sesame (*til*), cluster bean (*guvar*), corriander (*dhania*), etc.



**Write :**

Name of the seed : \_\_\_\_\_

The date on which seed were sown : \_\_\_\_\_

The day when you observe sapling coming out of the soil, start filling in the following table :



To find the height of a plant use thread and then measure it with the scale.

Date	Height of the plant (in cm)	How many leaves seen ?	Any other change







### Find out :

- After sowing the seeds how long did it take for the plant to germinate from the soil ?
- What was the difference in the height of the plant on the first and second day ?
- On which day did the height of the plant increase the most ?
- Did new leaves grow on of the plant every day ?
- Was there any change in the stem of the plant ?
- Compare it with your friends. Whose plant is taller ? Why ?



### Discuss :

- Which seeds did take the most number of days to germinate from the soil ?
- Which seeds did take the least days to come germinate from the soil ?
- Which seeds did not grow at all ? Why ?
- Did any student's plant dry up or turn yellow ? Why did this happen ?
- What would happen if the plants do not get water ?



### Think and Tell :

- What is inside the seed ?
- How does a big plant or tree grow from a tiny seed ?



**For the Teacher :** To develop the understanding in the children through the questions in the discussion that air, water and soil are necessary for the growth of the plants. Growth of the plant is not possible without it. What is inside the seed? Such questions will make children to think and encourage them to express their thoughts. These questions are not expected to provide scientific information.





### Think and Imagine :

- What would happen if plants could walk ? Draw a picture.



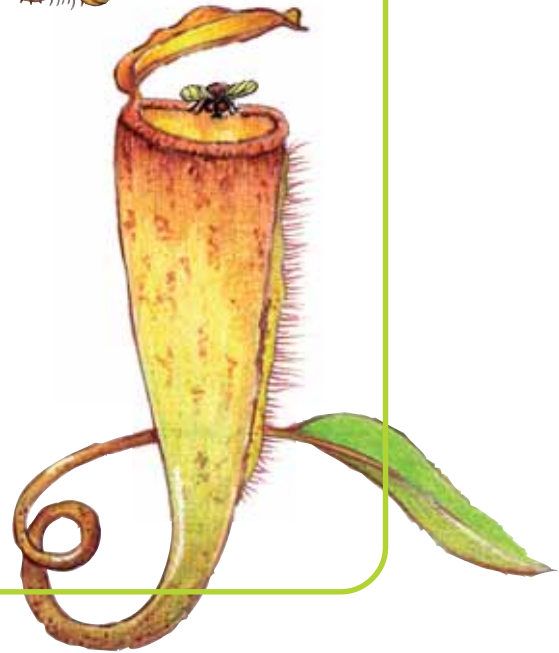
### Find out :

- Is there any plant grow without seed ?

Poor guy.....  
Got trapped

### Hunter Plants :

There are some plants which trap and eat mice, frogs, ants and small insects. The Pitcher plant (Nepenthes) is one such plant which is found in Australia, Indonesia and Meghalaya state in India. It has a pitcher-like shape and the mouth is covered by a leaf. The plant has a special smell which attracts insects to it. When the insect lands on the mouth of the plant, it gets trapped and cannot get out. What a clever way to hunt !



### So many Seeds !

How many types of seeds can you collect ? Think, where will you find those seeds ? Bring different types of seeds. After that, put all the collected seeds together. Now observe all these seeds carefully – shape, size, colour, texture (smooth or rough), etc.



Make a chart of the seeds collected in the class. Make a table in the chart to fill in the details of all seeds.

Name of the seed	Colour	Draw its Shape	Texture
<i>Rajma</i>	reddish brown		smooth



### Think :

- Is there aniseed (*saunf*) and cumin (*jeera*) in the list above ?
- Which is the smallest and the biggest seed in the collection of seeds ?
- Which seeds are smooth and which are rough ?



### Classify and Write :

- Seeds that are used as spices in the kitchen : \_\_\_\_\_
- Seeds of vegetables : \_\_\_\_\_
- Seeds of fruits : \_\_\_\_\_
- Light seeds (check by blowing them) : \_\_\_\_\_
- Flat seeds : \_\_\_\_\_
- Make more groups. How many groups of seeds could you be able to make ?
- Do you know any games that can be played with seeds ?

Discuss with your friends and play.

### Wandering Seeds :

Trees remain at one place throughout their life. They cannot move around, but their seeds are great travellers ! They can reach far and wide.





Kenneth Rowley



Picture 1



Olga Gerrard

Picture 2



- Look at the Picture 1. How do these seeds fly with the help of air ?
- Have you ever seen any seeds that can fly ?
- What are these flying seeds called in your area ?
- Imagine how many seeds from your collection would be blown away by wind.

Look at the Picture 2 carefully. These seeds cannot fly in the air. These seeds get stuck in the fur of animals and on our clothes. What a free ride ! Can such seeds be seen in your area ? Collect them and paste seeds on cloth to make picture. Did any new idea come from seeing these seeds ?

Read, how did the idea of 'Velcro' come to George Mestral ?



This incident is of 1948. One day when George Mestral was coming back from a walk with his dog, he noticed that something was sticking all over his clothes and on his dog's body. It was one kind of seed. He took the seed and stuck it elsewhere. It stuck. He was very much surprised. Immediately he took out microscope and began to observe the seeds. There were small hooks on the seeds. With the help of which they could easily stick to clothes. Knowing this Mestral came up with a new idea – to make 'Velcro'. The 'Velcro' strips stick together easily. When we tear it, it sounds like 'charr...charr...'. You may have seen this, used in clothes, bags, shoes, sandals, etc. What a way to take inspiration from nature !



Look at the pictures given below and guess how the seeds travel and reach at different places ?



- Some plants spread their seeds themselves over long distances on their own. When the soyabean pods ripe, they burst themselves and the seeds are thrown out. Have you ever heard their sound ?
- Have you seen Banyan tree, Pipal or other plants growing on a wall or in a well ? How would the seed reach there ? By whom it would have gone there ? Find out.
- Think, what would happen if seeds did not spread and remained at one place only ?
- Make a list of the different ways by which seeds are spread.



### Who came from where ?

Have you included human beings in your list of seed dispersal ? Yes, we also carry seeds from one place to another, knowingly or unknowingly. We bring the seeds of plants that we find beautiful or useful in medicine to grow them in the yard or garden. Later, as these plants grow bigger, spread their seeds at far and wide places. Many years later, people may not even remember that where the plant came from. Do you know from where chillies came to our country ? Chillies were brought to India by Portuguese traders from South America. Now a days Chillies are grown everywhere in India. Are chillies grown at your place ? Spicy food cannot be cooked without chillies these days.

Read this poem to know which plant came from where.

### Potatoes, Chillies, Tea...



Potatoes, Chillies, Tea.... Dear!  
Where do they come from....Dear!

Across seven oceans,  
Gifts of the world trade,  
Products of invasions - battles  
wars and quarrels.

All of them, travelled through  
various routes..... Dear!

Potatoes, Chillies, Tea.... Dear!  
Here, Comes-Queen Chilly from  
South America,  
She-The Queen of Spices!... Dear!

Groundnut, Potatoes, Cluster Beans  
Ratling with excitement, making  
noise..... Dear! Here comes -Tangy  
Tomatoes... Dear!

Potatoes, Chillies, Tea.... Dear!  
Ladyfingers lay in office  
with Black - Black - Coffee

Hey! Where is Europe  
in the map? Ah! From  
there comes our peas  
and cabbage... Dear!

Tea travells from Assam state,  
Potatoes, Chillies, Tea....Dear!



Walking all the way from China,  
Here comes - Soyabean  
On reaching America -  
it beats its drum

with thrills, frills, pomp and show-  
Reaches to our nation.... Dear!

Oh! It possesses unique  
qualities with lot of pride  
it comes here.... Dear!

Brinjal, Raddish, Beans,  
bitter gourd, mangoes, oranges,  
berries, bananas, spinach,  
Pointed gourd, Mint and Fenugreek

Brothers and Sisters are  
they...Dear!

Born in the same  
nation-India....Dear!  
Where do they come  
from.... Dear!

Potatoes, Chillies, Tea .... Dear!



Now you know who came from where. If all these seeds had not come to us, what would be the situation! Try to find these countries on the world map.



#### What we have learnt

Reena has drawn a picture of a sprouted seed. Write it in your own words about things required for a seed to germinate. How would a seed look like if it did not get the things it needed? Make a picture of it and show it.

- How do seeds spread? Write any two ways of it in your own words.





## 6. Water is Life

### Many years Ago

This is a picture of *Ghadsisar*. *Sar* means a lake. King *Ghadsi* of Jaisalmer got it made 650 years ago with the help of the people. There are *ghats* all around the lake with steps leading to the water, decorated verandahs, large halls, rooms and much more. People came here to celebrate festivals and for programmes of music and dance. Children came to study in the school on the *ghat*. The *lake* belonged to everyone and everyone took care to keep it clean.

Rainwater collected in this lake spread over many miles. It was made in such a way that when the lake was full, the extra water flowed into another lake at a lower level. When that too filled up, the extra water flowed into the next lake. This way, all nine lakes filled up respectively. This rainwater could be used throughout the year.



Pawan Gupta

Today, *Ghadsisar* is no more in use. Many new buildings and colonies have come up in between those nine lakes. Now the water does not get collected in these lakes. Rainwater just flows away and is wasted.





## Through the eyes of Al-Biruni

More than a thousand years ago, a traveller came to India. His name was Al-Biruni. The place that he came from is now called Uzbekistan.

Al-Biruni carefully observed and noted down the details of all that he saw. He wrote especially about those things that he found very different from his own country. Here is a part of what he wrote about the lakes of that time.

**The people here are very skilled at making lakes. The people of my country would be surprised to see them. They pile up huge rocks and join them with iron rods to build *chabutaras* (raised platforms) all around the lake. Between these, there are rows of long staircases, going up and down. The steps for going up and coming down are separate. So there is less crowding.**

Today when we study history, we can learn a lot about those days from the writings of Al-Biruni.



### Observe and Find out :

- Look at the area around your school. There could be any fields, farms, pucca roads, drains, etc. Is the area sloppy, rocky or flat? Think, what will happen here when it rains? Where will the rain water go – into the drains, pipes or pits? Does some water also get absorbed into the soil?



### Drop-by-drop

Besides Jaisalmer, many places in Rajasthan and Gujarat, get very little rainfall. Here it rains very little during the entire year, sometimes not even that much.



**For the Teacher :** We can tell children how Al-Biruni's book is helpful to know about the past. Discuss about other sources of history. Such as old buildings, coins, paintings, etc. Help children to locate Uzbekistan on the world map.





The rivers here do not have water throughout the year. And yet, most of the villages in these areas do not have a shortage of water. People know that every drop of water is precious. Lakes and tanks(*johads*) were made to collect water. Water is everyone's need.

Therefore everyone should make an effort for water storage. This work should be done by everyone together whether it is a businessman or a labourer, a craftsman or a farmer. The water from the lakes soaked into the ground and reached the wells and stepwell (*bavdis*). So that the soil of the area also became wet and fertile.

Every house had a system to collect the rain water. Look at the picture on your right.



Mimru

How do you think the rainwater that falls on the roof will reach the underground tank ? Draw the path of it.

**Know this :**

According to number of entrance, there are four types of stepwell.

- (1) *Nanda* – One entrance
- (2) *Bhadra* – Two entrances
- (3) *Jaya* – Three entrances
- (4) *Vijaya* – Four entrances

Have you ever seen a stepwell ? Look at the picture. You can imagine by looking at the picture that the steps go down several storeys deep. Instead of drawing the water up from the well, the people could go down the steps and reach the water. That is why they are called stepwells.



**For the Teacher :** How does the earth absorb water and how does it reach wells and stepwells ? This can be discussed with children.



Many years ago, people used to make long journeys with their *caravans* of animals and goods. At that time people felt it was a good thing to give water to thirsty travellers. Thus, they built many beautiful stepwells.

- Have you ever faced a shortage of water in your area ? If yes, then what was the reason for it ?



### Find out :

Talk to your grandparents or any elderly person. Find out, when they were of your age:

- From where did they get water for the house? Is there any change now ?
- What kind of water arrangements were made for travellers. For example, *piau* (Water fountain), *mashak* (leather bag) or any other ? Now what do people do for water when they travel ?



### Customs related to water

Even today people get water from very old lakes, *dharas*, stepwells and rivulet. Many festivals and customs are related to water. At some places, whenever lakes get filled up with

rainwater, the people gather around the lake to celebrate.

See the bride of Uttarakhand in this picture. After getting married she has come to the new village. She bows to the spring or the pond. In the rural culture of India, when the water from the first rain of monsoon showers into river or lake, people celebrate it like festival to welcome and worship. In cities one can see an interesting form of this custom. The new bride worships the water tap in



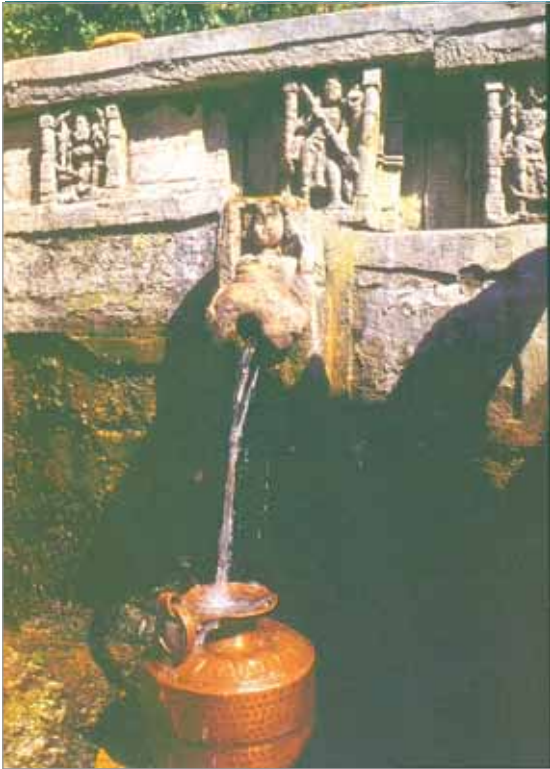
Devraj Agarwal

her home. Can we even imagine life without water ?

In many villages of Gujarat, when the lake is overflowed with water people celebrate. Holiday is held in the village or town. On the day the lake is filled '*Meghladu*' are also distributed.



Do you have some special pots for water at your house ? Look, water is being filled in this beautiful copper pot. The shining yellow pot of brass can be seen in the second picture. Stone carvings are seen near the place of drinking water. Have you ever seen any beautiful building near water reservoir ? Where ?



Devraj Agarwal



### Find out :

Is there any lake, well or stepwell near your house or school ? Visit it and find out more about it.

- How old is it? Who got it built ?
- Which types of buildings are around it ?
- Is the water clean? Is it cleaned regularly ?
- Who all use the water ?
- Is there any festival celebrated at this place ?
- Is there any water today, or is it dry ?
- Do you have trough for animals to drink water in your village ? Where ?



**For the Teacher :** Let the students know that the source of water that we have such as wells, stepwells, lakes, etc. is considered sacred. The person who was going to fill the water also took out the slippers. Due to such customs the cleanliness of water was maintained. Discuss that it is the duty of all to keep all these waterbodies clean.



### Think over it !

In 1986, there was no rain in Jodhpur and the surrounding areas. People remembered the old and forgotten stepwell. They cleaned the stepwell and more than two hundred trucks of garbage was taken out of it. People of the area collected money. The thirsty town got water from the stepwell. After a few years, it rained well and again the stepwell was forgotten.



### Discuss :

There are two old wells in the area where Punita lives. Her grandmother says that about fifteen - twenty years ago there used to be water in these wells. But now the wells have been dried up because :

- Water is being pumped up from under the groundwell, with the help of electric motors.
- The lakes in which rain water used to collect are no longer there.
- The soil around trees and parks is now covered with cement.
- Is there any other reason for this ? Explain.

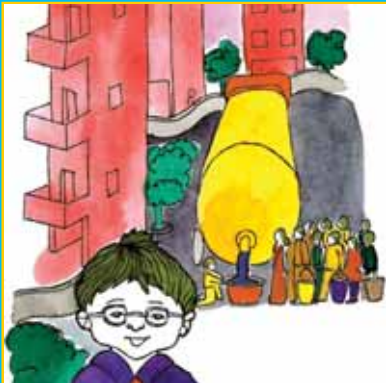
### Today's story

Let us see the different ways in which people manage to get water today. See page 57 and discuss. Do you get water in your house by any of these ways ? Put a tick (✓) on that. If you get water by some other way, write in your notebook.



**For the Teacher :** Discuss about the unequal distribution of water with children. It is important to know how people get water from different sources and the problems they face. It is important to discuss issues of world conflict related to water, especially from the children's perspective. Prepare a list of slogans showing the importance of water.





A water tanker from Jal Board arrives in our colony twice a day. We have to stand in a long queue to get water from the tanker. People at times have fights over water.



We fetch water from the well. The nearby well dried up a year ago. Now we have to walk far to reach the other well.



We get water at home for half an hour. We fill this in the tank to use the whole day. Sometime it is dirty.



We get water from our taps, the whole day long.

## This is how we get water.



There is a handpump nearby, but the water that we get from it, is salty. We have to buy drinking water.



We have connected a pump directly in the Jal Board pipeline. Now we do not have any problem.



We have connected a motor to pump up the water from the borewell. We get water whenever we wish.



We get water from the canal itself.





## Discuss :

- Everyone has the right to live. Yet, is everybody getting enough water to live? Even some people do not get enough drinking water, too? Why is it that some people have to buy drinking water? Should it be like this? Water on this earth is for one and all. Some people draw out water from the ground by deep bore wells. How far is it correct? Have you ever seen this? Why do some people connect a pump directly in the Jal Board pipe line? What problems would other people face due to this? Do you have any such experience?

### Surat Municipal Corporation - Hydraulic Department Water Bill

East Zone

Connection No.	X X X X	
Name	Poojan Patel	
Address	X X X X X X X, X X X X, X X X X X X X X X X X, X X X X, X X X X	
Connection Usage : Residence	Bill Period	: July-August-19
No. of Family : 1	Meter Status	: Working
Connection Size : 1/2 Inch	Bill Date	: 03/09/2019
Meter No. : X X X X	Last Payment Date	: 17/09/2019
<b>Reading Details</b>		
Previous Reading	Current Reading	Actual Consumption
228000	242000	14000
	Total	14000
<b>Bill Details</b>		
A. Previous Balance (As on Date 03/09/2019)		Amount Rs.
A. Total		0.00
<b>B. Current Bill Details</b>		
Current Water Charges		116.87
B. Total		116.87
Rounding		0.13
Total Payable		117.00

Note : This e-bill is generated as a reference document for the convenience of the consumer and should not be used for any legal purpose. (29)



## Look at this bill and Tell :

- From which office has this bill come?
- Do you get a water bill at home? From where is it sent? Find out.
- Why Surat Municipal Corporation is written along with Hydraulic department? What do you think?
- In whose name is the bill? How much money do they have to pay for every month?
- Do you have to pay for water? How much? Is the rate of water varies in different colonies? Ask your elders.



## This can be done

There are some groups that work hard to bring water to the people of different areas. They ask the elders about the water arrangement in their times. They rebuild the old lakes and water tanks (*johads*), and also build new ones. Let us see how the group called 'Tarun Bharat Sangh' helped Darki Mai.



This is Darki Mai. She lives in a village in the Alwar district of Rajasthan. The women of the village used to spend the entire day looking after their home and animals. Sometimes, it took them the whole night to pull water from the well for the animals. In summer, when the wells get dried up, they had to leave the village. Darki Mai heard about this group and asked for help. Together, the people from the group and the village made a lake. So, the problem of food and water for animals is now less. People get more milk. They have started earning more.

From the book – '*Char Gaon ki Katha*'

Have you ever read this kind of news in any newspaper? How did people solve their problem of water? Did they repair and reuse any old lake or stepwell?

## What we have learnt

Make a poster : Do you remember the slogan –

- "Water on the earth is for one and all." Think of some other such slogans. Draw pictures and make a nice poster.
- Bring a water bill, look at it and tell –
- This bill is from \_\_\_\_\_ to \_\_\_\_\_ date.
- How much money is to be paid for this bill?
- What else can you see in the bill, like the money spent on repair, maintenance etc.?



## 7. Experiments with Water



### What floats – what sinks ?

Sejal was waiting for dinner. Today Mother was making her favourite food – *puri* and spicy potato *sabzi*.

Sejal watched as her mother rolled out the *puri* and put it in the hot oil. She saw that at first the *puri* sank to the bottom of the pan. As it puffed up, the *puri* came up and started floating in the oil. One *puri* did not puff up and did not float like the others. On seeing this, Sejal took some dough and rolled it into a ball. She flattened it and put it in a bowl of water. Alas ! it sank to the bottom and stayed there.



### Think, what would happen if -

- Sejal put a puffed *puri* in a bowl of water. Would it sink or float ?
- Put a steel plate on water. Would it sink or float ?
- What would happen to a spoon ?
- Would the cap of a plastic bottle sink or float on water ?

In the evening Sejal went for a bath. She had just come out when her mother called, “Sejal, you have dropped the soap in the water again. Take it out and put it in the soap case.” Sejal was in a hurry and the soap case fell out of her hands.







It started floating on water. Sejal gently put the soap in the soap case. She saw that the case continued to float, even with the soap in it.

Have you seen that some things float on water while others sink ? Think, how this happens ? The poem here raises such questions.

### Why This ?

A wooden boat  
in water will float.  
But a needle will sink !  
Why does this happen ?  
Let me think...

An iron ship  
will also float,  
though it's much heavier  
than my boat !

But a needle,  
light as a leaf,  
thin as a pin,  
will sink right in !

Why does this happen ?  
Let me think...

— *Shishir Shobhan Ashthana*  
*Chakmak*, December 1985  
(Translated by Anupa Lal)



### Do this and Find out :

Do this experiment in groups of four friends. Each group will need a big pot filled with water and the things listed in the table. Put each thing one-by-one in water and observe. Write your observations in the table given on the page-62.



Mark [✓] for the things that float, mark [×] for those that sink.



Things to be put in water	Presumption before experiment	Observation after experiment
(a) Empty bowl ( <i>katori</i> )		
(b) After putting 6-7 small pebbles, one-by-one in bowl		
Iron nail or pin		
Matchstick		
(a) Empty plastic bottle with its lid closed (b) Bottle half-filled with water (c) Bottle full of water		
Aluminium foil (from medicine packing) (a) Open and spread out the foil (b) Pressed tightly into a ball (c) In a cup-like shape		
(a) Soap cake (b) Soap cake in a small plastic plate		
A piece of ice		

Find out from the other groups which things float and which sink in the water.

After doing the experiment, fill in the blanks :

- The iron nail \_\_\_\_\_ in water but the *bowl* \_\_\_\_\_. I think this happened because \_\_\_\_\_.
- The empty plastic bottle \_\_\_\_\_ on water. The bottle filled with water \_\_\_\_\_ because \_\_\_\_\_.
- The aluminium foil \_\_\_\_\_ when it was spread out. When pressed tightly into a ball it \_\_\_\_\_. This may have happened because \_\_\_\_\_.



## Is it Magic ?

When Sejal woke up in the morning her mother had fever. Father made some tea and went to give medicine to mother. He told Sejal, “Boil eggs. Also put some salt in the water.” Sejal took water in a pot. By mistake, she put too much salt in the water. She saw the eggs at the bottom of the pot come up a little and start to float in water !

- Take some water in a glass. Put a lemon in it. Now keep putting salt in the water, half-a-spoon at a time. Were you able to float your lemon in water ?
- What do you think, the lemon floated in salty water, because.....



### Dead Sea

All oceans and seas have salty water. The saltiest of all is the Dead Sea. How much salty ? Imagine. 300 grams of salt in one litre of water ! Would you be able to even taste such salty water ? It would be very salty. Interestingly, even if a person does not know how to swim, he/she would not drown in this sea. He/She will float in water, as if lying down on it ! Remember the lemon you saw floating in salty water ?



### What dissolved, what did not ?

On Sunday Sejal’s cousin brother Vikas came to her house to play. As soon as he came he asked his aunt to make his favourite *shakkarpara* (a sweet dish). *Mother* said, “Let me come back from the market, then I will make some for you. If you help me that will be more fun. Take two glasses of water and put a bowl of sugar in it. Mix it till it gets dissolved.” Vikas thought, “Let me finish this work fast. Then I will watch TV.”

- Suggest some ways to Vikas for dissolving sugar quickly.



**For the Teacher :** It is not expected that children should tell about density. We should accept different answers that children may give, such as water is ‘heavy’ or ‘thick’.





### Do this Experiment :

Make a group of four friends. For the experiment you will need 4-5 glasses or bowls, spoons, water, and the things listed in the table. Take some water in each glass. Now try to dissolve one thing in one glass. Observe what happens and note in the table.

Things	Did it dissolve or not?	What happened after keeping for 2 minutes?
(1) Salt	_____	_____
(2) Soil	_____	_____
(3) Chalk powder	_____	_____
(4) 1 spoon milk	_____	_____
(5) Oil	_____	_____



### Tell :

- Could you see the salt after it dissolved in water ? If no, why ?
- Does it mean that now the water does not have salt ? If it has, then where is the salt ?
- What difference did you see – in the water with salt, and the water with chalk powder – after keeping for sometime ?
- Which of the two would you be able to separate from the water by straining with a cloth – salt or chalk powder ?



**For the Teacher :** There are many things which cannot be easily labelled as soluble or insoluble. These categories are anyway not needed here. Children need to be encouraged to fill the table on the basis of their own observations.



While doing the experiment Sejal and Vikas had an argument. Sejal felt that after stirring the mixture, the oil dissolved in water. Vikas did not agree. He said, “Look, the tiny yellow oil drops can still be seen in the water”. Sejal said, “Let’s wait for sometime and then see.”

- Do you think the oil got dissolved in the water ? Why do you think so ?



### Racing Drops

Sejal put two drops of oil on the lid of her tiffin box. Next to that she put two drops of water and two drops of sugar solution. She tilted the lid. She saw some drops slide down quickly, while some were left behind.

- You also try to do the same and tell – which drop went ahead ? Why did it slide faster ?



### Where did the water go ?

One day Sejal’s mother put some water to boil on the stove for making tea. She got busy with some work and forgot about it. When she remembered and came to check, she found very little water left in the pan.

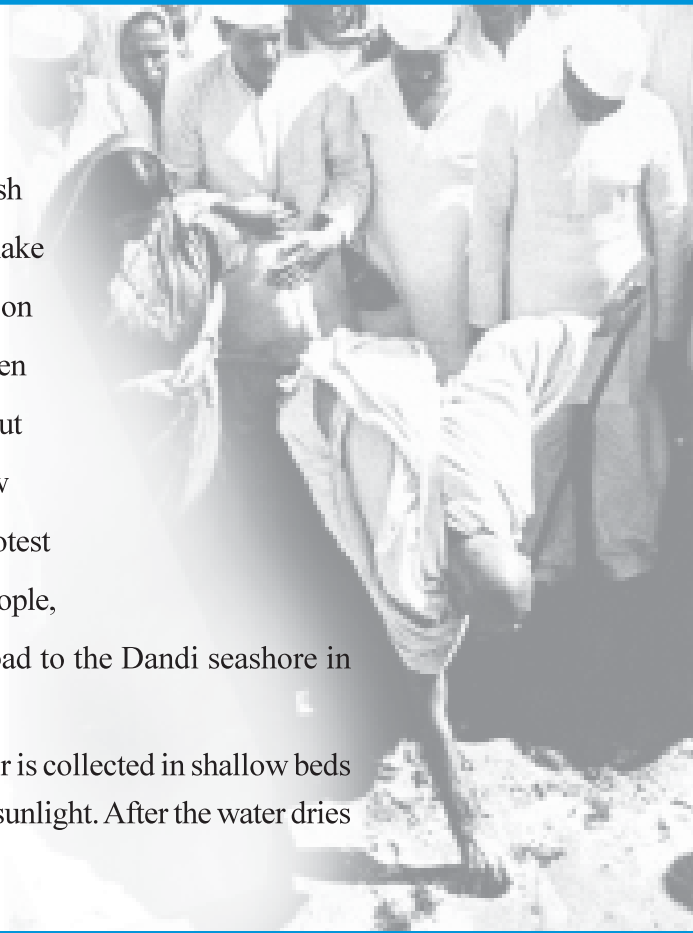
- Think, where did the water go ?
- Why did Alpesh and Mahendra keep their *aam papad* in the sun ?
- At your house, which things are made by drying in the sun ?



## Dandi March

This incident took place in 1930, before India became independent. For many years the British had made a law that did not allow people to make salt themselves. They had also put a heavy tax on salt. By this law people could not make salt even for use at home. “How can anybody live without salt?” Gandhiji said, “How can a law not allow us to use freely what nature has given !” To protest against this law Gandhiji, with several other people, went on a *yatra* (long walk) from Ahmedabad to the Dandi seashore in Gujarat.

Do you know how salt is made ? The sea water is collected in shallow beds dug in the sand. Water is allowed to dry in the sunlight. After the water dries the salt remains on the ground.



### What we have learnt

- You have washed your handkerchief and you want to dry it quickly. What will you do ?
- What things do you put in water to make tea ? Which of those things dissolves in water ?
- You have been given some lumps of sugar. Suggest some ways to dissolve them quickly.



**For the Teacher :** Children of this age cannot be expected to answer the concept of ‘evaporation’ but they can begin to think about it. ‘Dandi March’ can provide a context to talk about the struggle for Independence.



## 8. Mosquitoes : Diseases and Treatment



Harpreet

### Blood test

Vipul is back at school today. He had been absent for many days. “How are you now ?” asked Aarti. “I’m all right,” Vipul replied softly.

**Harpreet :** You must have played a lot while you were at home.



Vipul

**Vipul :** Who wants to play when you have fever ? On top of it, I had to take a bitter medicine. I even had a blood test.

**Harpreet :** A blood test? Why ? It must have been very painful.

**Vipul :** Actually, when the needle pricked my finger, it felt like an ant bite. They took 2-3 drops of blood, and sent it for testing. Through investigation it was found that I had malaria.



Nisha

**Nisha :** But you get malaria when a mosquito bites you.

**Vipul :** Yes, but we can find out by the blood test.

**Harpreet :** There are a lot of mosquitoes in my house these days, but I did not get malaria.



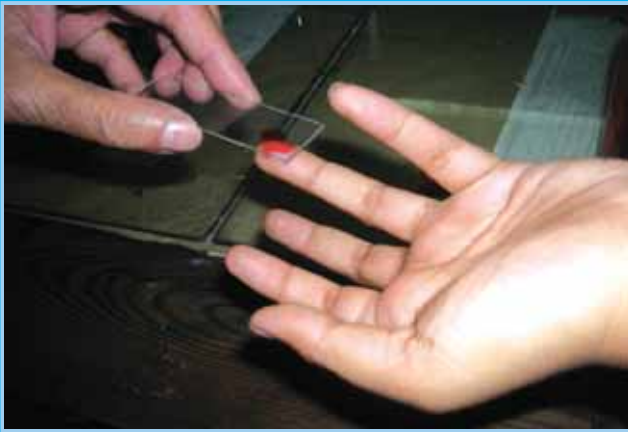
Aarti

**Nisha :** Who says that every mosquito bite causes malaria ? Malaria spreads only by some special types of mosquitoes.

**Aarti :** All mosquitoes look the same to me.

**Vipul :** There must be some difference.





**Taking the blood on the glass slide for test Malaria spreads through female Anopheles mosquitoes**



**Dr. Shabnam looking at the blood slide under the microscope. This microscope makes things look thousand times bigger. The details inside the blood can be seen clearly. There are some microscopes which make things look even bigger than this one.**

**Nisha :** Did they take the blood from the place where the mosquito had bitten you?

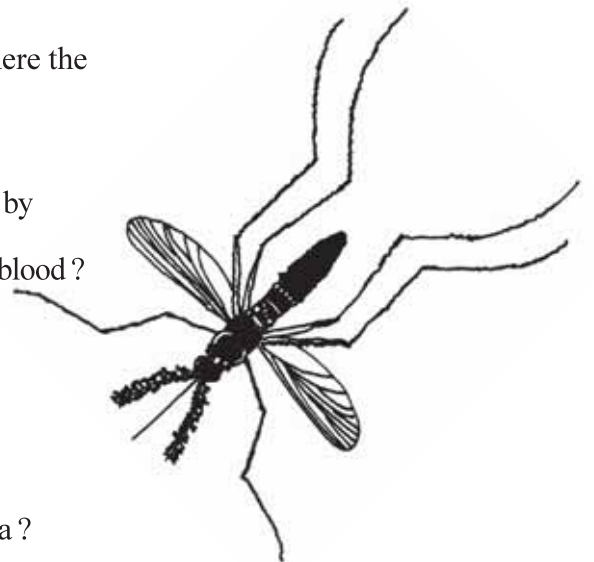
**Vipul :** Of course not ! How do I know when and where the mosquito bit me ?

**Nisha :** But how could they find out that you had malaria by your blood test ? Do you think they could find something in the blood ?



**Find out :**

- Do you know anyone who had malaria ?
- How did they find out that they had malaria ?
- What problems did they have suffering from malaria ?
- What other diseases can be caused by mosquito bites ?
- In which season mosquitoes are more common ? Why do you think this happens ?
- How do you protect yourself from mosquitoes in your house ? Find out from your friends also about what they do ?





## CLINICAL PATHOLOGY REPORT

Health Department, Gujarat Gov.

06/12/2018

Name..... Vipul Age..... 11 Sex..... Male

Diagnosis..... Fever with chills and Rigors.....

**Malarial Parasite Found in Blood Sample**

  
**Pathologist**

- Look at the blood test report given here.  
Which words in the report help us to know that the person has malaria ?

### Medicine for Malaria

From early times, the dried and powdered bark of the *Cinchona* tree was used to make a medicine for malaria. Earlier people used to boil the bark powder and strain the water which was given to patients. Now tablets are made from this.

### Anaemia – What’s that ?



**Aarti :** You know, I also had a blood test done. But they took a syringe full of blood. The blood test showed that I had anaemia.



**Vipul :** What is that ?



**Aarti :** The doctor said that there was less ‘haemoglobin’ or iron in the blood. The doctor gave some medicines to give me strength. He also said that I should eat jaggery, gooseberry (*amla*), beet root and more green leafy vegetables, because these have iron.



**Nisha :** How can there be iron in our blood ?



**Harpreet :** There was something about this in the yesterday's newspaper.



**Vipul (laughing) :** So then you ate iron or what ? !



**Aarti :** Silly ! This is not the iron used to make keys. I don’t know exactly what it was. After I ate a lot of vegetables and whatever the doctor had said, my haemoglobin count went up.



**For the Teacher :** You can bring a blood test report in the class and discuss with the children.



## Anaemia common in schools of Delhi

November 17, 2007 - Thousands of children studying in the Municipal Corporation schools in Delhi suffer from anaemia. This is affecting both their physical as well as mental health. Due to anaemia, children do not grow well and their

energy levels are low. This also affects their ability to study properly. Now health check ups are being done in the schools and health cards are being made for all the children. Anaemic children are also being given iron tablets.



**Tell :**

### CLINICAL PATHOLOGY REPORT

Health Department, Gujarat Gov.

13/01/2019

Name ..... Aarti Age ..... 12 Sex ..... Female

Diagnosis ..... Anaemia .....

Normal Range

Haemoglobin ..... 8 gm/dl (12 to 16 gm / dl)

Pathologist

### CLINICAL PATHOLOGY REPORT

Health Department, Gujarat Gov.

30/06/2019

Name ..... Aarti Age ..... 12 Sex ..... Female

Diagnosis ..... Anaemia .....

Normal Range

Haemoglobin ..... 12.5 gm/dl (12 to 16 gm / dl)

Pathologist

- Look at Aarti's blood test report and find out the minimum required haemoglobin.
- How much did Aarti's haemoglobin go up and how long did it take for that ?
- What does the newspaper report say about the problems caused by anaemia ?
- Have you or anyone in your family ever needed to get a blood test ? When and why ?



**For the Teacher :** A discussion can be initiated in the classroom, about how diseases spread through the housefly. Newspaper reports can also be used in the class.



- What was found out by the blood test ?
- Have you had a health check up in your school ? What did the doctor tell you ?



### Find out :

- Ask a doctor or elders about the food items which contain iron.

### Baby Mosquitoes (Larvae)



**Harpreet:** There is a poster on malaria just outside our class.  
(Everyone goes out to look.)



Are you inviting mosquitoes ?

**BEWARE !**

**They spread Malaria, Dengue, Chikungunya !**



**Don't let water collect around your house. Fill up the pits.**



**Change water of water tank, coolers and keep the water pots, coolers and**



**tanks clean. They should be dried every week.**



**Use mosquito nets to protect yourself.**



**Spray kerosene if water has logged at some place.**



**Vipul :** The poster says something about larvae. What are those ?



**Nisha :** They are baby mosquitoes. But they do not look like mosquitoes at all.





**Aarti :** Where did you see them ?



**Nisha :** There was an old pot lying behind our house. It was full of water for some days. When I looked there I saw some tiny thread-like grey things swimming.

I was surprised when Mummy told me that these had come out of the eggs which mosquitoes lay in water. They are called larvae. I also heard something about it on radio.



**mosquitoes' larvae**



**Vipul :** What did you do ?



**Nisha :** Papa immediately threw away the water. He cleaned and dried the pot and kept it upside down, so that no water would collect.



**Harpreet :** Shazia aunty told me that even flies spread diseases, especially stomach problems.



**Vipul :** But flies do not bite. Then how do they spread diseases ?



**larvae seen through magnifying lens**



**Find out and Tell :**

- Have you seen any poster like this anywhere ?
- Who do you think puts up such posters, or gives advertisement in the newspapers ?
- What are some of the important points given in the poster ?
- Why do you think pictures of a tank, cooler, old tyres, pits and pots are shown in the poster ?



**Think :**

- Why do you think it talks about putting fish in the tank ? What will the fish eat ?
- What will happen when oil is spread on the water ?





### Find out :

- Which diseases are spread by flies and how ?



### Mosquito Investigation

Divide students of your class into group of two or three. Each group will go around to check one area in school or around it. It must be noted carefully if water has logged anywhere and mark ✓ where it finds stagnant water.

Pot  Cooler  Tank  Any open space in the school ground

Gutter  Any other place \_\_\_\_\_

- Since how many days has water logged there ?

\_\_\_\_\_

- Who is responsible for keeping these places clean ?

\_\_\_\_\_

- Who is supposed to get the gutters and drains repaired ?

\_\_\_\_\_

- Can any larvae be seen in the collected water ?

\_\_\_\_\_

- Has it caused any problem in that area ? Write.

\_\_\_\_\_



### Make a Poster :

- In your group, make a poster with a message to keep the cooler, tank, drains and the area clean (wherever water collects). Put up your poster in or around your school.
- Find out who is responsible for keeping the area around your school clean. Write a letter from your class, reporting your findings and suggestions. Find out to whom the letter should be written and to which office it should be sent.



## Survey Report

Some children did these surveys. Here are their reports.

We found something green around the taps in our school which is called algae. Due to algae (a kind of plant) it had also become slippery there. The algae spreads a lot during the rainy season. We think that there are some kind of small plants that grow in water.

There is a pond near the school. At first you cannot see the water in the pond as it is completely covered with plants. One aunty has told us that these plants have grown themselves in water. Around the pond there are pits filled with water. We also saw some larvae in the water. As we moved around, lots of mosquitoes flew from the plants growing around. Harpreet feels that there are so many mosquitoes in her house because of this dirty pond nearby.



### Tell :

Is there a pond or river around your house or school ? Go there and observe surrounding things.

- Can you see algae in or around the water ?
- Have you seen algae anywhere else ?
- Are there plants growing on the side or in water? Find out their names. Draw some of these in your note book.
- What do you think these were planted by someone or did they grow on their own ?
- What else can you see in water ? Make a list.



Ronald Ross

### A scientist peeps into a mosquito's stomach

This interesting incident took place almost a hundred years ago. A scientist found out that mosquitoes spread malaria. How this scientist has invented it ? Let's read about in his own words.

“My father was in the Indian Army. I lived in India. I was studying to become a doctor. Reading stories, writing poems were my hobbies. I loved the music and drama also.



At that time, there was not much information about malaria but thousands of people died due to it. The disease would occur where there was heavy rain and mud. People thought that the disease was caused by the dirty air of the mud. That's why they gave it the name 'malaria'. Malaria means 'bad air'. In the blood of malaria patient a few germs were found. But where did these germs come from ?

One of our professors thought these germs would come from mosquitoes. Since I was a student of him, I started trying to know that. I spent all my day to catch and observe mosquitoes. We make these mosquitoes to bite the patients. In return, the patient received one 'aana' (the currency of ancient times) was also given.

At the hospital in Sikandrabad we dissect the mosquitoes and observed them under a microscope. By the evening the neck would be sore. Once in this tough task I also fell ill.

Nothing was found for several day. One day I saw a few different looking brown coloured mosquitoes. I looked into the stomach of one of the female mosquitoes, I saw something black there. When I looked closer found the same germs that were present in the blood of the malaria patients. And this is how the malaria spreading germs were discovered.”

In December 1902, Ronald Ross received the Nobel Prize for his invention. In 1905, even when he was lay dying, his last words were, “I will find something, I will find something new.”

### What we have learnt

What can you do so that mosquitoes do not breed in your house, school and neighbourhood ?

- How can you find out, if someone has malaria ?



**For the Teacher :** Tell children that 'aana' was a form of currency used earlier in India. Use the story of Ronald Ross to encourage children to know and talk about scientific processes. It is important to share with children that in an ordinary hospital of Sikandarabad many important experiments were done — some successful and some not so successful — which led to an amazing discovery about a disease which has still not been controlled. Collect more such exciting stories on inventions about different diseases and share with children.



## 9. Climbing High !

February 2, 1984

### Mountaineering Camp

### Nehru Institute of Mountaineering, Uttarkashi



We were at the mountaineering camp and were very excited. Twenty of us were teachers from Kendriya Vidyalayas. There were other women from banks and other institutions.

Today was the second day of the camp. In the morning as I got out of bed and put my foot down, I screamed in pain. I remembered yesterday I walked 26 kilometre with the heavy rucksack on my back. I was afraid to go back to that steep climb and the rough narrow path.

With tears in my eyes I started walking slowly towards the room of Brigadier Gyan Singh, the Director of our adventure course. I was thinking of what I would say to excuse myself from that day's trek. Suddenly, I heard his deep voice from behind.

“Madam, what are you doing here at breakfast time ?  
Hurry up ! Otherwise you will have to trek on an empty stomach.”

“Sir, Sir....,” I could not say any more.

“You have come to tell me that you have blisters on your feet that you cannot walk, isn't it ?”

“Yes, sir.”

“That is nothing new. Now get ready quickly.”





With a sad face I rushed back to get ready. I had just turned when I heard his voice again, “Listen, madam. You are the leader of group number 7. You will have to help those members who has difficulty in climbing the mountain. You have already been informed about the responsibilities of a group leader in the mountaineering.”



### **Tell :**

- Have you ever seen the mountains ? Have you ever climbed a mountain ? When and where ?
- How far have you walked at a stretch ? How far can you climb ?



### **Imagine !**

- What do you know about the paths on the mountains ? Draw a picture.

## **A big responsibility**

I started thinking about what a leader must do:

- Help others in carrying their luggage.
- Let the group go ahead and the group leader stay behind.
- Help those who cannot climb properly.
- Find a good place to stay and rest.
- Look after those who are not well.
- Arrange food for the group.

The most important thing is to be ready to be punished even when some one else may have made a mistake.

I realised that there was a special kind of discipline here. I wondered whether the camp would still be fun for me !



## Group no. 7

Group No. 7 included girls from Assam, Manipur, Mizoram, Meghalaya and Nagaland. I was the only teacher from Kendriya Vidyalaya in this group. I was happy to meet my new group members. Most of them could not speak Hindi fluently. I still feel bad that after being together for 21 days, I could not talk even once with Khondonbi from Mizoram. She speaks only Mizo. Yet we were drawing closer to one other with our hearts.



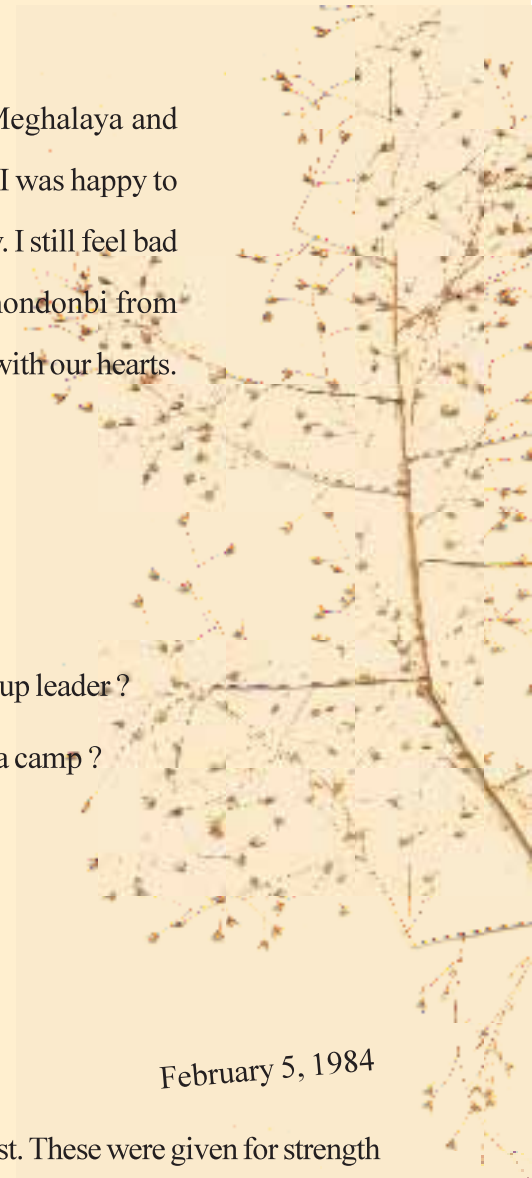
### Tell :

- What do you think about the responsibilities of a group leader ?
- What will you do if you were made a leader in such a camp ?
- What does a monitor have to do in your class ?
- Would you like to be the class monitor ? Why ?

## Crossing the River....

We got vitamin C, iron tablets and hot chocolate milk in our breakfast. These were given for strength and to keep us warm in the cold. Every morning there would be a medical check up of us. We tied our bandages and counted the days left !

After an eight kilometre trek we reached a river. There was a thick rope tied across the river, from one bank to the other. The rope was tightly fixed to pegs or 'pitons' on both the sides. I was feeling nervous. I started thinking what would happen if the rope came out ? I was trying to estimate the width of the river.



February 5, 1984



Our instructor tied a rope around his waist and put a sling (type of hook) in it. He then put the sling on the thick rope tied across the river. Walking through the icy water, he went to the other side. No one was ready to step into the fast flowing river. Everyone was pushing each other to go first. I stood last in the line hoping that no one would see me. But our instructor came to me with the sling and rope in his hands. I felt that I could not escape anymore. I was ready, but did not have the courage. Sir could not guess my fear. He called out loudly, “Three cheers for Sangeeta madam!” And before I knew it, someone had gently pushed me into the water.

I felt as if my feet were frozen. I started shivering, my teeth were chattering. I hold of the rope and started putting my feet firmly on the river bed. As I walked further in, the river got deeper and slowly the water reached upto my neck. In the middle of the river I lost my balance and started slipping. I was so scared and felt so cold. The rope slipped from my hands. I started shouting for help.

I was sure that would be carried away by river. But no, I found that I was tied with the rope to the sling. “Hold the rope! Hold the rope”, I could hear the shouts. Somehow I managed to get hold of the rope and pulled myself forward. I reached the river bank slowly, with some courage. I felt a special kind of happiness when I came out of the river. It was the happiness of finishing a challenging task. Now, standing on the bank, I was calling out

to the others to hold the rope tightly. I knew that this confidence was a result of facing a challenge with courage.



Kalyani Raghunathan





### Find out and Write :

- What kinds of tools are needed for mountaineering ?
- Have you ever seen a hook and rope being used for anything else ? Where ?
- What else can you use if you want to cross a river in the mountains ?
- Why do we need extra energy on the mountains ?
- Have you ever heard of anyone who has done something adventurous ? What ?
- Have you ever done anything adventurous ? If yes, tell your class and write about it in your own words.



### Rock Climbing

February 10, 1984

We had to climb 15 km to reach Tekla village. It was at a height of 1600 metres. Our rucksacks had all that we may need – food packets, water bottle, rope, hook, plastic sheet, diary, torch, towel, soap, windsheeter, whistle, glucose, jaggery, gram (*chana*) and some other snacks.

We could see fruits and vegetables growing in the step fields. We saw Colonel Ram Singh standing on a 90 metres high flat rock with pegs and ropes.

We had been told first to observe the rock carefully and to identify hold – places where we can put our hands and feet. Today, I was not going to back out. I stood first in the line. Our instructor tied



Kalyani Raghunathan





a rope around his waist. He put the sling, and held the thick rope which was hanging. He started climbing as if he was running up. I also put my sling. But as I took my first step, I slipped. And there I was – swinging from the rope!

“Keep your body at an angle of 90° while climbing,” I heard.

“Keep your back straight. Do not bend.”

Keeping this in mind, I experienced the rock as flat ground and started to climb up. Again while coming down we had to use the rope, in a special way called ‘rapling.’ I did this with the same fearlessness.



### **Tell :**

- Have you ever climbed a tree? How did you feel ? Were you scared ? Did you ever fell down ?
- Have you ever seen someone climbing a small wall ?

What do you think is the difference between climbing a wall and climbing a high rock ?

### **A Funny incident**

February 14, 1984

It was evening. Khondonbi was feeling hungry. We did not have anything to eat. She jumped over the fence and got into a field. She quickly plucked two big cucumbers and came back. Suddenly a woman came from behind and grabbed her by the bag. She started saying something to Khondonbi in her own language. We could not understand what she was saying. Khondonbi was trying to explain her in Mizo



language which we could not understand. I tried to explain in Hindi. But the woman did not understand neither of the two languages. Finally, I folded my hands to say that we were sorry.

By then our group had gone far ahead. It was already dark. I thought we had lost our way. Now we were really scared and we could not see anything even with our torches. I started sweating even though it was cold. I tightly held Khondonbi's hand. I called out loudly, "Where are you all ? Can you hear me ?" My voice echoed in the mountains. We both started to whistle loudly and flashed our torches. Probably the group had noticed that we were missing. We heard some whistles at a distance and understood the signal. We held each other's hand tightly and waited. Khondonbi felt that we should keep on talking. She started singing a song loudly in Mizo language. After some time, we saw the group members coming towards us. At last we were with the group again.



**Tell :**

- Is there anyone in your class whose language you do not understand, or who does not understand yours ? What do you do in such a case ?
- Have you ever lost your way ? What did you do then ?
- Why do you think Khondonbi would have sung loudly ?
- Have you ever seen someone doing something special to get over their fear ?

What and when ?

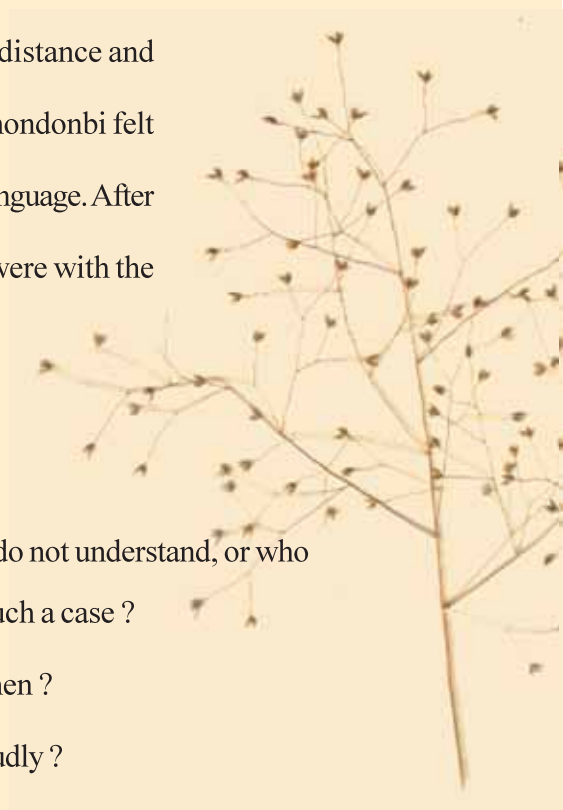
**Try :**

- Ask your friend for a book without speaking. Try to explain something to the class in the same way.

**A Special Guest**

February 15, 1984

After dinner we met a special guest – Bachhendri Pal. She had just been selected



as a part of the team to climb Mount Everest. She had come to seek the blessings of Brigadier Gyan Singh. It was a happy evening – we were all singing. Bachhendri also joined us in singing and dancing on the famous *Pahadi* song ‘*Bedu Pako, bara masa, kafal pako chaita, meri chhaila.*’ At that time we had no idea that Bachhendri would become the first Indian woman to reach Mount Everest and create history.

## Camp in the Snow

February 18, 1984

We were standing at a height of 2134 meters. We were to spend the night here. Everyone was busy trying to put up the tent. We used double layered plastic sheets for the tent and for the ground and we put in the pegs and began to put up the tent. As we tied it from one side, the wind flew the tent from the other side. After quite a lot of pulling and tugging, we managed to get the tent up. Then we dug a pit around the tent.

We were feeling very hungry. We collected some firewood, stones and other material to make a *chulha* and cooked some food. After the meal, we collected all the waste in a bag to clean the camp site. Soon we got into our sleeping bags. I was not sure if I would be able to sleep in it. Would it be comfortable?

Would I not feel cold? But the bags were filled with soft feathers, which help in keeping us warm. We were all very tired. So very soon we fell asleep.



**For the Teacher :** The children can be encouraged to learn the languages spoken by their friends. This would help them appreciate and respect other languages.



The next morning we woke up and found that it was snowing. White soft fluffy snowflakes were gently falling. Wow ! It was so beautiful ! The plants, the trees, the grass and the mountains—everything looked white. Today we had to climb at the height to 2700 metres. We walked carefully on the snow with the help of sticks. It was very difficult because we kept slipping. Yet by afternoon we had reached snow covered mountains. We enjoyed throwing snowballs at one another and making a big snowman.



## Last day at the Camp

February 21, 1984

We were getting ready for the camp fire. Each group presented a programme. We were enjoying—telling jokes and laughing, singing and dancing around the camp fire. Soon it was midnight. Brigadier Gyan Singh got up and called me. I thought, “Oh, no! what have I done now ?” But when Sir announced my name for the ‘Best Performance Award’ I stood still. He blessed me and tears of joy rolled down my face.



### Discuss :

- What do you think why a pit was dug around the tent ?
- Besides mountaineering, what are other activities that can be called adventurous ? Why ?



**For the Teacher :** The pages of the diary are based on the real experiences of Sangeeta Arora. She teaches in Kendriya Vidyalaya, Shalimar Bagh, Delhi and is also one of the author of this EVS textbook.



Kalyani Raghunathan





## Imagine and Write :

- You are on a mountain. How do you feel there ? What can you see ? What do you feel like doing there ?

### Alone on the Mountain top

A twelve-year old girl living in the mountains was out on a school picnic. She climbed a mountain peak of 4000 metres with her friends. The girls had done this for fun and adventure. Soon it was dark and they could not come down. It was also cold and scary night. They were alone without any food and it was a long night. This happened to Bachhendri Pal, when she was a young girl.

Bachhendri grew up in Nakuri village in the Garhwal area of Uttarakhand. When she grew older, she joined Nehru Institute of Mountaineering, Uttarkashi. Her guide was Brigadier Gyan Singh. She did very well in her training. She started to train women in mountaineering courses. In 1984, Bachhendri was selected as a team member to climb the Mount Everest.

### Snow Storm

There were seven women in the team of eighteen members. On the night of 15th May the team was very tired after having reached a height of 7300 metres. The team put up their tents and went to sleep. Around midnight they heard a loud sound and then a bang. Before they were fully awake, the tent flew off and something very heavy hit them. There was a terrible snow storm. Bachhendri was almost buried under the snow and was hurt on the head. Many of the team members were also injured. The others used snow-picks and axes to dig out those who had been buried under the snow.

The rest of the team members returned to base camp but Bachhendri went ahead, climbing slowly but steadily towards the peak. It was seven minutes past one o'clock in the afternoon of May 23, when Bachhendri Pal stepped onto the peak of 8848 metre high Mount Everest which is called Sagarmatha in Nepal.

There was another team member with her. There was no space for two people to stand on the top at the same time. One slip and they would fall straight down-thousands of feet below ! Bachhendri and her team-mate dug into the snow and pitched their axe firmly in the ice. Using this as a hook, they tied themselves to it with a rope. Only then two of them could stand there. She was shivering with cold but filled with the warmth of achievement. She bowed her head, pitched the national flag and took photographs. She spent forty three minutes on the highest peak in the world.

Bachhendri Pal became the first Indian woman and the fifth woman in the world to reach the peak of Mount Everest.



**For the Teacher :** Teachers can either make available the photographs or if possible the actual mountaineering equipment like sling, pitons, hunter shoes, ropes, sleeping bag, oxygen cylinder, etc. This will help in discussion with children.





Kalyani Raghunathan



### Think :

- Why did Bachhendri hoist the Indian flag on the peak ?
- When have you seen our national flag being hoisted ? Collect information of our national flag.
- Make groups of 6-8 children. Design a flag for your group. Explain why you choose that design.
- Have you seen the national flag of any other country ? Where ?

### What we have learnt

- Explain - Why it can be adventurous and challenging to climb a mountain ? How would you prepare if you were to climb a mountain ? What would you take with you ? Write in your own words.



## 10. Story of Walls



### Reached Uparkot

Finally today we went out with *Didi* to see Uparkot near Junagadh city. *Didi* studies history and we enjoy visiting various places with her.

**Zeel :** Wow ! awesome. How huge this fort is !

**Yashpal :** And look, at what a height it is built !

**Jigna :** Ohh ! Look at this door. Have you ever seen such a long-wide door ?

**Zeel :** It looks very heavy. I wonder how many people would be needed to open and close this gate.



**Jigna :** What do these sharp iron spokes on the door look like ? Why would they have been put up ?

**Zeel :** Look at its thick-wide walls.

**Yashpal :** I have never seen such thick walls.

**Jigna :** At some places, this wall protrudes in a circular shape towards the front. I wonder, why is that ?

**Didi :** It is called bastions (*Gadh*). See, they are even higher than the wall. There are many bastions in the outer wall of this fort. Thick walls, huge gates and so many bastions! How strong measures have been taken for the protection of the fort !



Why is this small entrance made in the big entrance ?





### Think :

- Why were bastions made in the fort wall ?
- Why were big holes made in the fort ?
- What is the difference between looking from a straight flat wall and a bastion at a height ?
- How would the soldiers find peeping from the holes in the bastions useful while attacking ?

### So much inside the fort !

**Zeel :** Was this fort built by the king for his own residence ? How old is this ?

**Jigna :** Yes, I heard that this fort was built during the time of Chandragupta Maurya.

**Didi :** This is a very old fort. The construction of this fort was completed in B.C. 319. But remained deserted for a long time. Later on in 976 A.D. it was renovated. Many rulers ruled here and made changes in the fort as they desired wished.

**Zeel :** Oh ! See, there is a map of the fort on this board.

**Yashpal :** This map shows trees, stepwells, wells, etc. and look there are some palaces too.

**Zeel :** This means that not only the king, but many others would lived in the fort.

**Jigna :** It might have been a whole town.

### Magnificent Palace

**Yashpal :** Wow ! This building is really worth seeing.



**For the Teacher :** Draw the attention of children's towards high and rounded walls can help to see things at a distance and in various directions.



**Zeel :** Even in those days, the construction of their palaces and buildings was so astonishing !

**Jigna :** Today these buildings are being destroyed, but it can be imagined that earlier there will be many big halls and large living rooms.

**Yashpal :** Oh ! See, how minutely carving work has been done on the walls !



### Wow, what an Engineering !

Today we have many equipments. With which we can easily make the layout of the building and build good as well as fast construction based on it. However, sometimes defects like cracks in the walls, water dripping etc. are found. How could such a building has been built with such an excellent understanding in those days ?

If we think about how the people would have lived thousands of years ago ! So many questions will arise in our minds. For example, how could water be raised at such height ? Imagine and say.

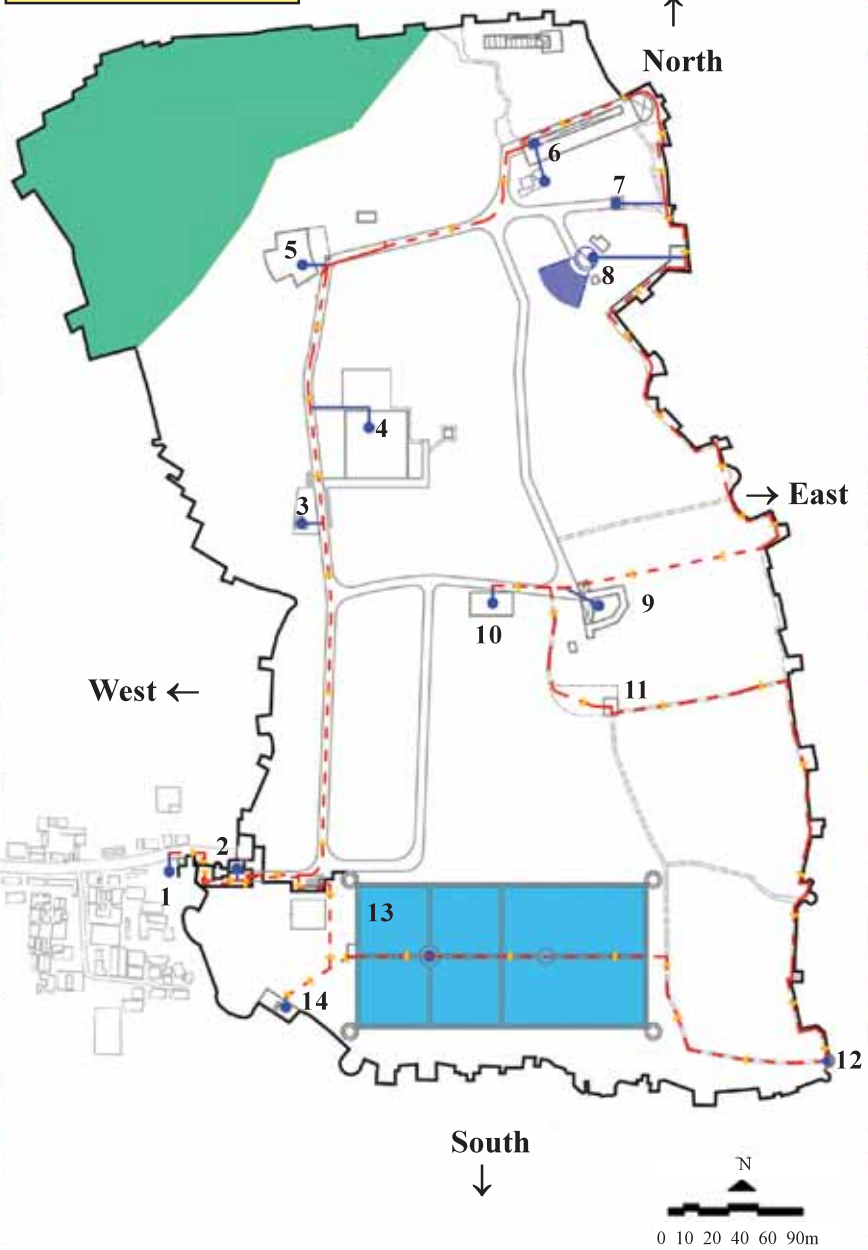
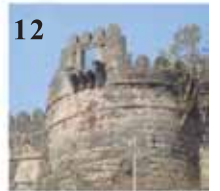


### Think and Discuss :

- What arrangement would have been made for air ventilation in the building ?
- Look carefully at the picture of the beautiful carvings made on the wall. What tools would have been used for such fine carving ?
- What would happen if there was no electricity at our house for a week ? What are the works that can be difficult to do without it ?



## Fort of Uparkot



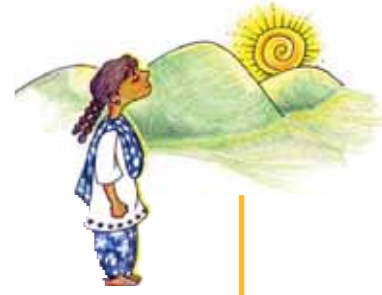
1. Main Gate
2. Lashkari Vav (Stepwell)
3. Neelam-Manek Tope (cannon)
4. Jama Mosque/  
Ranakdevi's Palace
5. Buddhist caves
6. Adi-kadi vav (Stepwell)
7. Temple of Khodiyar Mata

8. Theatre
9. Navghan Kuvo (well)
10. Grain storage
11. Dargah (Tomb)
12. Dhakka bari (Window)
13. Kund (Waterpool)
14. Kadtal Tope (cannon)



## Where is East-West directions ?

At the place where you are, in which direction does the sun rise ? Where does it set ? Where you are standing, find out what is there to your east. What is there to your west ? Also find out, what is there to your north and south ?



### Tell and Write :

Look carefully at the map of Uparkot given on the previous page. On the map, arrows show all the four directions.

- If you enter from the main entrance in which direction from you is Neelam-Manek cannon ?
- If someone is near the Buddhist cave, in which direction from him/her will the water tank be ?
- In which direction would you walk from the Buddhist cave to reach Jama Masjid ?
- How many entrance can you see on the outer walls of the fort ?
- How many palaces are there in the fort ? Count.
- What are the arrangements done for water inside the fort ? For example, wells, tanks, stepwells.

On the map, 1 cm distance is equal to a distance of 45 metres on the ground. Now tell :

- On the map the distance between Aadi-Kadi Vav and Dhakkabari is \_\_\_\_ cm.  
On the ground, the distance between the two would be \_\_\_\_ metres.
- How far is the main entrance and Buddhist cave from each other ?



**For the Teacher :** Children make a lot of mistakes in identifying directions. They are often confused about the north and south directions. Many a times we adults also think that north is upwards. We also often show the 'north' direction by pointing to the top of the paper. Students can answer question (a) and (b) in terms of front, back, left and right. It is not expected that children will be able to understand directions by doing the activity once. It is important to link it with the child own experiences.





## Why these Attacks ?

While we were all talking, Yashpal called us to see the cannon. We also rushed there to see the cannon.

**Zeel :** This is really big cannon. The same cannon balls that are on this side might have been used in it. *Didi* we want to know more about this cannon.



**Didi :** The name of this cannon is 'Neelam'. From the plunder of Diu, Malek Eiaz was brought here on the order of Sultan Bahadur Shah. The other cannon next to it is named 'Manek' cannon. These two cannons were used in the battle of 1538 A.D. between the Sultan of Gujarat and the Portuguese.

**Zeel :** Why were such attacks happen at that time ?

**Didi :** In those days, emperors and kings did such wars. They tried to make smaller kingdoms a part of their own kingdom. Sometimes to maintain friendship, sometimes for marriage between two families and sometimes also to increase their own territory wars were fought.

**Jigna :** I have heard that Siddhraj Jaysinh's army could not enter the fort. Though he also had many soldiers and weapons.

**Zeel :** Jigna, don't you see the wide and strong walls of the fort ? In the map there is a long deep valley next to the wall. How could the army enter ?

**Yashpal :** And if the army tried to come by any other way, then the soldiers hiding in the bastions can see them from a distance and take measures to avoid attack.

**Jigna :** Let's guess with our eye closed. The army is coming with their guns on horses and elephants.

**Zeel :** Oh no ! How many people and soldiers on both the sides may have died in this battle ? Why do people wedge wars ?





**Yashpal :** Guns and cannons are things of the past. Nowadays many countries have atom bombs. A single bomb of this type can cause so much destruction !



**Discuss :**

- Have you ever read or heard of a country invading another country or a war in the recent years ?
- Find out what was the reason for this war.
- What kind of weapons were used in this war ?
- What kind of destruction was caused because of this ?



**Find out :**

The cannon like big gun that Yashpal saw was made of bronze.

- What things/objects have you seen made of bronze ?
- For thousands of years, the tribal people have been using bronze to make many things. One wonders how they took out copper and tin from the mines, melted these metals, and turned them into beautiful things !
- Find out from your elders about some of the things made from bronze that were, or are still being used in your house.
- From its colour try to identify which things are made from copper, which from brass and which from bronze.



**For the Teacher :** Pictures of bronze and brass vessels have also been given in Chapter 6. Encourage children to identify different metals from their colours.



## Arrangements for Water

“Here you can see wonderful arrangements for water”, said Yashpal.

*Didi* : This is ‘Adi-Kadi Vav (stepwell)’. This stepwell is 310 feet long from east-west and north-south is 10.5 feet. Its shore is very deep and wide. There are total 166 steps in this stepwell. People living in the fort used to get water from this stepwell as per their needs.



### Tell :

- Look around and tell how water is pumped up from the ground to higher places ?
- How is water pumped up using electricity ? How is water fetched without electricity ?



Then *Didi* took us to see ‘Navghan Kuva(well)’. She said, “This well was built during the time of Navghan Kings of Chudasama dynasty. There is a well in the middle and stairs around it. The stairs have open windows without large lattice gets at certain distances to allow sunlight and air to enter. This well is 171 feet deep. There are total 204 steps have been carved on the stairs around the well to reach out to the water.

Then we saw the granaries, Noori Shah’s tomb, etc. and also got information from *Didi*.



**For the Teacher :** Discuss with children about various arrangements to fetch water from the ground.



## What a sad sight !

Talking, whistling and listening to our own echo we were walking through the Buddhist caves.



**Yashpal :** How cool is the air here !

**Zeel :** It was written that the Buddhist monks stayed here.

**Yashpal :** Read this board. But see how the wall looks like !

**Zeel :** Oh ! Think, how this wall looks after thousands of years. It has seen kings and queens, horses and elephants, war and peace etc. But we have spoilt it in just a few years !

## Close your eyes and go back in time !

Imagine that you are in those days when Uparkot was a busy town. Think about the questions given below and discuss in class. You can even enact a play.

- What is the king doing in his palace ? What kind of clothes is he wearing ? What dishes are being offered to him ? But why does he seem so worried ? And in what language is he talking ?



**For the Teacher :** Through this activity encourage children to imagine how life would have been at that time – like lifestyle, clothes, the food habits etc. They can express these in a variety of ways, like by drama, drawing, making a story, etc...



- Imagine the rooms in the palace. The beautiful carpets and curtains, the fountains on the terrace... and where does the sweet smell of jasmine and roses come from ?
- What different kinds of factories can you see ? How many people work there ? What do they do ? What are they wearing ? How long do you think they work ?
- Look there ! How those craftsmen are carving the stones using bezel, a chisel and hammer ? Can you see the stone dust in the air ? Do that stone dust harm them in any way ?



### **Museum :**

After seeing Uparkot, the children also went to a museum in Junagadh. Many ancient items were kept there. Such as pots, vessels, jewellery, swords, howdah (*ambadi*) to put on the elephant.

**Zeel :** Oh ! Why are these *howdah* (seat use to sit on an elephant/camel) and palanquin (*doli*) kept here ?

**Didi :** It is through all these things that we come to know how people of those times lived, what they used and what kind of things they made. If all these would not have been preserved here, how could we know so much about those times ?



**For the Teacher :** Encourage children to talk to their elders and neighbours about old times. This would help to develop their understanding of history.





### Write :

- What kinds of pots do you see around you ?
- Get information from your grandparents about what the other types of pots and vessels were used in their time ?
- Have you ever been to any museum ? Or have you heard about it? What all things are there in a museum ?



### Observe and Write :

- Are there any old buildings or monuments around your area ? If yes, name them.
- Have you ever gone to see an old monument ? Where is it located ? Did you feel like it was telling you a story ? What did you know about those days from it ?
- How old is that building ? How did you find out ?

---

- What is it made of ?

---

- What colour is it ?

---

- Is there any special kind of carvings or designs on the old building ? Draw them in your notebook.

---

- Who used to live there in the olden days ?

---

- What kinds of activities took place there ?

---

- Do people still live there ?

---



**For the Teacher :** Talk to children about various sources of history such as maps, pictures, excavated things, books, records and ledgers.



## Create your own Museum

Rajni teaches in a Government school in Mallapuram district in Kerala. She has collected many old things from all the houses together with the children of her class. Like old walking sticks, locks, umbrellas, wooden slippers (*padukas*), pots, etc. They also saw what these things look like today. Rajni and the children arranged an exhibition, which people from the neighbourhood came to see. You could also do this at your school.



umbrellas, wooden slippers (*padukas*), pots, etc. They also saw what these things look like today. Rajni and the children arranged an exhibition, which people from the neighbourhood came to see. You could also do this at your school.

### Look at the painting and Tell

This painting is about 500 years old. It shows Agra fort being constructed.

What kinds of work are people doing? How many men and women are working? See, how they are taking the huge pillar up along the slope? Is it easier to lift heavy objects down a slope or straight up? Can you see the men carrying water in a *mashak* (leather bag)?

### What we have learnt

- Sangeeta thinks there is no point in creating a museum by keeping old items. How would you convince her that it is important to have a museum?
- Why do you think the chapter is named, 'Story of Walls'?



## 11. Sunita in Space



### Think and Tell :

- How does the earth look like ? Make a drawing of the earth in your notebook. On your drawing show where you are. Take a look at your friends' drawings too.



### How does our earth really look like ?

Khushboo and Umang are playing with the globe. While playing they are talking to each other.

**Khushboo :** Do you know that Sunita Williams is visiting our school tomorrow ? I have heard that she has spent more than six months in the space.

**Umang :** (*looking at the globe*) Hmm... look here is America, Africa. But, where is the space ?

**Khushboo :** The sky, the stars, the sun and the moon, they are all in space. The earth is also in the space.

**Umang :** Yes, I know. Sunita Williams went in a spaceship. I saw on TV that she could see the earth from there.

**Khushboo :** From there the earth would look like this globe.

**Umang :** If our earth looks like this globe, then where are we ?

(*Khushboo takes a pen and places it on the globe.*)

**Khushboo :** Here we are. This is India.

**Umang :** If we were here like this, we would all fall off. I think we must be inside the globe.



**For the Teacher :** We know that scientists have also struggled to build an understanding of the shape of the earth. It is difficult for the young children to understand the shape of the earth. Encourage children to express their ideas freely.





**Khushboo :** If we are inside, then where is the sky, the sun, the moon and the stars? We must be on the globe. And all the seas and oceans must also be on the globe.

**Umang :** (*pointing towards the lower part of the globe*) You mean to say that no one stays here?

**Khushboo:** People live here too. Brazil and Argentina are here.

**Umang :** Are the people there standing upside down ? Won't these people fall off ?

**Khushboo :** Yes, it looks strange, isn't it ? And this blue part must be the sea. Why doesn't the sea water fall off ?



### Think and Tell :

- If the earth is round like a globe, how is it that we do not fall off ?
- Do the people in Argentina stand upside down ?

### Talking with Sunita

When Sunita Williams came to India, thousands of children like Khushboo and Umang got a chance to meet her. She also interacted with the children.



**For the Teacher :** Children can be told about Kalpana Chawla and her space travel. The book – *How We Found the Earth is Round* written by Isaac Asimov (Longman) is very useful for teacher. This book talks about the way people in different culture have been thinking about the concept of earth over centuries. Interestingly, even today many children's ideas match with many of those ideas and thoughts. There is actually no 'up' and 'down' on the earth, it is relative.





Sunita says, “My friend Kalpana Chawla also wanted to come to India and meet the children. I come to India to fulfil Kalpana’s dream.”

### Sunita’s experiences of living in space !

☆ We could not sit at one place. We kept floating and could reach from one end to another.

☆ Water too doesn’t stay at one place. It floats around as blobs. To wash our face or hands we had to catch these blobs and to wet paper with them.



☆ We ate very differently there. The real fun was when all of us would float into the dining area of the spaceship and catch the floating food packets.

☆ In space there was no need to use a comb. My hair kept standing all the time.

☆ Not being able to walk, we had to get used to floating around. We had to learn to do simple things differently. To stay at one place, we had to strap ourselves there. Papers also had to be stuck to the wall of the spaceship. It was a lot of fun living in space but it was also difficult.



#### Look at the photographs and Write :

- Can you think why Sunita’s hair were standing ?
- Look at Sunita’s photographs and the dates written on each of them. Write what all things are happening and when ?





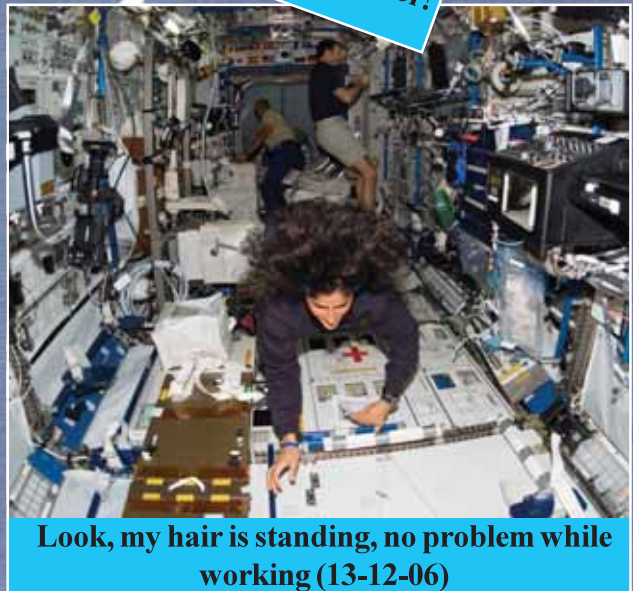
**We take off (9-12-2006)**



**Our feet don't stay on the floor! (11-12-2006)**



**Where is this food flying away? (11-12-2006)**



**Look, my hair is standing, no problem while working (13-12-06)**



**Sunita outside the spaceship, really in space! (16-12-06)**

Courtesy : NASA





## Classroom becomes a Spaceship !

- Close your eyes. Imagine that your class is a spaceship. Zooo...m – in 10 minutes you have entered the space. Your spaceship is now going around the earth. Now tell :
  - Are you able to sit at one place ?
  - What do you say about your hair ?
  - Oh, look ... where are your bags and books going ?
  - And what is your teacher doing ? Where is her chalk ?
  - How did you eat your food during the break ? How did you drink water ? What happened to the ball that you threw up ?
- Act out or draw the scene.

## Isn't it Amazing ?

On the earth when we throw something up, it comes down. When we throw a ball up in the air, it falls back. We are able to catch it. On the earth, we don't keep floating around like in spaceship. When we fill a glass or bucket with water, it stays there. It doesn't float around in blobs as Sunita Williams says. It is something special about the earth that makes this happen ! The earth pulls everything towards itself.

Sunita Williams went 360 kilometres away from the earth, in the spaceship. Think how far it would be! Find out which town or city is located about 360 kilometres away from where you live. This is how far Sunita Williams went away from the earth.

- Can you now say why Sunita's hair kept standing ?
- Think, why water flows downwards on any slope ? Over the mountains too water flows downwards, not upwards.



**For the Teacher :** It is challenging even for adults to understand how things behave in the space. Discussion can be initiated based on the given photograph. It is important for children to raise questions and imagine things in space. We become so used to things being pulled by the earth's gravity that we never give it much thought. It becomes tough for us to imagine what would happen if there was no gravitational pull.



### **Magic 1 – A tiny paper races a coin.**

Take a 5 rupee coin and a small piece of paper. The paper should be about one-fourth the size of the coin.

1. Hold the coin in one hand and the paper in the other. Drop them at the same time. What happened ?
2. Now place the tiny paper on the coin and drop them. What happened this time ? Surprised !

**1**



**2**



### **Magic 2 – A mouse lifts an elephant!**

To play this you will need a small stone, a bigger stone (lemon-sized), a thick roll of paper (also take an empty rod of thread), a mouse and an elephant made of paper.

- Take a string about 2 feet long.
- At one end of the string tie the small stone. Stick or tie the mouse to the stone.
- Pass the string into the roll of paper.
- At the other end of the string tie the bigger stone and stick the elephant.
- Hold the roll of paper in your hand and move your hand to rotate the small stone.

**Who is pulling whom ? You will be surprised ! The mouse lifts the elephant ! How did this magic happen ?**

### **Where are the lines in reality ?**

Sunita describes her view of the earth from the spaceship : “The earth looks so beautiful and amazing. We could watch it for hours, from the window of the spaceship. We could clearly see the round shape of the earth.”



**For the Teacher :** Sunita’s experiences can be used to give children a sense of the earth’s gravity. Use of the term ‘gravity’ is not needed here. Children would need to be helped to construct an understanding about the pull of the earth. This can be done only by linking it with children’s own experiences. It seems magical when the tiny paper falls with the coin at the same time. This is because in our daily life we find that the air slows down the speed of leaves or paper while they fall. Children are not expected to understand the science behind the magic 2 - ‘A mouse lifts an elephant !’ They might not even be able to understand that the bigger stone is lifted against the earth’s gravitation. Actually, in the spaceship Sunita did not experience the pull of the earth because the spaceship was revolving around the earth.

Look at this photograph of the earth, taken from a spaceship. From such photographs today we know how the earth looks like. But thousands of years ago, people could only imagine how the earth looked like. Scientists tried hard to find out – how big is the earth, how does it go around ?



Courtesy : NASA



### Look at this photograph and Tell :

- Can you see India ?
- Can you recognise any other place ?
- Where is the sea ?
- Do you think there is any similarity between the globe and this picture of the earth ? In what ways are they different ?
- Could Sunita make out Pakistan, Nepal and Myanmar separately, when she was looking the earth from space ?



### Look at a globe in your school and Tell :

- Can you find India ?
- Where can you see the ocean ?
- Which countries can you see ?
- Can you see some of the countries with which India plays cricket matches ? For example : England, Australia, Pakistan, Bangladesh and South Africa.
- What else can you see on the globe ?



*(Khushboo and Umang are looking at different countries on the globe.)*

**Khushboo :** See, there are border lines between two countries on this globe. Are such border lines also there on the earth ?

**Umang :** There must be. There are border lines on the map of India in this book also. Look here, there are border lines between the different states, too.



**Khushboo :** If we go from Delhi to Rajasthan, would we find such border lines made on the ground ?



**Look at the map of India and Tell :**

- Find out the state in which you live ?
- Which are the states next to the state you live in ?
- Have you been to any other state ?
- Umang thinks that there are border lines drawn on the ground between the states. What do you think ?



When Sunita saw the earth from space she found the earth very beautiful. Many thoughts came to her mind. As she describes it, “From so far away, one can only make out the land and the sea. One cannot see the different countries. Division into countries has been done by us. All the lines on the maps are made by us, they are in our mind. I wish we all should think about this. Where are the border lines, in reality ?”



**Look at the Sky :**

**Umang :** (*He closes one eye and moves the coin back and forth while looking at the moon.*) Look, I can hide the moon behind this coin.

**Khushboo :** Wow! Imagine hiding such a big moon behind such a small coin.

- Why don't you try to do the same with a coin ?
- How far do you keep the coin from the eye to hide the moon ?



**Think :**

- Do you think the moon is flat like the coin or round like a ball ?



Have you ever looked the sky carefully at night ? Don't the twinkling stars look magical ! And sometimes the moon is silvery and bright, while sometimes it is nowhere to be seen in the dark sky.



- Look at the moon tonight and draw what it looks like. Look and draw again after one week, and then after 15 days.

Today's Date	Date after a week	Date after 15 days



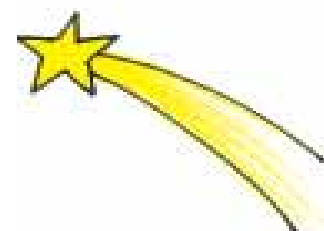
**Find out :**

- When is the next full moon ? At what time will the moon rise on this day? What does the moon look like on this day ? Draw it.
- Which festivals are associated with the moon?
- Look at the sky carefully for 5 minutes at night.
  - What can you see ?
  - Do you see anything moving in the sky ? What do you think it could be ? A star or a shooting star or a satellite (satellites are used for the TV, telephones and for weather reports). Find out more information about this.



**Look at the table and Tell :**

- Given below are the times when the moon sets in Gandhinagar on the given days.



Date	Time of moon set (hours : minutes)
29-10-2019	19:16
30-10-2019	20:04
31-10-2019	20:54
1-11-2019	21:47



**For the Teacher :** Usually the moon immediately is seen after the sunset during the period of waxing moon-*Ajvadiyu* (the fortnight between new moon day to full moon day) so the time for moon set is considered. But if it is the period for the waning moon- *Andhariyu* (the fortnight between full moon day to new moon day) then time of moon rise should be taken. Because the time for the moon rise to on each day (*tithi*) gets delayed, which could be seen upto sunrise next day.



- Write time of moon set of any four days at your village/town in the table given below :

Date	Time of moon set

- Have you ever seen the moon at 12 in the afternoon ? Why can't we see the moon or stars easily during the day ?

The poet is also raising such questions in this poem :

### Twinkling Stars

Stars are twinkling  
in the sky.

Why do they twinkle ?

Tell me why.

How many can you see ?

Some seem near  
and some seem far.

Is there a name

for every star ?

How many can you see ?

They shine so bright in the dark of  
night !

Why do they hide  
in the morning light ?

How many can you see ?

Some shining stars  
we know so well.

But every star  
has a tale to tell ! How many  
can you see ?

– Anware Islam

Chakmak, December 2003

(Translated by Anupa Lal)



Courtesy : NASA

### An interesting photograph !

A spaceship went to the moon. This photograph of the earth was clicked from the surface of the moon.

See, how the earth looks ? Can you see the surface of the moon ? Do you have any questions after looking at this picture ? Write down those questions and discuss them in the class.



**For the Teacher :** Both children and adults will enjoy looking at and admiring the night sky.

Children will need help understanding the difference between a star, a shooting star and a satellite. Stars can be seen twinkling. A shining object which seems to move with a constant speed in the sky can be a satellite. A shooting star is actually a meteorite which catches fire when it enters the earth's atmosphere. When we motivate ourselves for this children will also be motivated to observe the night sky and learn many new things.



## Do your best and things will work out !

When Sunita was five years old she saw pictures of Neil Armstrong landing on the moon. In 1969, Neil Armstrong was the first man to walk on the moon. Like any other child, Sunita was also fascinated. Sunita says that when she was a young girl she really loved sports and swimming. She was not much interested in studies. After high school Sunita wanted to become a diver. But she could not get into that course. Instead, she became a helicopter pilot. One day she found out that if she studied and trained for it, she could join the Space Mission and that is what she did ! In 2007 Sunita Williams set a new record for the longest space flight by a woman.

Sunita often gives her own example to children, “If you want something, and you get something else, do not give up. Do your best and things will work out !”

When Sunita was asked by a child what would she like to do in the future, she answered, “I want to become a teacher !” So that I could make children understand how science and mathematics are closely linked to our lives.”



### What we have learnt

- Why do children always slide down the slide and not slide up ?  
If this slide were there in Sunita’s spaceship, would children slide like this ? Why ?
- Why do we see stars mostly at night ?
- Looking at earth from the space, Sunita said, “Different countries cannot be seen as separate from here. These border lines are on paper. They are made by us.” What do you understand by this sentence ?



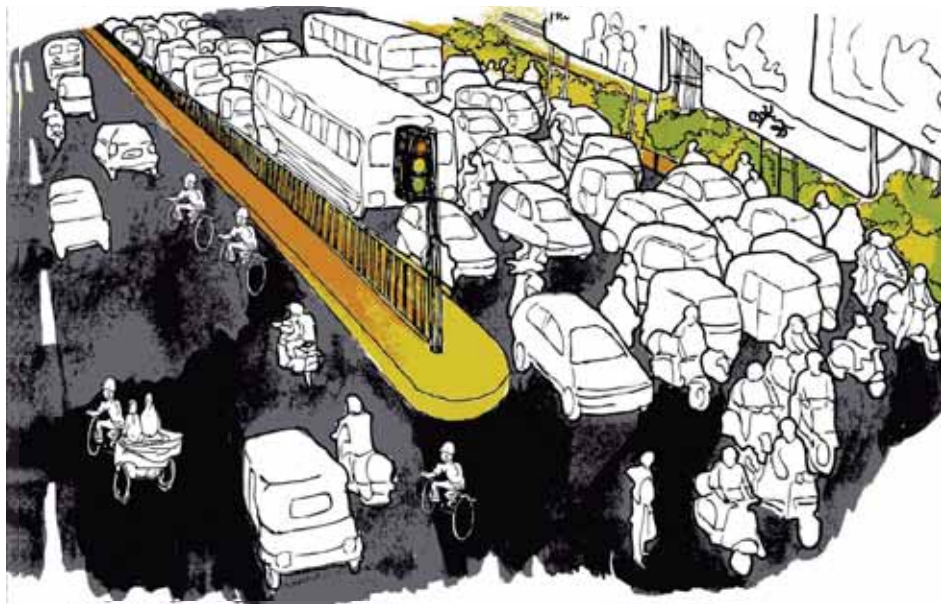
## 12. What if this will be Finished ?



### A bus Journey

Today, we were going on a school trip to the Adalaj stepwell, about eighteen kilometres from Ahmedabad. We began counting the vehicles on the road. Some of us counted the bicycles, others counted the buses, cars, and motorcycles. Abraham, who was counting bicycles, soon got bored. There were hardly any bicycles on this highway.

The driver suddenly braked at the red light signal. It was a big crossing and we could see the traffic lined up on all sides. There was noise of honking and smoke coming out of the vehicles. May be that is why a little boy in a rickshaw was coughing so much. I smelt something familiar. I remembered that this smell also came from my father's tractor in the village.



**For the Teacher :** Examples of familiar highways can help children see the difference among various kinds of roads. Discussion with children could involve listening to children's own experiences about the noise made by vehicles and the bad effects of smoke.

Discuss road safety rules in the class.





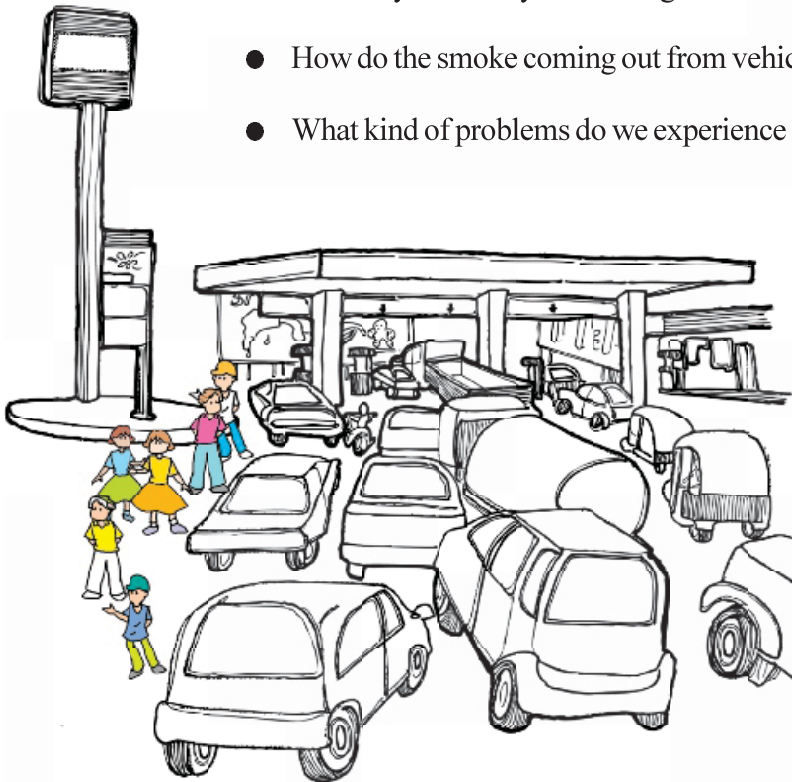
### Look at the Picture on the page 110 and Write :

- What are the different kinds of vehicles you can see ?
- What do you think which vehicles need petrol or diesel as fuel ?
- Which of the vehicles give off smoke ? Put mark on them.
- Which vehicles run without petrol and diesel ?
- What problems can we face from the speeding vehicles ?



### Tell :

- Do you ride a bicycle ? If yes, where all do you go on it ?
- How do you go to school ?
- How do your family members go to work from home ?
- How do the smoke coming out from vehicles cause problems ?
- What kind of problems do we experience from noise of vehicles (honking) ?



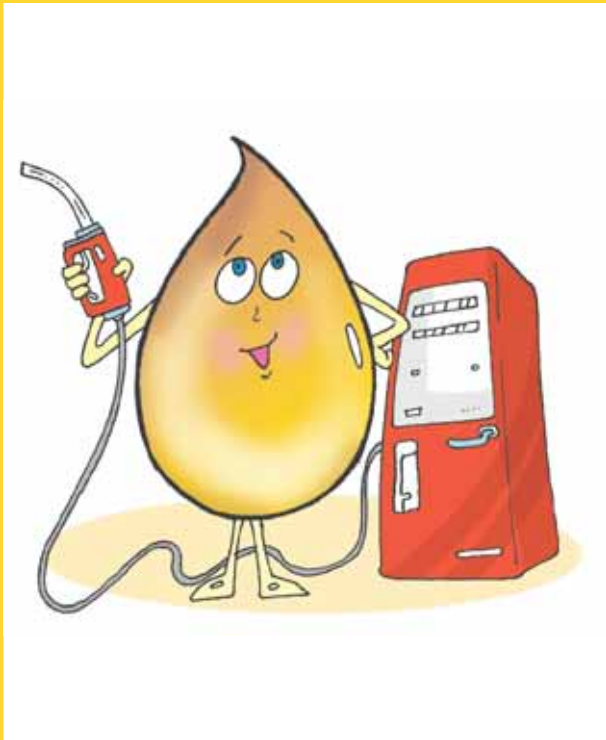
### At the Petrol Pump

After sometime our bus stopped at a petrol pump. There was a long queue. It seemed as if we would have a long wait. We all got down from the bus and started looking around the petrol pump. We saw many large boards and posters.



**For the Teacher :** The term 'oil' can be used for petrol, diesel and crude oil. Discuss with children about various minerals which are mined from deep inside the earth.





- **Petrol and diesel will not last forever. Save it for your children.**
- **Make every drop go a long way.**
- **Switch off the engine when you stop the car.**

**Date : 06-06-2019**

**Rate**

**Petrol: ₹ 68.64 / litre**

**Diesel: ₹ 68.25 / litre**



We could not understand why it was written that petrol and diesel will not last forever. We thought to ask the uncle who works at the petrol pump.

**Abraham :** Uncle, from where do we get petrol and diesel ?

**Uncle :** From deep, very deep down under the ground.

**Manju :** But how does it get formed there ?

**Uncle:** It is formed naturally, but very slowly. It is not made by a human being or a machine.

**Abraham :** Then we don't need to buy it. We can take it out ourselves using a borewell, like we pump out water !

**Uncle :** It is not found everywhere. But it is found only at a few places in our country. We need big machines to pump it out and refine it.





### Find out and Discuss :

- Which states of India have oil fields ?
- Besides mineral oil, what else is found deep inside the earth ?
- Find out the traffic rules and discuss them in the class.
- We should use petrol and diesel judiciously. Why ?

### They discuss further...

**Divya :** Is petrol going to finish ? The poster said that petrol is not going to last forever.

**Uncle :** It does not get formed as fast as we take it out. It takes millions of years for it to be formed under the earth.

**Abraham :** How will vehicles run if the oil finishes ?

**Manju :** On CNG. I had seen on TV that vehicles which run on CNG create less smoke.

**Uncle (laughing) :** That too comes from below the soil. It is also limited.

**Divya :** Electricity can be used to run vehicles. I have seen an electric bicycle.

**Abraham :** We will have to do something. Or else, how will we travel when we grow up ?

**Divya :** My grandmother would be happy, if fewer vehicles run on the road. She says, “Look ! vehicles line up like ants. What will you do when you grow up ?”

**Manju :** See, only one or two persons are sitting in this car. Why don't they use a bus ?

**Abraham :** That will save petrol. One bus can carry many people.

**Manju :** When I grow up I will invent a car that runs on sunlight. Then we won't have to worry about it getting finished. We can use it as much as we want !



**For the Teacher :** Different uses of solar energy can be discussed. The concept of ‘energy’ is abstract for children of this age but they can start thinking about it in terms of strength, power, etc. Which resources are limited and why ? Encourage children to think and discuss it in the class.



## Treasure from the Earth

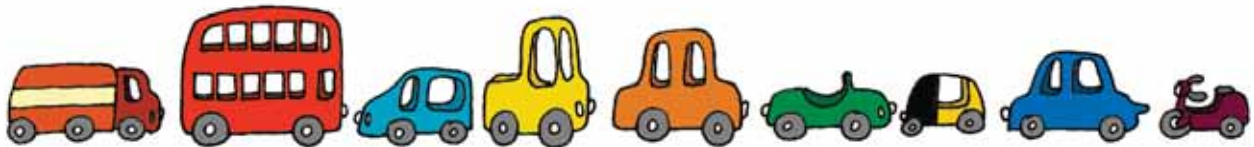
It is not easy to find out where oil is, deep inside the earth. Scientists use special techniques and machines to find this out. Then through pipes and machines petroleum is pumped up. This oil is a smelly, thick, dark coloured liquid. It contains many things mixed in it. To clean and separate these, it is sent to a refinery. Have you heard of a ‘refinery’?

It is from this ‘petroleum’ that we get kerosene, diesel, petrol, engine oil and fuel for aircrafts. Do you know that L.P.G., wax, coaltar and grease are also obtained from this ?

It is also used in making several other things like plastics and paints.



I started thinking about saving fuel. I remembered that sometimes my father keeps the engine of the tractor on, while doing something else. At times, the pump in the field is also left on. What a waste ! I thought I will surely talk to my father when I go home.



### Write :

- What makes all vehicles run ?
- What kinds of problems will we face, if the number of vehicles keep on increasing ? For example, more traffic on the road. Talk to your elders and write about it.
- Manju said, “Why doesn’t everyone use a bus ?” What do you think, why don’t people travel by buses ?
- Suggest some ways to deal with the problems arising out of the growing number of vehicles.
- What are the benefits, if we switch off the engine of the vehicles on the red light at the traffic signal ?



**For the Teacher :** Discuss about the possible options for reducing the number of vehicles on the road. Use different news reports related to it.





### Find out and Write :

How much oil?	Scooter	Car	Tractor
How much petrol/diesel can be filled at a time ?			
How far can it go in one litre of petrol/diesel ?			

The rates of petrol are different in each city. The rates of petrol and diesel in Delhi are given here. Look at the table and answer the questions.

Oil	Rate of one litre in June, 2009	Rate of one litre in June, 2014	Rate of one litre in June, 2019	Rate of one litre Today
Petrol	₹ 40.62	₹ 72.26	₹ 67.47	
Diesel	₹ 30.86	₹ 50.28	₹ 67.72	

- In 2019, as compared to 2014 the rate of petrol decreased by \_\_\_\_\_ rupees. The rate of diesel increased by \_\_\_\_\_ rupees.
- What was the difference in the rates of petrol and diesel from 2009 to 2014 and 2014 to 2019 ?



### Find out :

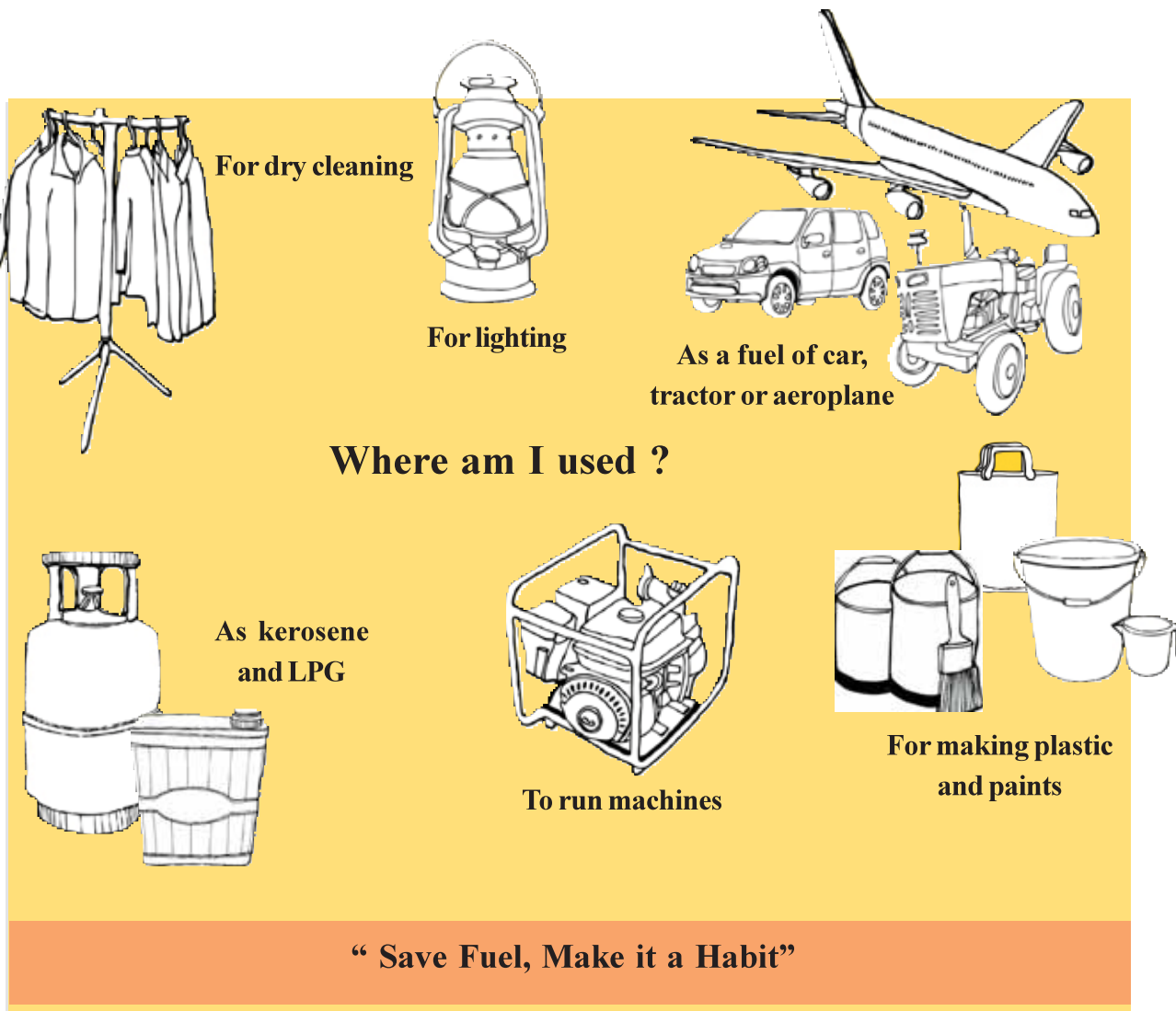
- What is the price of petrol and diesel in your area ?
- Why is the price of petrol and diesel going up ?
- In one month how much petrol and diesel is used in your home ? What is it used for ?



**For the Teacher :** Here average price for the month of June 2009, 2014 and 2019 is shown. Discuss the daily fluctuations in the price of petrol-diesel.



- One poster is given here.



**See the Poster and Write :**

- Where is fuel used ?
- Where is diesel used? Find out.



**For the Teacher :** It would be useful to have a discussion on the poster. This will help children to understand that petrol, diesel, kerosene, L.P.G. etc. are all different forms of petroleum. These all have different uses in our lives. Children will understand the poster better by relating it to their own experiences.





Divya wrote a poem and read it out to her friends. Read and discuss it.

### Who Am I ?

I'm black, I'm thick,

I flow.

Who am I ?

Do you know ?

I will last longer,

If you use me with care.

I got made over centuries.

I won't always be there.

I light your lamps,

I cook your food.

I run your machines,



Fly planes in the sky !

Who is more useful

To people, than I ?

If not used with care

I won't always be there

Will they fight without me ?

What is life without me ?

I'm black, I'm thick,

I flow.

Who am I ?

Do you know ?



### Think and Discuss :

- What would happen if you don't get petrol or diesel for a week in your village or town ?
- Suggest some ways to save fuel.



Urja Bharati

### Long time ago :

#### Wood for *Chulha*

Durga lived in a village in Haryana. Everyday she spent many hours collecting wood for the *chulha* (stove). Her daughter also had to help her in this. For the past three months she had a cough. There was a lot of smoke when damp wood was burnt. But Durga did not have any other option. When there is not enough money to buy food, where will there be money to buy wood ?



### Discuss :

- Have you ever collected dry wood or made cow dung cakes ? How are they made ?
- Do you know anyone who collects dry wood or leaves to be used for lighting a *chulha* ?

**What if this will be Finished ?**



- How cooking is done in your house ? How cooking is done in other families in your area ?
- If they cook food using wood or cow dung cakes, what difficulties do they face due to smoke ?
- Can Durga use anything else instead of wood ?

Why not ?

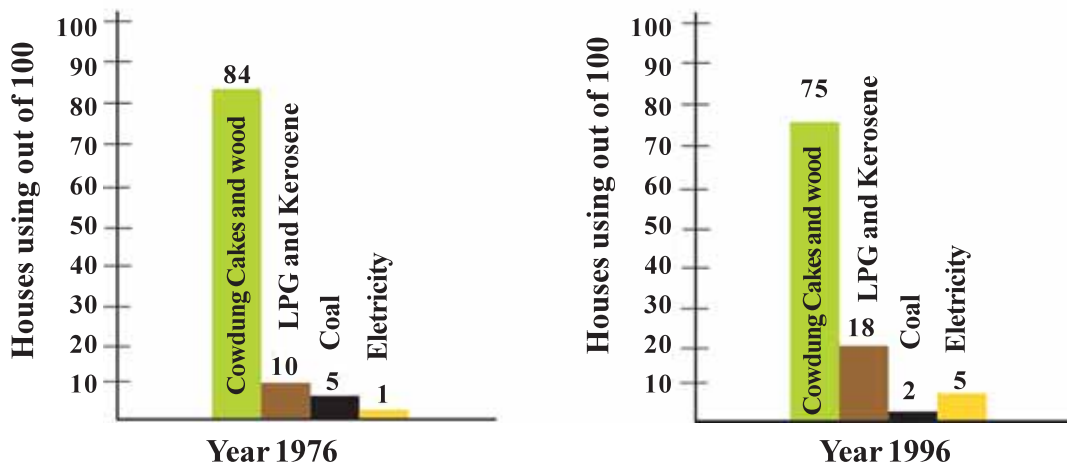
Earlier, about two-third (2/3) of people in our country used cow dung cakes, wood and dry twigs, etc. These are used not only for cooking food but also for keeping warm, for heating water and for lighting. Many other things are used for domestic activities at home such as kerosene, LPG, coal, electricity, etc.



Urja Bharati

Maitri had shown a **bar graph** in a book. The graph shows the number of houses out of 100 that use each type of fuel. It also shows the use of which fuel has increased and which fuel has decreased over the past twenty years.

### Change in fuel use over twenty years



- In year 1996, out of 100 how many houses used cow dung cakes and wood ?
- Which was the fuel used the least in 1976 ?
- In 1976, LPG and kerosene were used in \_\_\_\_\_ houses and in 1996 this increased to \_\_\_\_\_. This means that in twenty years their use increased by \_\_\_\_\_%.



**For the Teacher :** Give information to children about the fuel currently used at home. A bar graph given above can be prepared on the use of fuel used in their area or village homes.



- Out of 100, how many houses were using electricity in 1996 ?
- Which fuel was used, the least in 1996 ? What percentage of houses used it in the year 1996 ?



### Find out from your elders :

- When they were young what was used to cook food at home ?
- In the past 10 years use of which cooking fuel has increased in your area ? Use of which fuels has decreased ?
- Discuss the use of which fuel would increase and which would decrease in the next 10 years.

### What we have learnt

- Imagine that a company has given you a chance to design a new vehicle like a mini bus. What kind of vehicle would you design ? Write about it. Draw a picture and colour it.
- While making the design, whom do you plan to take care of:
 

old people — \_\_\_\_\_

children — \_\_\_\_\_

those who cannot see — \_\_\_\_\_
- Look out for news reports on fuel. Cut these and make a collage. Put up a chart in your classroom. Also write your own views on these news reports.
- Make a poster with a message on saving fuel. Write a slogan too. Where would you like to put up this poster ?



**For the Teacher :** Encourage children to relate the use of the term ‘percent’ to other instances from their daily lives, such as – chances of winning a game, marks in a subject, discount sales, etc. and correlate with mathematics. Give information about ‘Ujjwala Yojana’ to children.



## 13. Shelter High !



### A Traveller's tale



Gaurav Jani

“I am Gaurav Jani and this is ‘Loner’, my Motorcycle and my friend. In English, ‘Loner’ means alone. But my motorcycle is not alone. I live with it everyday.”

“We both are looking for an opportunity to get away of Mumbai’s crowded and noisy street and high-rise

buildings. We love travelling to different parts of our beautiful country. Today I will tell you a wonderful story of my motorcycle journey on the highest roads of the world.”

### My Preparation :

“My journey was for about two months. I had to carry luggage for those many days, even tying it on my motorcycle. I collected the luggage as needed after much thought. Tent for living, plastic carpet for bedding, sleeping bag, warm clothes and non-perishable food items. Apart from this I also took a camera and extra cans to fill up with petrol. I left Mumbai. I reached Delhi passing through small and big cities of Maharashtra, Gujarat and Rajasthan”.

“It took three days to cover the distance of 1400 kilometers from Mumbai to Delhi. I was hoping to see something new in Delhi. But Delhi was just like Mumbai. Now I was tired of seeing the identical cities. The same type of houses - made of cement, bricks, glass and steel. I was going to continue my journey.”



“I was very excited thinking about the days to come. I had an imagination in mind that I would be able to see wooden houses, houses with sloping roofs and houses covered with snow. Just like what I had read in the books.”

“Loading rest of the luggage from Delhi, I moved on. After two consecutive days of travel I reached Manali. The fresh air of the mountain region relieved my stress. To be honest, now my real journey was about to begin. We had to travel through many difficult roads of the state of Jammu and Kashmir to reach Leh in Ladakh.”



### Find out :

- Look at the map and tell. From which states would one pass through while travelling from Mumbai to Kashmir ?
- Gaurav Jani passed through several states while going from Mumbai to Delhi. Find the capital cities of all these states. Was there any big town or city on his way ?
- Is Manali a plain or a hilly area ? In which state is it located ?



Gaurav Jani

### My new Home :

“My 'Loner' and I were moving ahead each day. All I needed was food and a tent to protect myself from the cold at night. My nylon tent was so small that I could just about fit in it to sleep. My motorcycle guarded tent at night. That means parked outside. In the morning my eyes were

opened to see birds coming along with the cool air full of freshness and I saw sunrise.”





### Tell :

- Have you ever stayed in a tent ? Where ? How was it ?
- Imagine that you have to stay alone in a small tent for two days and only ten things could be taken along with. Make a list of those ten things.
- How many different types of houses you have seen ? Tell your friend about it. Also draw a picture.



Gaurav Jani

### Cold Desert :

Finally 'Loner' and I reached Leh. For the first time I saw high, dry and flat area called the cold desert. There is very little rainfall in Ladakh. Here there are high snowcapped mountains and cold, flat plains.

In Leh, I found myself on the streets with beautiful white houses. I was riding vehicle slowly. I saw a group of children following me. They called out '*Jule, Jule*', which means 'Welcome, Welcome'. They were amazed to see my 'Loner'. Every kid wanted to take me to their home.

### At Tashi's home

Tashi dragged me to his home. His house was of two storeyes. The house was made of stones which were kept one over the other. The walls were coated with thick layer of mud and lime. The house looked like a stable from inside, in which a lot of hay was stored.



**For the Teacher :** Discuss with children that all the deserts are not hot and sandy. Encourage students to find all the states in map mentioned in the chapter.



We reached the first floor using the wooden stairs. “This is where we live,” explained Tashi. “The ground floor is for our animals and for storing necessary things.



Gaurav Jani

Sometimes when it gets very cold, we also move downstairs.” I noticed that the ground floor had no windows. Thick tree trunks were used to make the roof strong.

Tashi then took me to the roof of his house. What a view ! I could see the same flat roofs all around. On some red chillies were, laid out to dry and on some there were

orange, pumpkins and golden yellow corn. Also some had stacks of paddy and on some cow dung cakes were laid out to dry.

“This is the most important part of our house,” said Tashi. “During summer season we dry many fruits and vegetables. We store them for winter. At that time we do not get fresh fruits and vegetables.”

As I stood there with Tashi I saw how every part of the house was built specially to suit their needs. I could understand how, a wooden floor, the thick walls and wooden ceiling could protect them from cold.



**Write :**

- During winter, Tashi and his family live on the ground floor. Why do they do so ?
- What type of roof your house has ? For which purpose the roof is used ?



## Accommodation on Top of the World

Now it was the time to climb to the great heights. Loner had a tough time as the roads were zigzagging along narrow and rocky. At many places there were no roads at all.

I was passing by the rocky plains of 'Changthang'. This place is almost 5000 metres above the sea level. It was so high that it was difficult to breathe there. I had a headache and felt weak. Then I slowly got used to breathing in such air. For many days we kept wandering in this area with not a single human being in sight. There were no petrol pumps or no mechanics. Only clear blue sky and many beautiful lakes around.

Many days and nights passed. Loner and I kept moving ahead. Suddenly one morning I saw flat grassy land in front of me. Many sheep and goats were grazing there. Far in the distance I saw some tents. I wondered who lived there ! And what were they doing in such far off place ?



### Find out :

- At what height above sea level is the place where you live ?
- Why did Gaurav Jani say - "This place is so high that it is difficult to breathe normally ?"
- Have you ever been to a hilly place ? Where ?
- At what height was it above the sea level ? Did you have any difficulty in breathing there ?
- Which was the highest place that you had been to ?



## The Changpa

There I met Namgyal and came to know about the 'Changpa' which is a tribe living on the mountains. There were only about 5000 people in Changpa tribe. The Changpas are always nomadic with their sheep and goats.





From them they get milk, meat, leather for making tents and wool for sweaters and coats. Their sheep and goats are their only treasure. If a family has more animals it is considered more rich and important. From these special goats they get the world famous Pashmina wool. The Changpa takes their goats for grazing at higher and colder places. The higher and cooler the place, the longer and smoother the hair of these goats. This is why Changpas prefer to live in higher altitudes even after enduring so many hardships. This is their life and their lifestyle.

I used to carry a little of my belongings on my motorcycle. But the Changpas carry everything that they own on their horses and yaks. It takes them only two and a half hours to pack everything and move ahead. In a short time they put up their tents at the chosen place, their belongings/things and their homes are ready.



Gaurav Jani

“You are most welcome into our home,” said Namgyal as he led me to the big cone-shaped tent. They call their tent ‘Rebo.’ Yak hair is woven to make strips which are stitched together. These are very strong and warm which protects them from the icy strong winds. I saw that the strips were firmly tied with nine sticks. The ground was dug about 2 feet deep. The tent was then put up around it little above the ground.



**For the Teacher :** In the language of the Changpa ‘changthang’ means a place where very few people live. Are such words like this spoken by children in different languages ?

As you climb the mountains, the amount of oxygen in the air decreases and at times people have to carry oxygen cylinders. It is not expected that children understand the concept of ‘oxygen’. But children may have little idea that it is difficult to breathe on high altitudes. This discussion will make them sensitive towards people living in such conditions. Through this, they will also understand many kinds of difficulties people have to face for a living.



## The World Famous Pashmina

It is believed that a Pashmina shawl provides warmth of as six sweaters ! It is very thin yet warm. The goats from which the smoothest pashmina wool is collected, are found at very high altitudes of 5000 metres (above sea level). In winter, the temperature here drops upto below 0 °C to (-40 °C). The goat has a layer of warm hair on its body which protects it from extreme cold. The goats shed some of their hair (fur) in summer. This hair is so fine that six hairs of these would be as thick as one hair of yours.



The fine hair cannot be woven on machines and so weavers of Kashmir make these shawls by hand. This is a lengthy and difficult process. After almost 250 hours of weaving, one plain pashmina shawl is made. Imagine how long it would take to make a shawl with embroidery ?

As we stepped into the tent I realised that I could stand up straight in the tent. It is not like my tent. I also saw that the 'Rebo' was as big as a room of my flat in Mumbai. It was held up by two wooden poles in the middle. There was an opening to let out the smoke from the *chulah*. Namgyal told that the design of this tent is more than a thousand years old. The tent protects the Changpas from extreme cold.



Gaurav Jani

Rebo

How cold must it be ? In winter the temperature drops much lower than zero. The wind blows at 70 kilometres / hour. Imagine – if you were in a bus which was going at this speed, how far from your house would you reach in one hour ?

There was a place to keep sheep and goats near the 'Rebo', Changpas call it '*lekha*.'



**For the Teacher :** It can be discussed with children that there are different kinds of houses in different regions. There are different kinds of houses in the same area. The factors include climate, economic conditions and also the availability of local raw material (stone, mud, wood).



The walls of a '*lekha*' are made of stones. Each family makes a special mark on their own animals. The women and girls count animals and take them out of the '*lekha*'.

- For the Changpas their animals are an major part of their life. Is any animal part of your life ? For example, as a pet, or for help in farming.
- How do different animals relate to your life ? Give five examples.
- Do sheep and goats need their own fur ? Discuss.



### Find out :

- You read that in Changthang the temperature drops below  $0^{\circ}\text{C}$ . Find out from the news flashed on the TV in which Indian cities or abroad where the temperature drops below  $0^{\circ}\text{C}$ . In which months would you like to see this ?

## Towards Srinagar

I spent a few days with the people of Changpa community, but unfortunately now I have to move on. The time had come. My return journey would take me away from this special part of the world, towards towns which looked like a totally different world. This time I took a different route from Leh. I was going towards Srinagar via Kargil. I saw many more amazing buildings and different houses.

I stayed in Srinagar for few days. I was amazed by the houses there. They won my heart! Some houses were on the mountains, while some on water. I took many photographs of these. See my photo album (page no. 128).



**For the Teacher :** Children at this age are not expected to understand the concept of temperature. But using newspaper reports and linking  $0^{\circ}\text{C}$  with their experiences of hot or cold will help them to make some associations. This will provide an opportunity to know the names of some new cities in which the temperature drops below  $0^{\circ}\text{C}$ .



## Houses of Srinagar – My Photo Album

Vinod Raina



Tourists who come to Srinagar prefer to stay in houseboats. Houseboats can be as long as 80 feet and around 8 to 9 feet wide.



Afaq Ghada

Many families in Srinagar live in a 'Donga'. These boats can be seen in Dal Lake and Jhelum river. From inside the 'Donga' is just like a house with different rooms.

Afaq Ghada



Beautiful carving on wood can be seen on the ceiling of the houseboats and some big houses. This design is called 'Khatamband' (which has a pattern that look like a jigsaw puzzle).



Afaq Ghada

In villages of Kashmir, houses are made from cut stones and kept one on top of the other and coated with mud, wood is also used in it. The houses have sloping roofs.

Afaq Ghada



Some old houses have a special type of window which comes out of the wall. This is called 'Dab'. It has beautiful wood designs. It is wonderful to sit here and enjoy the view!

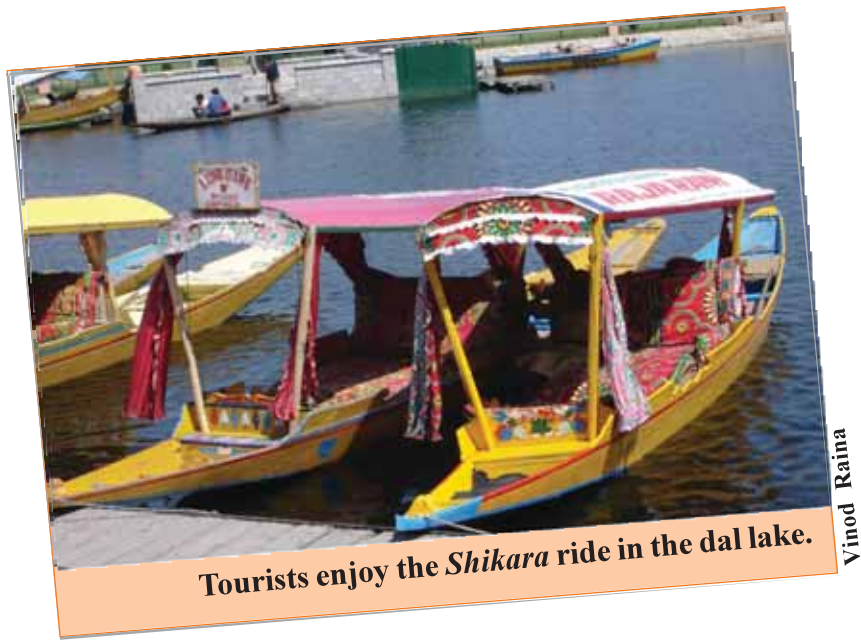


Afaq Ghada

The old houses here were made of stone, bricks and wood. The doors and windows have beautiful arches (*Mehraab*).



When I started my journey, I had not imagined that in a single state I would find so many different kinds of houses and lifestyles. I had a wonderful experience of living on the mountains in Leh and on water in Srinagar. I saw how both types of houses, adapted according to the climate of its area.



## Return Journey

It was now time to return. In Jammu I saw houses like I have been seeing in Mumbai. The same – cement, brick, steel and glass. These houses are very strong. But they are not as special as the houses I saw in Leh and Srinagar.

After a long journey Loner and I were about to reach Mumbai. I came back with a heavy heart. I also felt that my motorcycle did not want to come back. I had also brought back some memories in my camera. And of course, this was not the end ! Next time when Loner and I get bored of the city, we will again set out for a new journey.



**Can you tell what is shown in this picture ? Every lane in Kashmir has a bakery. Kashmiri people don't cook rotis in their homes, they buy it from such bakeries.**



**Tell :**

- The houses in some parts of Jammu and Kashmir are made to suit the climate and the needs of the people over there.



- Are there different types of houses in the area where you live ? If yes, think about the reasons.
- Think about your own home. Is there something special in it ? For example, a sloping roof as it rains a lot, or a courtyard where you can sleep when it is hot or where things are kept in the sun for drying, etc.? Make a drawing.
- Which materials are used for making your house ? Is it mud, brick, stone, wood or cement ?



Anita Rampal



### Discuss and Write :

- Look at this picture. Can you see any houses in the picture ? These houses are made of stone and mud.  
Nobody lives here in winter. In summer, the Bakarwal people live here when they bring their goats to higher lands for grazing.
- Can you guess the similarities and differences in the life style of the Changpas and Bakarwal people ?



### What we have learnt

You read about different kinds of houses in Jammu and Kashmir – some on high mountains, some on water, some with beautiful designs in wood and stone, and some mobile shelters/houses that can even be packed and carried to another place.

- Describe how these shelters suit the needs of the people who live there.
- How are they differ from your house ?



## 14. When the Earth Shook !



### A Bad Dream

Help ! Help ! Save me ! Aaahhh... ! Ooooww... There was screaming and shouting everywhere. The ground (land) was shaking and people were running all around.

Screaming loudly I got up. On hearing my voice my mother also woke up. She came running and hold me tightly. It was the same bad dream ! Now it has been more than eighteen years since the earthquake. But in my sleep I still feel the earth shaking and trembling.

I am Jasma. I live in the Kutch area of Gujarat. I was eleven years old when there was an earthquake.

It was January 26, 2001. Everyone from the village – children and old people – had gathered in the ground of the school to watch the parade on TV. Suddenly the ground started shaking. People were scared and started running here and there. No one knew what was happening and what to do. There was panic all around !



**For the Teacher :** Talking to children about the earthquake in Bhuj would help them understand the context. The effects of an earthquake can also be discussed.



In a few minutes, our village was collapsed. All our things such as clothes, pots, grains, food ect. were trapped under the stones, mud and wood from the wreckage (debris). At that time everyone thought of two things – to save the people who were trapped and to treat the injured. The village hospital was also damaged. Many people were seriously injured. The doctor treated people with the help of the villagers.

Six people of our village died. My grandfather (*Nana*) was also buried under the rubbles.

My mother wept all the time. Seeing my mother, I also cried. The entire village was sad and disturbed (in agony).

The House of *Motabapu* who is the *Sarpanch* of our village was less

damaged. He gave rice and wheat for everyone from his godown. For many days, the village women cooked food together at *Motabapu*'s house and fed everyone.

Imagine, being without a house in the cold winter ! Due to fear and the cold we were not able to sleep in the night. All the time we were worried that what if an earthquake would occur again ?



### Discuss and Write :

- Have you or anyone that you know ever faced such difficulty ?
- Who helped at such a time ? Make a list.





## Help Arrives

For some days after that earthquake, people from other cities kept coming to see what had happened. They came with food, medicine and clothes. Everyone used to rush to take these things. The clothes that we got were very different. We had never worn such clothes before.



People from different groups of the city, helped us to put up the tents. Staying in these plastic tents was very difficult in the cold.

Some of these people were scientists. They tried to find out which areas have more chances of having an earthquake. People from our village spoke to them many a times. They suggested to

build our houses again. Engineers and architects showed us some special designs for constructing houses. They said that with this design, houses would not get damaged much during earthquake. But our people were a little afraid. They thought if these people built our houses, our village would not look like our old village. So, the villagers thought they would build their own houses with their help. The group of engineers and architects would build the village school.



We all worked together to rebuild our village. Many people dug and brought the clay from the pond. We mixed the clay with cow dung and made big balls. We put these on one another to make the walls. We whitewashed the walls and decorated them with beautiful designs and small pieces of mirrors. We put up



**For the Teacher :** Talk to the children about government agencies and voluntary groups. For this, examples from their own area can be taken. A discussion can also be held on the kind of work engineers and architects do.





the thatched roof. Now our house shines like a diamond in the dark night.



### Discuss :

- A lot of people from other places came to Jasma's village. Who were these people? In what ways did they help the villagers?
- People in Jasma's village rebuilt their houses with suggestions from the engineers. Will these houses be safer than before in case if there is an earthquake again? Why?
- Think, if there were an earthquake where you live, would your house be safe?
- What will you do to save pet animals during a natural disaster?



### Write :

- Compare your house with that of Jasma. List in your notebook what materials were used in making both the houses.

Jasma's House	Your House
_____	_____

### What will you do ?

People from the groups also explained to the children in Jasma's school, what they should do in case if there is an earthquake. This is what they said :

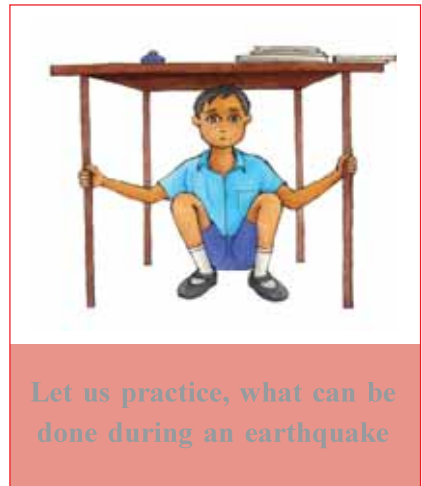
— If possible, leave the house and go to an open ground.



**For the Teacher :** Discuss with the children about what can be done if there is a warning about such disasters.



- If you cannot go out of the house, lie down under strong object like a table and hold it tightly, so that it does not slip away. Wait until the trembling stops.
- Have you been told in your school or anywhere else about what to do in case of an earthquake ?
- Why do you think one should go under a table during an earthquake ?



## Who Helped ?

- Read this TV report of the earthquake in Bhuj.



*Ahmedabad, January 26, 2001*

Around thousand people have died in the earthquake that struck Gujarat this morning. Thousands of people injured. Army jawans called in to help.

Around hundred and fifty buildings have fallen in the city of Ahmedabad. In these, there are a dozen multi-storeyed buildings. By this evening, around 250 bodies have been removed from these buildings. It is feared that

several thousand people may still be trapped. Rescue efforts are on. There is perhaps no building in the city which has not developed cracks.

The situation in Bhuj is even worse. People are running around in shock and panic. Within an hour of the earthquake the fire engines had reached and started rescue work along with the local people. Offers to help are coming from all corners of the country and abroad.



### Write :

- According to the TV report, thousands of people were injured and some died in Gujarat. If the buildings had been made in a way that they would not fall during the earthquake, would the damage have been less ? How ?



- At times like this, when people have lost their homes and all their belongings, what kind of help would they need ?
- In such situations whose help would be needed and for what? Write in your notebook as shown here.

Whose help will be needed	How will they help
1. Dog	To smell out where people are lying trapped
2. _____	_____



**Discuss :**

- Have you ever seen people in your area helping one another ? When ?
- Why do people live together in a neighbourhood ?
- Imagine living in a place where there were no other houses or people around. How would it be ? For example, whom would you play with? With whom would you celebrate festivals and special days ? Would you be scared ?
- People face a lot of difficulties when they lose people from their family, or their houses and belongings. In newspapers of the last one month, look for news related to such disasters – earthquakes, floods, fire, cyclones, etc., in different parts of the world. Collect these news reports and paste them in your notebook.



## Your Report :

- Make your own report that mentions the following details :
  - Cause of the disaster, date and time
  - What kind of damage did it cause – to lives, belongings, livelihoods ?
  - Which people came forward to help ? Which government offices or other groups ?
- If there is no rain then crops can fail and there can be a **drought**. But food for people can be brought from other places so that there is no **famine**, which means people don't have to stay hungry, and they don't die of hunger.
- Have people in your area ever got affected by flood or drought ? Search such reports of different countries from newspaper articles. Make your own report.
- Find out and write address and phone numbers of those people whose help you may need in case of an accident or emergency. Add more names to this list.

	Address	Phone Number
Fire Station	_____	_____
Nearby Hospital	_____	_____
Ambulance	_____	_____
Police Station	_____	_____



### Difficult Times

Write a report with the help of the following words :

flood, river water, injured people, food packets, rescue work camps, dead bodies, dead animals floating on water, houses under water, aerial survey (to see the scene



of disaster from a plane), sad people, water borned diseases, homeless people, trapped people.

### What we have learnt

What are the difficulties faced by the people during floods ? Look at the picture. What kind of a school have the children come to after the flood ? What people had to do to make their lives normal again after the flood ?



**For the Teacher :** About the importance of a neighbourhood, various examples like daily interactions, weddings or a death in the neighbourhood can be taken in the discussion. After collecting articles from the newspaper, children can work in various groups on different disasters. Discuss how various people are affected by disasters differently.

For example, farmers are the most affected by floods, fishermen by tsunami, etc.



## 15. Cold or Hot ?



There was a woodcutter. Everyday in the morning he used to go to the forest to cut wood. In the evening he would sell the wood in the city. One day he went deep into the forest. It was very cold. His fingers were becoming numb. Every now and then, the woodcutter would put down his axe and bring his hands close to his mouth. Then he would blow hard to warm them.



While he was cutting wood Miya Balishtiye was watching him from a corner. Miya Balishtiye saw that the woodcutter kept blowing air on his hands. He began to wonder what was all that about ! But he could not figure it out. He got up thinking that he would go and ask the woodcutter. After walking a little, he came back thinking that the woodcutter may not like being asked. Finally, Miya Balishtiye could not help himself. He went hopping to the woodcutter and said, “Hello brother, if you don’t mind; can I ask you something ?”

Seeing this tiny person the woodcutter was amazed and amused. But, he hid his smile and said, “Of course, what do you want to ask ?” “All I want to ask

is why do you blow air from your mouth on your hands ?” said Miya Balishtiye.



**For the Teacher :** It would be good for the children to know that this story has been written by Dr. Zakir Hussain, former President of India. He has written many stories for children. It could be discussed why an imaginary character like '*Miya Balishtiye*' could have been used.





The woodcutter replied, “It is too cold. My hands are frozen, so I blow air on them to warm them a little. Then, when they get cold again I warm them again by blowing.”

Miya Balishtiye nodded, “Oh... ho... so that’s it !” And with that he moved away. But he stayed nearby and kept a close watch on him.

Soon it was afternoon. The woodcutter began to think of lunch. He picked up two stones and made a *chulha*. He lit a fire and put a small *handi* (pot) filled with potatoes to boil. The wood was damp, so the woodcutter bent down and blew on the fire to help it burn. Balishtiye was watching him from a distance. He said to himself, “*Arre*, there he goes again – blowing air from his mouth ! Does fire come out of his mouth ?”

The woodcutter was feeling very hungry. He took out a potato from the *handi*. He tried to eat it but the potato was very hot. He again began to blow air on it – ‘foo... foo...’.

“*Arre*,” said Balishtiye to himself, “He’s blowing again ! Now what ? Is he going to burn the potato ?” After blowing a few more time ‘foo... foo...’ the woodcutter put it in his mouth and began to eat it.





Now Miya was very surprised ! He just could not stop himself and off he went hopping to the woodcutter. “Hello brother”, he said, “If you don’t mind, can I ask you a question again ?”

The woodcutter replied, “Not at all. Ask whatever you want to.”

Miya Balishtiye said, “This morning you told me that you blew on your hands to warm them. Now you are blowing on this potato, which is hot already. Why do you want to make it hotter ?”

“No, no, my little friend. This potato is too hot. I am blowing air on it to cool it down.”

When he heard this, Miya Balishtiye’s face became pale. He began to tremble with fear, and started to back away.

The woodcutter was a good man. He said, “What’s wrong Miya ? Are you trembling because of the cold ?”

But Miya Balishtiye kept going backwards. When he was at a safe distance away, he said to himself, “What kind of a creature is this ? Surely he must be a ghost or a jinn. Blow hot, blow cold with the same breath! It is just not possible !”

Yes, that’s right. There are some things that seem they cannot be – but they are !



– Zakir Hussain



### Do this :

Miya Balishtiye was confused when he saw the woodcutter blowing air on his cold hands to make them warm and on the hot potatoes to cool them.

- Have you warmed your hands in winter by blowing air on them when they are cold ? How do you feel ?
- Blow hard with an open mouth on your hands. How did you find the air from your mouth as compared to the air around ? Was it hotter or cooler ?
- Now put your hands at some distance from your mouth and blow again. How do you feel the air in your mouth ? Why ?





### Think and Tell :

Can you think of any other way in which you use the warmth from your breath ?



- Fold a piece of cloth 3-4 times. Now bring it close to your mouth and blow hard on it. Did the cloth become warm ?
- Balishtiye saw that the woodcutter was trying to cool the hot potatoes by blowing air on them. What would have happened if he had eaten the potatoes without cooling them ?
- Have you ever burnt your tongue when you ate or drank something that was too hot ? How do you cool some food when it is too hot ?
- If you have to cool these three hot things – *dal*, *roti*, rice – in which ways would you do so ?



#### Picture 1

Mini tried to cool her tea by blowing on it.

Which do you think will be hotter – Mini's tea or the air she blew from her mouth ?

#### Picture 2

Sonu was feeling very cold. He kept blowing on to his hands. Now think and write, which will be cooler – Sonu's hands or his breath ?



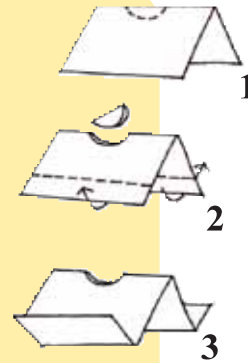


- For which other activities do you blow air from your mouth ?



### Make a paper whistle

- Take a piece of paper 12 cm long and 6 cm wide.
- Fold the paper into half (as in picture 1). Cut it off a little in the centre to make a small hole (as shown in picture 2).
- From both the sides, fold the paper upwards (picture 3).
- Hold the paper between your fingers and put it close to your mouth.
- Blow air on it and hear the whistle. Whose whistle was louder - your's or your friend's ?
- Blow gently and also blow hard and make different sounds.



### Blow in different ways

- Make whistles of the things given below. Write in a sequence—from the loudest to the softest whistle.
  - Wrapper of a toffee \_\_\_\_\_
  - A leaf \_\_\_\_\_
  - A balloon \_\_\_\_\_
  - The cap of a pen \_\_\_\_\_
  - Any other thing \_\_\_\_\_



**For the Teacher :** Children take time to understand the concept of hot and cold air. Through the activity, we can try to enable children to understand that the air coming out of our mouth can be cold or hot as compared to the temperature outside. It is not expected that children will be able to understand all these at one go. It is important to link this concept with different experiences of children.



- Have you seen people playing different musical instruments like flute, *dholak*, *been*, guitar, *mridang*, etc. Can you recognise their sounds with your eyes closed ? Find out more about these musical instruments. Collect their pictures, too.



### Write :

- Can you name some things which produce melodious and pleasing sounds when we blow into them ?



### Do this and Discuss :

- Have you seen someone blowing on their spectacles to wipe them clean ? How does the air from the mouth help in cleaning the spectacles ?
- Take a glass. Bring it near your mouth and blow hard on it. Do this three or four times. Does the glass look hazy ?
- Can you make a mirror hazy in the same way ? Can you tell by touching the mirror what made it hazy ? Is the air you blew from your mouth dry or wet ?
- Put your hand on your chest. When you breathe in, does your chest come out or go in.



### Measure your chest

- Take a deep breath in.
- Ask your friend to measure your chest with a measure tape.

Measurement \_\_\_\_\_ cm



**For the Teacher :** Air blown out from our mouth is hot and the mirror is cold. The hot air that we breathe out contains water vapour which turns into tiny droplets of water when it comes in contact with the colder mirror. This makes the glass moist and hazy.





- Now breathe out. Again ask your friend to measure your chest. Measurement \_\_\_\_\_ cm.
- Was there any difference in the two measurements of your chest? If yes then, \_\_\_\_\_ cm.

### How many breaths in one minute ?

- Put your finger under your nose. Can you feel any air when you breathe out from your nose? \_\_\_\_\_
- How many times in one minute do you breathe in and breathe out? Count \_\_\_\_\_
- Jump 30 times. Did you feel breathless? \_\_\_\_\_
- Now again count how many times in one minute you breathed in and out? Count it. \_\_\_\_\_
- What was the difference in your count before and after jumping? \_\_\_\_\_



### The clock inside you

You have all heard the ‘tick tick’ of the clock. Have you seen a doctor using a stethoscope to listen to our chest? Where does the sound come from? Is there a clock inside your chest that keeps ticking away?

Have you ever listened to your heartbeat? Take a rubber tube as long as the distance from your shoulder to your elbow. At one end of the tube fix a funnel. Place the funnel on the left side of your chest. Put the other end of the tube to your ear. Listen carefully. Did you hear a ‘dhak- dhak’ sound?



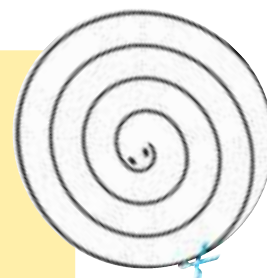
**For the Teacher :** To help children for one minute time the teacher can say ‘start’ and ‘stop’ in the activity for counting breaths.





### Flow of air :

- For this take a round shaped paper of 10-15 cms radius. Cut this paper in a spiral shape (as shown in picture 1).
- To hold this snake tie a thread on head side.
- Tie a knot to make it hang. Now the snake is ready to move.
- Take this snake near a hot thing. For this, you can take hot tea, water or a burning candle. Now see from the top, in which direction the snake moves.
- Whenever the air flows upwards it will move in a clockwise direction. When the air flows downwards the snake will move in the opposite direction.
- Stand with this snake below a fan. Look in which direction it moves. Take this paper snake to different places and observe its movements.
- Can you understand from the movement of the snake - if the air is moving upwards or downwards ?



Picture 1



Picture 2

### What we have learnt

- While playing, Amit hit a wall. His forehead was swollen. *Didi* immediately folded a scarf (4-5 times), blew on it and kept it on Amit's forehead. Why do you think *didi* did this ?
- We blow air to cool hot things as well as to warm them. Give examples of each.



**For the Teacher :** The 'snake game' can give an idea to the children about the direction of air flow. When the hot air rises, the snake moves in which direction vice versa. when the cold air comes down (as it is heavier) the snake moves in the opposite direction. To find out the direction in which the snake is moving, we must remember to view it from above. (Hot air goes up, while cold air comes down.)



## 16. Cleaning is our job

- Have you seen such scenes around you ?



Sudharak Olive

- Have you ever thought about the people who do the work of cleaning ?
- What is our responsibility to keep each place clean ?
- What if the sweepers were not doing the cleaning work ? Think.

***Cleaning is our job***



## Let's meet Shankarbhai.

- He cleans the village. Let us ask him questions. Let's know what they answer.

Q. Since how long have you been doing cleaning work ?

A. About thirty years. I have been cleaning the village since my father died.

Q. Why do you do this work ?

A. This is our profession and we have to do this for employment.

Q. How many children do you have ?

A. I have two sons and a daughter.

Q. Do they also do cleaning work ?

A. No, they are not ready to do the cleaning work.

Q. So what do they do ?

A. One son is working as a teacher after study and other son is studying.

Q. Do you like to do this work ?

A. I do not like. Does anyone like filth ? I feel worse when I see educated people spreading filth like this. Spreading filth and still considered educated ?

Q. So now who will do this cleaning work ?

A. Now everyone has to do this work by oneself. If everyone stops littering or spreading less garbage, our work will reduce. Everyone needs to be careful about hygiene.



### Write :

Talk with people who do the cleaning job around your house or school :

- Since when have they been doing this work ?
- How much have they studied ?
- Have they tried to look for some other work ?
- What do their children do ?
- What kind of difficulties do they face while doing this work ?

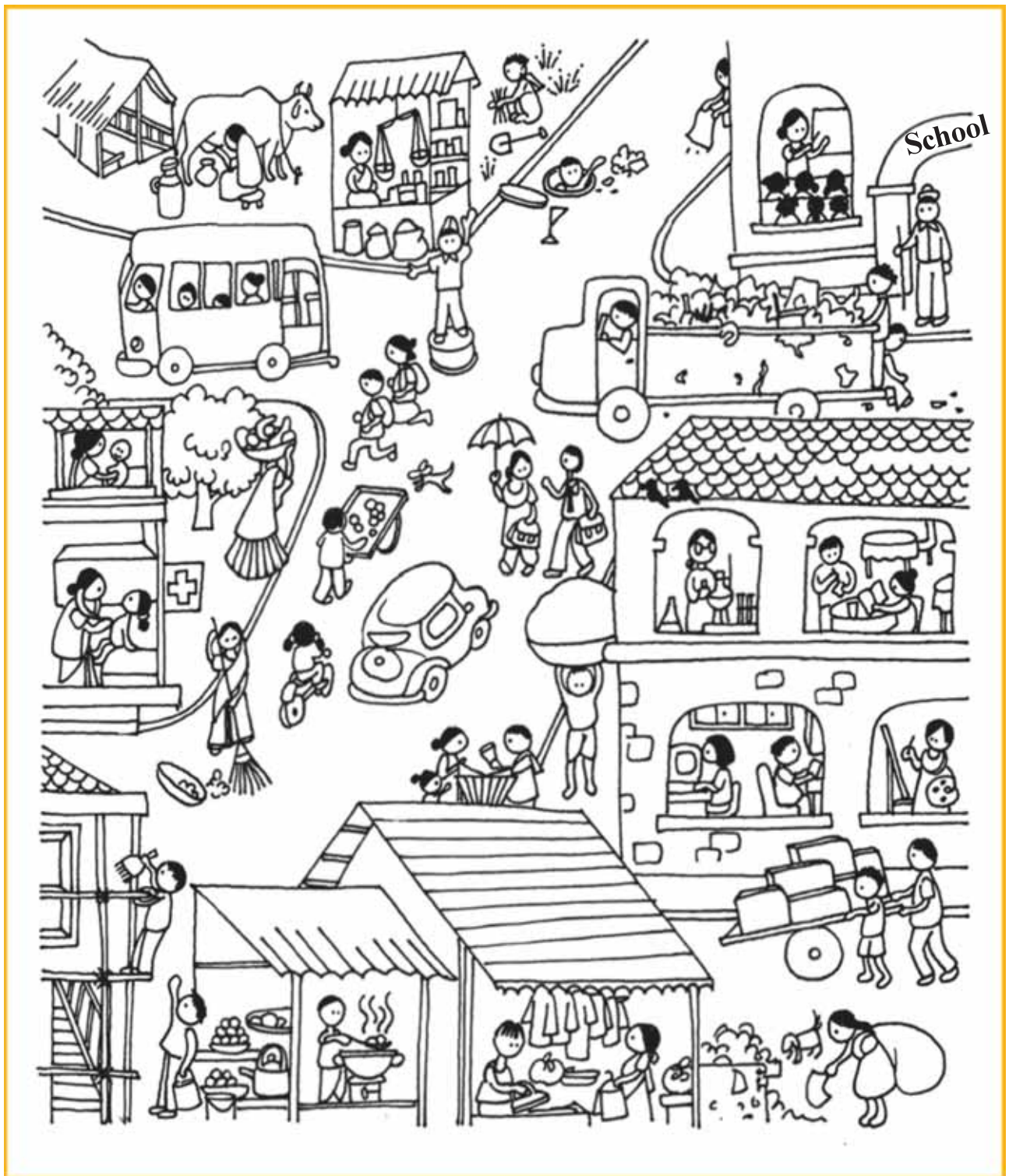


**For the Teacher :** Before the children talk with the staff who does cleaning , discuss the kinds of questions that could be asked. Sensitise children to be respectful during their interactions.





What are the different kinds of work being done in this drawing ? Make a list of any five of them.



- If you were asked to do five jobs shown in the picture above, which five jobs would you choose to do ? Why ?
- How all the works shown in the picture above are useful ?





### Discuss :

- What type of work or job do people like ? Why ?



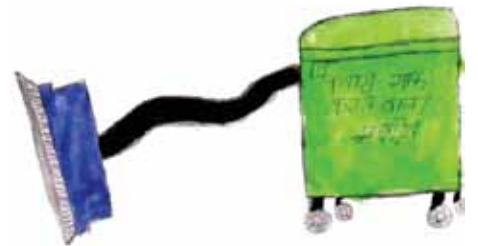
### Imagine :

- What would happen if nobody does the cleaning work ? If nobody cleared the garbage lying outside your school or your house for a week, then what would happen ?
- Think about waste disposal machines or other solution. So that people would not have to do the work they don't like.

Draw a picture of what you thought.

*(These pictures are made by children.*

*You also make these kinds of pictures)*



Has anyone ever tried to change this situation ? Yes, many people have tried in this direction. Even today, many people are making efforts in this direction. However it is not easy to change it. One such person was Mahatma Gandhi who put lot of efforts for cleanliness and hygiene. Mahadevbhai Desai was a friend of Mahatma Gandhi. Mahadevbhai's son Narayan also stayed with Gandhiji when he was young. Read the incident taken from his book.



**For the Teacher :** Discussion can be organised with the people who are involved in bringing such changes in the community. Sensitivity can be developed in the class by using news on issues related to 'untouchability'.



## Remembering those Days

When Narayan (Babla) was 11 years old, he was living in Gandhiji's Sabarmati Ashram. Everyone living in the Ashram had to do various kinds of work. One of his tasks was to teach the guests how to clean the toilets. In those days, the toilets were not like today. At that time the basket (like *dabba*) was placed under the seat. After going to the toilet, he had to pick up the baskets himself and empty it near the cesspool.

Usually this work is done by the people of one community/caste, but in Gandhiji's Ashram, every person had to carry the basket to cesspool oneself and empty it there. Whether he was a guest or a person living in the Ashram, everyone had to do this work himself. Narayanbhai remembers that some people used to make excuses for not having to do this work. Some even left the Ashram for fear of this work.

Once Gandhiji went to live in a village, near the city of Wardha in Maharashtra. Although the village was close to the city, they lacked facilities. Gandhiji, Mahadevbhai and their associates started cleaning the public toilets in the village. A few months have passed. One morning a man coming from the village toilet with *lota*, came to Mahadevbhai and started saying that there is a lot of dirt in this toilet. You clean it!

When Babla saw this, he got very angry. He thought that the villagers felt that this cleaning work was of Gandhiji and his associates, it was not right. He asked Gandhiji why this was so? Gandhiji replied that untouchability is a serious matter. It takes hardwork to change that.

Narayan could not understand that how we could make a difference by doing this work. He asked what is the benefit if the villagers do not improve? They have become accustomed to use their work done by others. Then Gandhiji said, Why? Don't you think that the people who clean also benefit from it. They learn a lesson. To learn something is an art. Cleaning work is also an art.

Little Narayan was not ready to believe. He reargued that those who pollute the place and do not clean it, should be taught a lesson. Debates continued between Gandhiji and Narayan about this. However, Narayanbhai did not stop walking on the path shown by Gandhiji.

*(Based on the book by Narayanbhai Desai – Sant-Charan-Raj, Sevita, Sahaj)*



### Tell :

- Why did Gandhiji and his team start doing cleaning? What do you think about this?
- Do you know such people in your area who try to help others in solving their problems? Find out and discuss in the class.
- Every guest at Gandhiji's Ashram had to learn cleaning work also. If you were one of these guests, what would you do?
- Does your home have a toilet? Is the toilet indoor or outdoor? Who cleans the toilet?



- How did the man who was returning from the dirty toilet with *lota* behave with Mahadevbhai ? Why ?
- How would you treat people who clean toilets and drains ? Write.

### A Man to Meet

His name is Jagubhai, who is a farmer by profession. But he is treasure trove of many virtues. He does everything precisely, meticulously. Everyone likes his work. Jagubhai is very insistent of cleanliness. He does not allow food to be wasted. His presence is mandatory on any occasion, wedding, gathering in the village. He is very careful about hygiene. People throw rubbish anywhere but when Jagubhai sees it, he immediately picks up the rubbish and throws it in the dustbin or at proper place. Even at meal times if someone has left food in the plate, he lovingly feed and explain. He does not allow food to be wasted. Seeing his activity, other people also started helping him in his work. Gradually, people's habits began to improve. Because of him, people are throwing garbage in the right place, stopped wasting food. Many people told him, why do you do such thing ? This should not be done. Then he said-this work belongs to all of us. You do not do it, so I have to do. It is not good to throw dirt here and there. Thus, due to his cleaning activities all villagers have started doing this activity. Today Jagubhai's activities are also remembered in neighbouring villages.

Is there a man like Jagubhai in your village ? Find out/Investigate and gather information about them. What do we like to learn from Jagubhai ?

#### Discussion with School Students :

**Sita** : I am Sita. This is Gita and this is Raju. We study in fifth standard.



**Question** : What do you do in school ?

**Gita** : In school, we study as well as we participate in school activities.

**Question** : What is the first activity done in the school ?

**Raju** : When school opens, first cleaning is done. Classrooms, ground and toilet have to be cleaned.

**Question** : Who does this cleaning ?

**Sita** : The team of students have decided for each day. Whoever team's turn is there, it has to do cleaning work. Our teachers also join.

**Question** : Do you have to do this work everyday ?

**Gita** : No, our school has a sweeper, but he comes two or three days a week. So on the day he doesn't come, we all clean up together.

**Question** : Do you like to do this work ?

**Raju** : Who does not like cleaning ? After cleaning, the atmosphere is clean and we like to study in school. We have to use it. So it is not proper to keep the school dirty. It is our duty to keep the school clean.

**Question** : Is there any benefit to you from doing this work ?

**Sita** : Yes, previously we did not know cleaning, sweeping with big broom, cleaning benches and tables, cleaning with water etc., but by watching senior students we also have learnt. Now, at home we also help mother in cleaning work.





### Tell :

- Who does the cleaning in your school ? What all have to be cleaned ?
- Do all children do all kinds of cleaning ?
- When do you clean your school ?
- Do the girls and boys do the same kinds of work or different ?
- What all works do you do at home ?
- Is the work done by boys and girls, men and women are the same ?
- Would you like to bring some changes ? Of what kind ?



### Discuss :

- Do people look at different kinds of work in the same way in the society ? If not, why is this so ? Is it necessary to bring change ?
- What can be done to create awareness regarding hygiene among the people ? Discuss it in the class.
- Do you clean up at school only or do you help to clean up at home also ?



### What we have learnt

Gandhiji used to say that every person should do every kind of work. What do you feel about this? If everyone followed this, what are the things that would change? Would there be any change in your house?

What happens if you do not keep your clothes, books and toys/playing equipments at the proper place at home? Discuss it.



**For the Teacher :** Discuss the importance of cleaning and its benefits to students in the class. Introduce and provide inspiration of such people who play an important role in doing such work and maintaining order in the society.



## 17. Across the Wall



### *Dreams in her Eyes (Indian Express - 2007)*



The gender wall, her mother had put up for her. Today, Afsana herself has become a strong wall of NBA, the Nagpada Basketball Association of Mumbai.

Today, she is the source of motivation for five other girls who have come to the basketball court, leaving behind the problems of their everyday lives.

Just 13 years old, Afsana Mansuri who washes utensils for a living. She had already jumped over the wall. The wall between her *jhuggi* (hut) and the local basketball court. The wall made by society for girls.

Today, she is the star of a young team. This team has managed to surprise some of Mumbai's club teams. With a lot of guts and courage, the team has reached the semi-finals of a district-level tournament.

### **Meeting the Team**

We read about Afsana and the Nagpada basketball team in the newspaper. We thought of meeting these girls and introducing them to you.

We took the train and got off at Mumbai's Chhatrapati Shivaji (Victoria) Terminus Station (railway station). From there, we walked towards Nagpada. It took us just twenty minutes to reach there.

There we met Afsana and the other girls of the Nagpada Basketball Association. Read the interview with the team members.



## Meet this special Team

Meet Afsana, Zarin, Khushnoor and Afreen. At first the girls were quiet, but once they started talking, they just did not stop.



Zarin began, “My house is just in front of this ground. My brother used to play here. I would stand in my balcony and watch the boys play. I was in Class VII at that time. Whenever the boys played a match, many people came to watch. The winning team got a

lot of praise. Everyone cheered the players. On seeing all these, I wished I could also play. The coach is a good friend of my father. The coach said, “Why not? If you bring some more girls, you can make a team. Then I will teach you.”



### Find out :

- Is there any play ground near your house ?
- Who plays there ? What do people play there ?
- Do the children of your age also get a chance to play there ?
- What other things happen at this place ?



**For the Teacher :** Give opportunities to children to share their experiences about games. Discuss these to build children’s understanding on issues, such as, similar games for boys and girls, equal opportunities for all while playing, etc.



## We asked – Was it easy to make a beginning ?

**Khushnoor :** At first my parents refused. But when I insisted they agreed.

**Afsana :** My mother works at other's houses and sends us to school. I also help her. When I told her about my plans to play basketball, mother got angry. She said, "Girls do not play basketball. Do your work, go to school and study hard. No need to go to the ground to play." But when my friends and Coach Sir talked to my mother she agreed.

**Afreen :** Being girls we were not permitted. My grandmother gets very angry with all of us. Yet, we three sisters come here to play. Grandmother scolds us and even scolds our Coach Sir. She says, "You need proper equipment to play. You need to have a lot of milk for strength. Where will the money for all these come from ?" But father understands our feelings. He even teaches us some special moves used in the game. My father also used to play on this ground when he was young. He did not have proper shoes or clothes. He used to practise with a plastic ball.

Father tells us that Bacchu Khan was the coach when he used to play. Once when he saw my father playing, he realised that this boy plays very well and he should be trained properly. He gave proper shoes and clothes to my daddy. My father could have become a very good player, but because of his responsibilities at home, he left the game and took up a job. So he wants us to play and become good players.



**Tell :**



- Has anyone ever stopped you from playing some games ? Which games ?
- Who stopped you and why ? What did you do then ?
- Did anyone encourage you to play ?





## We asked – Tell us about your Team

**One girl :** We felt a bit strange in the beginning to go and play on the ground. The reason was we were the first girls' team here. People used to come to watch us playing on the ground. They were curious to see how girls would play basketball ! Now people are no longer surprised. They have begun to accept that we girls can also play basketball well.

**Afsana :** I was eleven years old when we first started playing. At that time we were not allowed to go anywhere else to play a match. It has been two years since then. Now we go to other places also for matches. But all these could happen only because of our hard work and training from the coach.

**Another girl :** Yes, we really work hard. The coach is also very strict. We first jog together and then do our exercises. The coach teaches us how to play the game well. We practise how to keep the ball with us, how to pass ball to our team members, to run quickly towards the court with the ball, to dodge the players of the other team, how to throw the ball in the basket and to score a goal.

**Afreen :** The coach says, “While playing, don't think that you are girls. Play like a player. Keep

playing even if you get a little injured.” We support each another and say – Come on, get up, you will be fine !” Now our game has improved a lot. Everyone says that we play well.



**For the Teacher :** Make different groups of children in class to give them a chance to play different games. Try to encourage the children to play for the team, not for themselves.



**One girl :** We also play with boys' teams and defeat them, too.



**Discuss :**

- Do girls and boys play different types of games in your school or neighbourhood ? If yes, then which games do the boys play and which do the girls play ?
- Do you think that there is any difference between the games and the way they are played by boys and girls ?
- Should the games for boys and the girls be different? What do you think ?

**We said – Tell us more about your Team**

**One girl :** Our team is very special. Our team is united. Even if we quarrel, we quickly make up and forget about it. Here we learnt how to stay and play together.

Some of the girls from our team got a chance to play as part of the Mumbai team. The match was at Solapur.

**Zarin :** When we went to Solapur we found that the team had girls from different parts of the state. They did not talk to us nicely and treated us like juniors. They would not even give us a chance to play properly. We felt very bad. There was no cooperation at all in that team.



**For the Teacher :** If possible, try to develop an understanding in children that players are recognised by their ability to play rather than by their caste or economic status. At times the task of protecting the nation was considered to be that of men only. Today many countries in the world include women in their military. The female fighters are also found in our history who fought bravely.



During the match I threw the ball to one of the team members. But she could not catch it. In turn, she started scolding me, blaming me for the mistake. In all these misunderstandings we lost the match. But this never happens in our own team. If we miss a shot that fails to hit the basket because of someone's mistake, we do not get angry. We say, "Never mind, next time we will do better!" It is very important to

support each other, because we are all part of a team.



**Afreen :** After playing in Sholapur we realised what was special about our team.

Cooperation between us is our strength that we understand and support each other well.

Even if every player is excellent, the team

can lose a match if all do not play together as a team. To play as a team it is important to understand each other's strength and weakness.



**Write :**



- Have you ever played as part of a team of your class, school or neighbourhood? Whom did you play with? Which game did you play?
- What is the difference between playing for yourself and for the team?
- While playing in a team would you like to play for yourself or for the team? Why?
- Is your team like the team Afsana played with at Solapur or like the Nagpada team? How?



## We said – You have done so much. What next ?



**Tournament Schedule**

1. Bandra Y.M.C.A.  
27<sup>th</sup> DEC. 2007
2. Shree Rampur  
17<sup>th</sup> JAN. 2008
3. N.B.A. invitational  
23<sup>rd</sup> JAN. 2008
4. NAS Gym. (Nasik)  
8<sup>th</sup> JAN. 2008

**Afsana :** We have been playing well. So we have got a chance to go to many other places. We have played for our city and our state. We hope to work hard and play for our country some day.

Yes, then we will also be popular like the cricketers !

We all want to play well. We should bring glory to our area and our country. We want to show that the Indian girls team can win a gold medal. We will make this happen.



### Discuss :

- Have you ever taken part in any game or competition from your school or area ? How did you feel ?
- Have you ever been to any other place to play ? What was that place like ? How did you like going to that place ?
- Have you seen matches being played between India and other countries ? Which ones ?



**For the Teacher :** It is necessary to develop an understanding among children that players are recognised by their perseverance rather than at what level they are playing. If a player plays or participates with full devotion, that should be the real achievement. It is not important what position he or she secures. In fact, ranking or unhealthy competition needs to be avoided.



- What games do you play ?

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- Write down the names of the players you know and the games they play.

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## We asked – Did you face any difficulties ?

**Khushnoor :** To tell the truth, we have not achieved all these very easily. As girls, even to be able to start playing was difficult. We had to convince our families. Sometimes we even had to fight. Even today, not many girls can play like this. Forget games, earlier some people did not even allow girls to study. My mother wanted to do many things, but she never got a chance. So my mother encourages me to take part in all activities – like games, swimming and drama.

**Afsana :** Even now, we are supposed to go home as soon as we finish playing. The boys go here and there, and can chit-chat till late. No one says anything. After coming from school, I help my mother with the cleaning work in two or three houses, do my studies and then come here to play. I also help at home. If my brother wants tea and he makes it for himself, then mother says, “He has three sisters. Yet, he has to work.”

**One girl :** Now, look at Zarin’s younger brother. He is only five years old but he says, “Mother, why do you send *didi* to play ? She does not look nice playing like that on the ground.” His mother asks him, what if you go to play ? On hearing this he replied, "I am a boy, of course I will play !"

**Afsana :** But it is good for everyone to play. We have now realised, how much we are benefited from playing. I want to be such a good player that other girls and boys would wish to be like me (get motivated).





## Discuss :

- What would happen if girls are not allowed to play games, to study or to do some other work of their choice ? How would you feel if such a thing happened to the boys ?
- How would you feel if you were not allowed to take part in any game or drama ?
- Have you heard of any women players ? Name them and the games they play.
- In which areas other than sports have you heard of women getting recognition ?
- Are these women less known than men ? Why ?
- Do you know of any woman or girl who you would want to be like when you grow up ?  
(Social workers, poets, freedom fighters, astronauts)



## What next ?

**Afreen :** I just want to say that if you have some dreams for yourself, give your best to fulfil them.

**Khushnoor :** If you have a wish or a dream, have courage to speak about it. If you don't do this now, you may regret later.



**We said – There is an article on you published in the newspaper. Now students will read about you in this textbook. How do you feel ?**

**Afreen :** We are so happy about it that we have no words to describe our happiness. We now feel we must play even better, to make our village/town and our country famous.

**All Girls :** Yes, this is our wish too.

### Coach Sir

The coach - Noor Khan who made this team told us, “This part of Mumbai is very crowded. This is the only playground in this area. This is our small ‘Bacchu Khan playground.’ A person named Mustafa Khan used to live in our area. Everyone was afraid of him. But children were very fond of him, so everyone started calling him Bacchu Khan. At that time there was no ground it was just a muddy land. Bacchu Khan used to train children to play. We were also among those children. It is because of Bacchu Khan’s devotion and training that players from this area are able to compete with the teams of other



countries. Like Bacchu Khan, I have trained the children of this area. Today our team has many who play at the international level. Some have even won the Arjuna Award.”

Noor Khan continued – “In the last few years we have also prepared a girls team here. Our girls play for the Maharashtra State team. They play well with good

discipline. Our girls and boys come from different types of families. Some are from poor families, some from richer. Some study in Urdu medium and some in English. But once they come here, they all make a team. Unity is the motto of our team.”





### Think and Write :

- The newspaper report said, “Afsana jumped over the gender wall that her mother had put up for her.” What do you understand by ‘gender bias’? Think and write in your own words.



### What we have learnt

- Should games for boys and girls be different? What do you feel? Think and write.
- If you are made the leader of your team, how will you prepare your team?





## 18. Where do we go now ?



### Anujbhai

Anujbhai was sitting at the door with his daughter Jiya. They were waiting for Kaushal. It was almost night but Kaushal had not come home. Two years back Anuj's family came to Mumbai from Sinduri village. Here, they only knew the family of a distant relative. With their help, Anujbhai began to repair torn fishing nets. But the money he got was not enough. They had to pay for the medicine, food, school fees and rent for the house. Here, they even had to buy water.



It was night, but Kaushal had not come home. Jiya was watching a dance on TV through the neighbour's window. But Anuj did not want to watch TV. He was lost in thoughts. Here, everything was so different ?

The day would pass running around for work, but the evening brought back old memories.



### Think and Tell :

- Anuj felt alone, even in a crowd of people. Have you ever felt like this ?
- Imagine what kind of difficulties one has to face on leaving one's own place and moving far away to live in a new place ?
- Why do you think families like that of Anuj's family are coming to the big cities ?

## Remembering old days

Anuj was born in Khedi village, in the middle of thick green jungles and hills. The people of his village had been living there for many years.

There was peace in Anuj's village, but not silence. There were so many soothing sounds – the gurgle of the flowing river, the murmur of trees and the chirping of birds. People used to do farming. They would go to the nearby forest, chatting and singing together, to collect wild fruits, roots and dried wood. While working with elders, children also learnt many things like – to dance together, to play flute and *dhol*(drum), to make pots of clay and bamboo, to recognise birds and imitate their sounds, etc. People collected things from the forest for their use. Some of those they would sell in the town across the river. With that money they would buy salt, oil, rice and some clothes.

Although it was a village, there people used to live together like a big family. Anuj's sister was married in the same village. People helped one another in good and bad times. The elders would arrange weddings and settle quarrels of village.



Anuj was now a strong young man. He worked hard in the fields and caught fish from the big river. He and his friends would go to the forest to collect fruits, roots and plants for medicine and fish from the river, to sell these in the town. During festival time, Anuj would dance and play the drum with boys and girls of his age.



### Tell :

- What all did children learn in Khedi village ?
- What do you learn from your elders ?
- Anuj learnt so many things in Khedi. How many of those would be useful for him in Mumbai ?
- Do you hear the sounds of birds everyday ? Which ones ?
- Can you imitate the sound of any bird ? Show how.
- What are some of the sounds that you hear everyday, but the people of Khedi may not be hearing ?
- Have you experienced silence ? When and where ?



**For the Teacher :** Children can be made sensitive to the experience of ‘calm’ or ‘peace’ as clearly different from ‘silence’. When all the students of class stop speaking they are calm and the class becomes quiet. But they can still hear many sounds. So there will be peace, but not the silence.



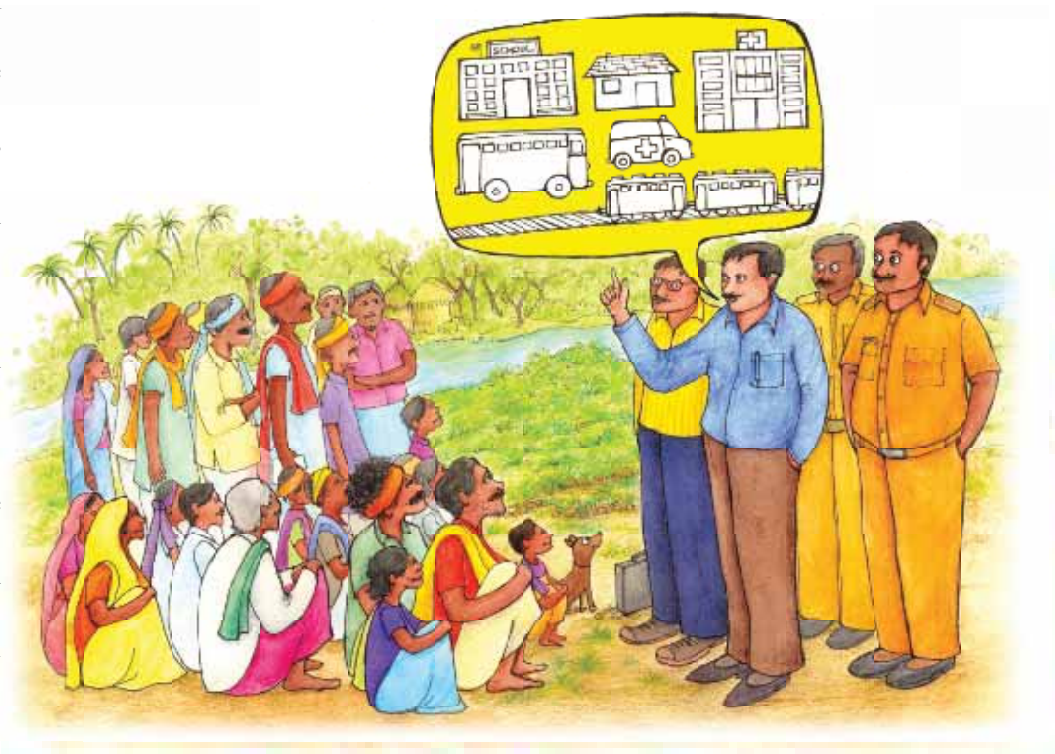
## Across the River

One day the people of Khedi heard that a big dam was to be built on the river. For this, a big wall would be built to stop the flow of the river. Khedi and many nearby villages in that area would be drowned under water. The people would have to leave their villages and their lands, on which their forefathers had lived for years.

After a few days, government officers along with the police started visiting these villages. Small children of the village saw the police for the first time. Some children would run after them and some would get scared and start crying. The officers measured the width and length of the river, the fields, forests and houses. They called meetings with the leaders and the elders of the village. They said, “The villages on the bank of the river would have to be displaced. The People having land at Khedi will be given land far away, on the other side of the river. They will have everything there – a school, electricity, hospitals, buses, trains, etc. They will have all that they could not even dream of here in Khedi.”

Anuj’s parents and other elders were not happy about leaving their village.

Listening to all these, Anuj got little scared, but also felt excited. He started thinking that after getting married, he would take his bride to the new house in the new village. A house where he could just press a button for the light and turn on the tap for water. He would travel by bus and see new places in the city. When he would have children, he could send them to school. They will not be illiterate like him.





### Discuss and Tell :

- Many people in Anuj's village did not agree to move away from their land and forest. Why? Why they had to leave even though they didn't want to?
- How many people were there in Anuj's family in Khedi? When he thought about his family who all came to his mind?
- Who all come to your mind when you think about your family?
- Have you ever heard of people who do not want to be moved from their old place? Talk about them.
- Do you know some people who have never been to school? Do you also know of any place where there is no school?



### Imagine :

- What kind of difficulties people have to face where a dam is being built?
- Draw a picture of Khedi village and a picture of Anuj's dream village. Discuss the differences between them. Also look at the pictures your friends have drawn.

### A new place

It was a summer afternoon. Anuj was feeling giddy in the hot sun and wind. His feet were burning on the *pucca* road of coal tar. There wasn't a single tree to offer some shade. There were just a few houses and shops. Anuj was on his way home after buying medicine. He had an old tyre on his back.



**For the Teacher :** Discuss with children the different aspects of dams. You can give examples of any dams in your area or nearby. Dam may be beneficial to some people, but there are some people for whom dam may bring problems. All these can be discussed in the classroom.



In these days he had to lit his stove with just these rubber pieces of the old tyres. These caught fire fast and also saved some firewood. But the smoke and smell of burning tyres were terrible !

In this new Sinduri village, they had to pay money for everything—medicine, food, vegetables, firewood, and fodder for the animals. They could just not afford to buy kerosene. From where

to get the money for all these ?

Thinking of all these, Anuj reached home. The roof made of a tin sheet made the house hot like an oven. Anuj's wife had high fever. His daughter Jiya was rocking her little brother Kaushal to sleep in her lap. After all, there was no other older person with them.



Anuj's parents had been so sad about leaving Khedi that they had died before they moved here.

In Sinduri there were only eight-ten families he could call his own, those from his old village. The whole village had got scattered and people had gone wherever they had been given land.

This was not like the new village Anuj had dreamt about. There was electricity, but only for sometime in a day. And then, the electricity bill was also to be paid. There were taps, but no water !

In this village, Anuj got just one room in a tin shed. It had no place to keep the animals. He also got a small piece of land. But that was not good for farming. It was full of rocks and stones. Still Anuj and his family worked very hard. But they could not grow much in the field and could not make enough money even to buy seeds and fertilisers. In Khedi, people did not fall sick often. If someone fell ill there were many people who



knew how to treat them with what medicine made from which plant. People felt better after taking those medicines. Here in Sinduri, there was a hospital but it was difficult to find doctors and there were not enough medicines.

There was a school here, but the teacher did not care much about the children from Khedi village. These children found it difficult to study in a new language. The people of Sinduri did not welcome the newcomers from Khedi. They found their language and way of living strange. They made fun of the Khedi people by calling them ‘unwanted guests’. Nothing of what he had dreamt had come true !



### Write :

- Was Sinduri like the village of Anuj’s dream ?
- What difference did he find between Sinduri and his dream village ?
- Have you ever been to anyone’s house as an ‘unwanted guest’ ? How did you feel ?
- What all does your family do, when you have guests at home for a few days ?

### Some years later

Anuj stayed for a few years in Sinduri. The children also grew up. But Anuj’s heart was not here in Sinduri. He still missed his old Khedi.

But there was no Khedi now. There was a big dam and a big lake filled with water in and around Khedi. Anuj thought, “If we are to be called ‘unwanted guests’, then at least let us go to some place where our dreams can come true.” Anuj sold his land and his animals and came to Mumbai. Here, he started a new life with his family. His only dream was to send his children to school, to give them a better future, a better life.



Here too, things were not easy.

But he hoped that things would get better.

Anuj started saving money to repair his one-room shack. His relatives would tell him, “Don’t waste money on this. Who knows, we may have to move from here too. In Mumbai there is no place to stay for outsiders like us.”



Anuj was scared and worried. He thought, we left Khedi for Sinduri, we then left Sinduri for Mumbai. If we have to move from here too, then where will we go ? In this big city, there is not even a small place for my family to stay !!



### Think :

- What had Anujbhai thought while moving to Mumbai ? Did he find Mumbai as he had imagined ?
- What kind of school do you think Anujbhai’s children would be going to in Mumbai ?



**For the Teacher :** Discuss with children about the difference between people being ‘displaced’ or asked to move from a place, and those who go on a ‘transfer’. Both situations may cause different kinds of problems and difficulties. Discuss how many big projects like dams, bridges, highways, factories are promoted in the name of development. Do all people get benefit from these ? Discuss these live issues with reference to the newspaper reports and ongoing debates.







### Find out and Write :

- Do you know any family that has come to your town or village after having moved out of their place ? Talk to them and find out :
  - From where have they come ? Why did they have to come here ?
  - What kind of place did they dwell in there ? How do they find this new place compared to the old one ?
  - Is their language and way of living different from that of the people here ? In what ways ?
  - Learn some words from their language and write them in your notebook.
  - Do they know how to make some things that you cannot make ? If yes, then what ?
- Have you ever read or heard of a city slum being displaced ? How do you feel about this ?
- People also shift from one place to another when they get transferred in their jobs ? How do they feel then ?



### Discuss :

- Some people say that – “The city people do not produce garbage. Cities are dirty because of the slums.” How do you feel about this ? Discuss it in your class.

### What we have learnt

- Like Anuj’s family, thousands of families come to stay in big cities for many different reasons. Do you think their life may be better in a big city from what it was before ? How do they feel in a big city ? Imagine.



## 19. A Seed Tells a Farmer's Story



### I am little millet(*bajra*) seed

Many years ago in 1940, I had been kept in this beautiful wooden box. I want to tell you my story. This story is not only mine alone but also the story of my farmer Damjibhai and his family. If I did not tell my story today, I would never be able to say it.

I was born in Vangaam in Gujarat. That year there was a good *bajra* (millet) crop. There was a festive mood in the village. Our area was famous for its grain and vegetables. Each year Damjibhai kept aside some seeds from a good crop for the following year. This way our *bajra* family went on from one generation to the next. Good seeds were stored in dried bottle gourd which was coated with mud. But this year Damjibhai

himself made a strong wooden box with small compartments to store them. *Neem* leaves were also placed to protect us from insects. Different seeds were kept in different compartments of the box.

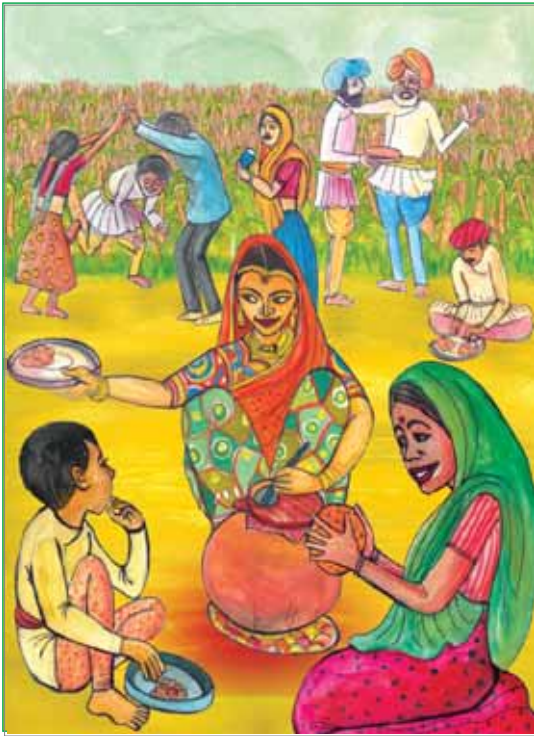
In those days Damjibhai and his cousins lived together. It was a very large family. Everyone in the village helped one another. When the crop was ready and harvested, all worked together, everyone celebrated together. What to talk about the food of that time! During winter, all the fresh vegetables stuffed with spices were put into a clay pot.

The pot was sealed tightly. Then the pot was kept upside down in hot coals for baking. With this special method the vegetables prepared in the pot is called '*Umabadiyu*' (food item like *Undhiyu*).



**For the Teacher :** Encourage children to talk about their experiences before starting the chapter. Millet is an example. The children can be asked to narrate their own observations about changes in crops and vegetables that have taken place in their area. Inspire them to observe it.





*Bajra rotis* cooked on the *chulha* is eaten with *Umbadiyu*. Oh, what a delicious flavour ! Along with that, home-made butter, curd and buttermilk are also there.

Farmers grow many different kinds of crops – grains and vegetables – according to the season. The farmers kept enough grains and vegetables at home for their needs and sold the rest to merchants in the city. Apart from grains and vegetables, sometimes cotton was also grown. Cotton wool was spun on a *charkha* (spinning wheel). The cloth was made from the thread, spun out of it.



### Tell :

- Are *rotis* made in your home ? From which grains are they made ?
- Have you eaten *rotis* made from *bajra* or *jowar* ? How did they taste ?
- Is *subji* like ‘*Undhiyu*’ cooked at your place ? Which vegetables are used in that ?



### Find out and Write :

- In your house what is done to protect grains and pulses from insects ?
- Which festivals related to farming are celebrated during different seasons ? Find out more about any one such festival and write in your notebook.

Like – the name of the festival, in which season is it celebrated, in which states of India is it celebrated ? What special food is made? How is that festival celebrated ? All together or at your own home ?

- Talk to the elders in your family and find out if there were some special food items cooked earlier that are not cooked any more.



- Make a list of the cereals, vegetables, pulses that are grown in your area. Of those, is there anything grown that is famous in the nearby region ?



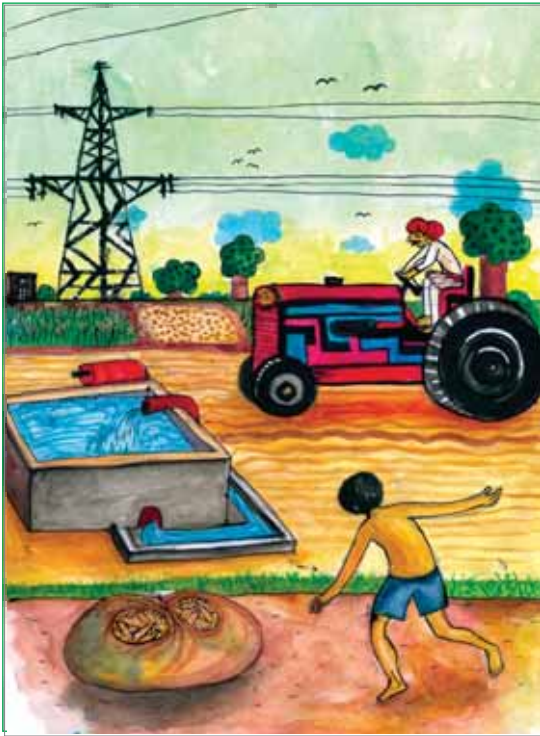
## Time has changed

As the years passed, many changes took place in the village. In some places the water reached through the canal. The water was carried far and wide by building a dam on a river far away. Then came electricity. Switch on the button and there is light ! Now farmers started taking crops like wheat and cotton because they were getting good prices in the market. So they stopped planting other crops like millet(*bajra*) and *jowar* and vegetables. Now farmers even buy seeds from the market. People say this was new kind of seed. The production is good. So there is no need to keep old seeds.

Now villagers cooked and ate together only on very special days. When they ate together they used to remember olden days - how tasty the food was made from fresh vegetables and grains from the field ! When the seeds have changed, how could food ever taste the same !

Damjibhai is old now. His son Hasmukh looked after the fields and the family. Hasmukh was making a lot of money from farming. He renovated the old house. He bought new machines for farming. He connected an electric motor to pump water from the well. He bought a motorcycle to go to the city easily. He also bought a tractor to plough the field. The work that took many days for the bullocks to do, a tractor could do in a single day.





Hasmukh says, “Now we are farming wisely. We grow only what we can sell in the market at a good price. Our standard of living improves with profits from our fields. And slowly we are making progress.”

Lying forgotten in the wooden box, the other seeds and I are suspicious. Is this really a progress? We kept on thinking. What type of progress is this? They have made us and the bullocks completely useless. We are no longer required as tractors have entered the fields. Even people working in the farms have become unemployed. What will they do to earn money? What will they live on?



### Discuss :

- The *bajra* seed saw differences in the way Damjibhai and Hasmukh did farming (for example, in irrigation, ploughing, etc). What were these differences?
- Hasmukh said, “With profits from our fields, we can progress.” What do you understand by 'progress'?



### Write :

- What kind of progress would you like to see in your village or area?

## More and More Expenses

Many changes have taken place in the last twenty years. Without cows and buffaloes, there was no cow dung to be used in the fields as fertilizer. Hasmukh had to buy expensive fertilizer. The new kinds of seeds were such that the crops were easily affected by the harmful insects. Pesticides also had to be sprayed on the crops to keep away the insects.



**For the Teacher :** Use children’s experiences to discuss the kinds of changes which have taken place in agricultural practices over the years and the possible reasons for that. The newspaper reports on farming can also be used.



Oh, how bad it smells and most of Hasmukh's money was spent on medicine, fertilizer and seeds. The canal water also started reducing. All the farmers built borewell and began to draw water with motor pump from the deep under the ground. Expenses have been increased. Loans were borrowed from the bank to cover expenses. The profit would be used to pay off the loan. Most of the farmers were growing cotton, so the price of cotton was not as high as before. Even the soil was no longer the same as before. There was so much damage to the soil by taking only one crop and using chemical fertilizer and pesticides that nothing good could grow there. It was very difficult to survive on farming alone.



Hasmukh was not the same as before. He was constantly worried and angry. His educated son Paresh did not want to do farming. He became truck driver to pay off the bank loan. He often did not come home until late at night. Sometimes he stayed out for three to four days. One day he was looking for something in the house. He asked his mother, "Mother, where is grand father's wooden box in which the seeds were kept? It will be useful to keep tools for the truck." Now do you understand, why did I tell you my story?



### Discuss and Think :

- What can happen to Hasmukh's farm after some years?



**For the Teacher :** It is important to give space to children to freely express what they understand by 'progress' and 'development'. Contemporary debates around the world can be linked to this discussion – for example, farmer's struggles in developing countries, traditional seeds, efforts to save agriculture, natural fertilizer and medicine etc. and who has the right over all these – farmers or the big multinational companies?



- Damjibhai's son Hasmukh chose to become a farmer like his father. Hasmukh's son Paresh is not a farmer, but a truck driver. Why would he have done so ?
- The seeds felt that what happened to Hasmukh was not progress. What do you feel ?
- Have there been any changes around you, which may be difficult to call 'progress' ? If yes, what are those changes ?



### Discuss and Write :



- Write down the advantages and disadvantages of farming with the use of chemical fertilizers and pesticides.

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- Write the benefits of organic farming.

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- Collect reports about farming and farmers from the newspapers. Paste them on the chart paper. Discuss about it.



### Project Work :

- What questions come to your mind about farming? Make questions in group and get answers from different farmers. For example, how many times a farmer harvests in a year ? Which crops are cultivated ? Which fertilizers and pesticides are used ? How and how much water is given to the crop ?
- Visit the farm or garden around you. Observe and discuss with the people there and prepare a report of it.



**For the Teacher :** Students need to be familiar with today's modern farming. But it is very important to throw light on damage being done to health, land etc. by today's farming. Keeping in mind the needs of the present time discuss the organic farming.



The student studying in standard V visited Bhaskarbai's farm and wrote a report. You also read.

### ***Bhaskarbai's Farm (Dehri village)***

We saw coconut trees from a distance. Alas! So many coconuts on one coconut tree ! We felt that he would be using the expensive chemical fertilizer and pesticides of the market. But when we saw in the farm we were very surprised. The whole land was covered with dried leaves, wild plants and grass.

Seeing the dried branches on some plants, it seemed that the insects must have eaten them. At some places we saw plants with colourful leaves. Why would this have happened ? Bhaskarbai said that this was a croton plant. Its roots cannot go deep into the ground. When its leaves begin to wither, we came to know that they needed water.

He said that we didn't use factory made fertilizer. His soil is fertile. Because of the green-dry leaves and grass rot and mix well in the soil makes the soil very good. When we observe carefully we saw many earthworms. Bhaskarbai said that earthworms dug the soil from inside. They move from one place to another place in the soil. Due to this, soil becomes soft. Their feces make the soil fertile and air and water can easily enter the soil.

Praveen talks about his uncle who lives in the city, he has dug a pit in the garden and put earthworms in it. Food left in the kitchen, peels of vegetables and fruits leaves etc. are thrown into the pit. Earthworms turns them all into the natural manure(compost). That manure is given to the plants. So that they grow well and they do not have to buy manure from the market. See how compost is prepared free of cost ! Then we ate fruits grown in the garden. How delicious fruits they were ! Really had a lot of fun learning about a different type of farming.

*Group members : Praful, Hansa, Krutika, Chirag, Praveen, Class-5C*



### **Journey of a *bajra* seed – From a field to a plate**

**Look at the pictures. Tell what you can see in each picture :**

In picture 2 you can see the *bajra* cobs in the mortar (*okhli*). The cobs are crushed with a pestle (*moosli*). So the seeds are separated from the cob. You can see the separated *bajra* seeds in picture 3. Today this work is not done manually but with big the threshers. We term this as 'technology'.

- What technology can be used to cut the trunk in picture 1 ?

What do you think is being done in the grinder (*chakki*) in picture 4 ?

In picture 5 and 6 which method would have been used to make dough ?





See pictures 1 to 9, think and prepare a note based on it. How flour is ground at present ?



Rainy I. A. Murkery



Milamber



Claud Renolt



Aparna



### What we have learnt

- How can you say that there have been many changes in our food ? Write it based on the story of the *bajra* seed and information from the elders.
- What would happen if all the farmers sow only one kind of seed and grow only one kind of crop ?



**For the Teacher :** We often limit our understanding of the word ‘technology’ to mean only big machines and instruments. A process or method is also a ‘technology’, for which we might normally use the word technique. For example, we could discuss how making dough from dry *atta* (flour) is also a ‘technology’, a special process. Straining the flour, pouring water slowly while kneading (you will surely appreciate this, if you have made a mess by putting too much water !), bringing it to the desired consistency, and at the end collecting the dough into one big lump - all these might be difficult to describe in words but are important to understand as processes. Encourage children to speak in their own words.



## 20. Whose Forests ?

### Daughter of the Jungle

Look at the picture. Where do you think these children are off to, with little bundles on their sticks? When you find out you too would want to go with them.

The children are going to the forest. There they jump, run, climb trees and sing songs in their language called *Kuduk*. They pick the fallen flowers and leaves to weave them into necklaces.



Nitin Upadhyay

They enjoy eating the wild fruits. They look for birds, whose calls they imitate. Their favourite *didi*—Suryamani joins with them in all these.

Every Sunday Suryamani takes the children to the forest. As they move around, she shows them how to recognise the trees, the plants and animals.

Children enjoy this special visit to the forest. Suryamani always says, “To learn to read the forest is as important as reading books.” She says, “We are forest people (Adivasis). Our lives are linked to the forests. If the forests are not there, we too can not survive.”

Suryamani’s story is a true story. Suryamani is a ‘**Star Girl**’. ‘**Star Girl**’ is a project which tells extraordinary tales of ordinary girls, who have changed their lives by going to school.



**For the Teacher :** Encourage children to share their experiences and imagination about forests. Planting thousands of trees does not make a forest. Discuss the relationships among plants, trees and animals in a forest to see how they depend on each other for food, security and habitat.





### Discuss:

- What do you think is a forest ?
- If someone grew lots of trees close to one another, would this become a forest ?



### Find out and Write :

- Other than trees what all are there in a forest ?
- Do all forests have similar kind of trees ? How many trees can you identify ?
- Suryamani says, “If the forests are not there, we too can not survive.” Why so ?



Nirin Upadhyay



## Growing Up

Suryamani loves the forest since she was a child. She would not take the direct road to school, but would choose the path through the forest. Suryamani’s father had a small field. Her family used to collect leaves and herbs from the forest and sell these in the market. Her mother would weave baskets from bamboo or make leaf plates out of the fallen leaves. But now no one can pick up a single leaf from the forest.

That is since Shambhu the contractor has come there. Everyone except Budhiyamai, all the people of Suryamani’s village were afraid of the contractor. She used to say, “We the people of this forest have a right over it. We look after our forests, we don’t cut trees like this contractor do. The forest is like our ‘collective bank’ – not yours or mine alone. We take from it only as much as we need. We don’t use up all our wealth.”



**For the Teacher :** It would be useful to begin this lesson with a discussion about the lives of forest-dwellers(Adivasis) and their relationship with the forest. Who is called contractor is and what is his work ? That can be also discussed. This lesson draws upon the true story of Suryamani, whose organisation works on these issues. Discussions can also include similar organisations or people working to save forests in your area.



Suryamani's father could no longer support the family on the small land. He moved to the town in search of work. But things did not improve. Sometimes there would be no food in the house. At times Maniya *Kaka* would send some grains from his small shop to Suryamani's house.

*Kaka* tried hard and got admission for Suryamani in the school of Bishanpur. Here they would not have to pay for the fees, uniforms and books. Suryamani would have to stay there and study. Suryamani didn't want to leave her village and forest. But Maniya *Kaka* was firm. "If you do not study, what will you do? Will you be hungry?" Suryamani would argue, "Why do I have to be hungry? The forest is there to help me!" *Kaka* tried to convince, "But we would be driven out from the forest. Even the forests are decreasing gradually – in their place mines are being dug, dams are being built. Believe me, it is important for you to study, to understand about the laws. May be then you can help to save our forests". Young Suryamani listened and tried to understand some of what he said.



### Think and Write :

- Do you know anyone who loves the forest?
- The contractor did not allow the people of Suryamani's village to go into the forest. Why?
- Is there any place around your area which you feel should be open to everyone, but where all people are not allowed to go?



### Discuss :

- Who do you think the forest belongs to?
- Bhudhiyamai said – "Forest is our 'collective bank' – not yours or mine alone." Are there other things which are our collective wealth? So if someone uses it more, everyone would suffer?



## Suryamani's journey

Suryamani was filled with joy on seeing the school at Bishanpur. The school was near a dense forest. Suryamani studied hard and passed her B.A. after getting a scholarship. She was the first girl in the village to pass B.A. While she was in college she met Vasavi *didi*, a journalist. Suryamani soon joined her to work for the '*Jharkhand Jungle Bachao Andolan*'.



Nitin Upadhyay

This work took Suryamani to far off towns and cities. Her father did not like this. But Suryamani continued her work. Not only that, she also started to fight for the rights of the village people. Her childhood friend Bijoy helped her in this work.

Suryamani had another friend- 'Mirchi', who stayed with her day in and day out. Suryamani would share all her thoughts and dreams with Mirchi. Mirchi would listen and say "Keee-Keee."

Suryamani had a dream for her *Kuduk* community. She wanted all her people to feel proud of being Adivasis.



### Think and Write :

- Do you have a friend with whom you can share everything ?
- Some people have moved so far away from the forest, that they cannot understand the lives of forest people. Some even avoid them. Why is it not correct to do this ?
- What do you know about how Adivasis live ? Write and draw a picture.
- Do you have an Adivasi friend? What have you learnt about the forest from him/her ?



**For the Teacher :** There should be a debate on the need and also the problems associated with the building of big dams, roads, mining projects, etc. It is important for students to discuss and understand that all of these – drawing out water, petrol or digging for minerals from under the ground, or commercial fishing from the sea – are examples of using our common resources. All these are important issues today, it is important for students to discuss and understand.



## Suryamani's 'Torang'

Suryamani was 21 when she opened a centre with the help of Vasavi *didi* and others. She called it 'Torang', which means forest in the *Kuduk* language. Suryamani wanted that on festivals people should sing their own songs and



Nitin Upadhyay

should enjoy wearing their traditional clothes. They should not forget their music. Children should also learn about herbs, medicine and the art of making things from bamboo. Children should learn the language of school but must link it with their own language, too. All these happen in the 'Torang' centre. Many special books about the *Kuduk* community and other Adivasis have been collected. Flutes and different types of drums are kept there.

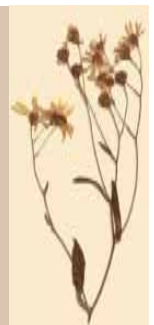


Whenever something is unfair, or if someone is afraid that his land and livelihood will be taken away, they come to Suryamani. Suryamani fights for everyone's rights.

Suryamani and Bijoy have got married and work together. Today their work is praised by many people. She is invited, even to other countries, to share her experiences. People of her area are also raising their voice for forest's new law.

## Right to Forest Act — 2007

People who have been living in the forests for at least 25 years, have a right over the forest land and what is grown on it. They should not be expelled from the forest. The work of protecting the forest should be done by their *Gram Sabha*.





### Think :

- Do you know anyone who works to save forests ?
- What is your dream ? What will you do to make your dream come true ?
- Collect reports about forests from newspapers. Did you find any news about how the cutting down of forests affects the weather ? How ? Discuss.
- In 'Torang' Suryamani does a lot to keep the *Kuduk* community music, dance and traditions alive. Would you like to do something like this for society? What would you like to keep alive ?



### Read and Tell :

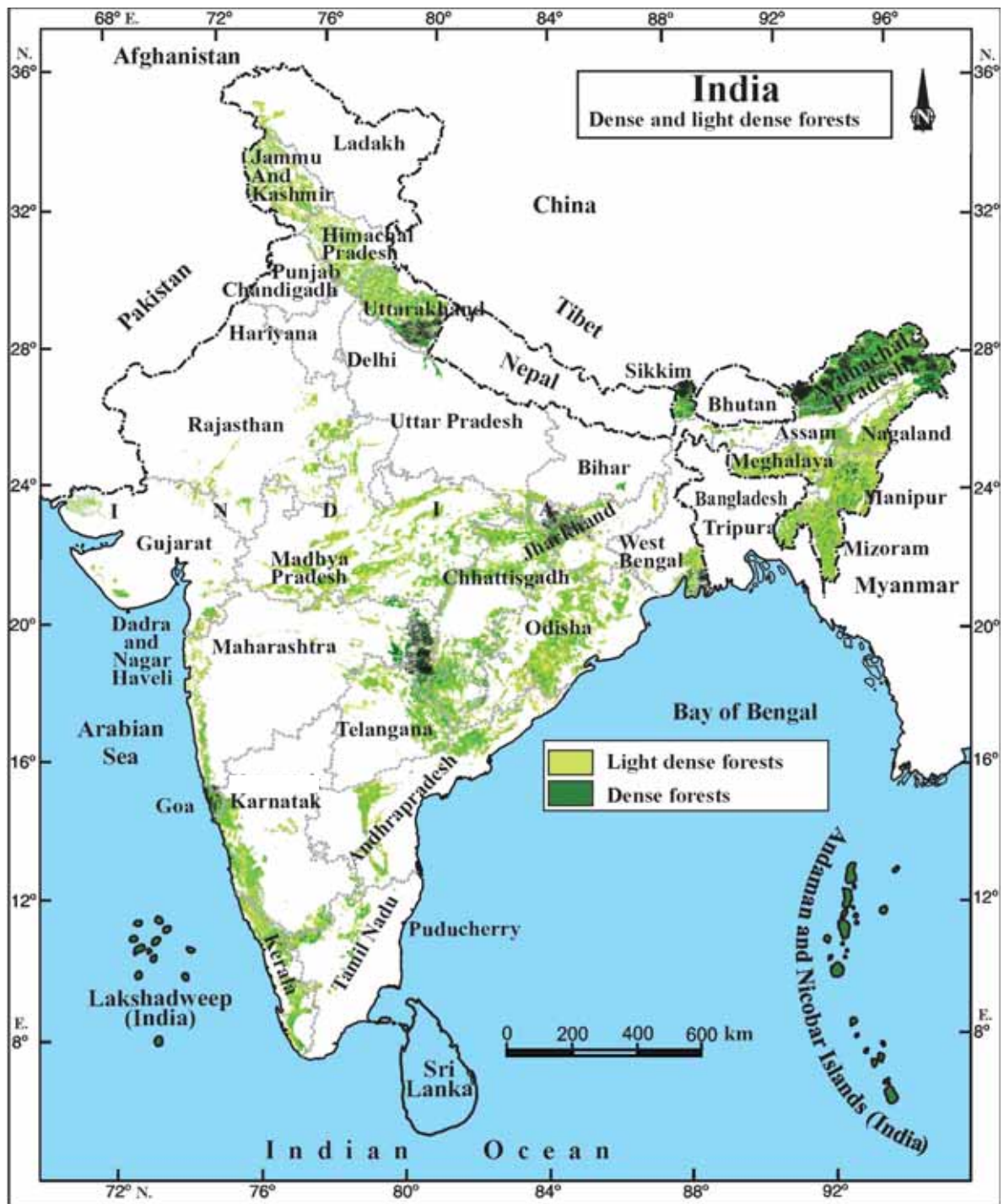
- Sikhya, a Class X girl in Odisha, wrote a letter to the Chief Minister. Read a part of the letter.

Respected Chief minister,

A forest is everything for Adivasis like us. We can't live away from the forests even for a day. Government has started many projects in the name of development – dams and factories are being built. Forests, which are ours are being taken away from us. Because of these projects, we need to think where the forest people will go and what will happen to their livelihood ? If there are no forests, where will the lakhs of animals living in the forests go ? If we dig out our land for minerals like aluminium, what will be left ? Only polluted air, water, and miles and miles of barren land...

- Is there any factory or some construction work going on in and around your area ? What type of work ?
- Is there any effect on the trees and land due to the factory ? Have the people in that area raised this issue ?





Look at the Map and Write :

- What is shown in the map ?





- You have read Sikhya's letter. Find out Odisha in the map.
- Is there a sea close to Odisha ? How did you find out ?
- Which are the states which have sea on one side ?
- Where is Suryamani's state Jharkhand on the map ?
- Where are forests on the map ? How will you find these ?
- How can you find out which states have dense forests and which have light dense forests ?
- For someone in Madhya Pradesh, in which direction would the country's dense forests be ? Name those states.



Daman Singh

### Lottery for farming in Mizoram

You read about the forests of Jharkhand in Suryamani's story. Now read about forests on the hills of Mizoram. See how people live there, and how farming is done.

Tan, Tan, Tan.... As soon as the school bell rang Lawmte-aa, Dingi, Dingima picked their bags and hurried towards home. On the way, they stopped to drink water from a stream in a cup made of bamboo. Today not only the children, but also 'Saima Sir' was in a hurry. Today there would be a special meeting of the Village Council (*Panchayat*). At the meeting, there would be a lottery to decide which family will get how much land for farming. The land belongs to the whole village, not to individual. So they take turns to do farming on different parts of the land.

A beautiful pot made of bamboo was shaken well. One chit was taken out. Saima Sir's family got the first chance. He said, "I am happy that my family gets to choose first. But, this year we cannot take more land. Last year I had taken more and was not able to farm it well. After my sister Jhiri got married and went away it is difficult to manage farming alone."



Saima Sir asked for ‘three tin’ of land. Little Mathini asked, “What is three tin of land? Chamui explained, “The land on which we grow one tin of seeds is called one tin of land.” One by one, the village families got their piece of land for farming.



### Find out :

- Which are the states around Mizoram ?
- Chamui said they measure land using unit 'tin'. What are the other units of measuring land ?
- Returning from school, children drank water in a bamboo cup. Who do you think would have made that cup and kept it in the forest ? Why ?
- What could be done to save forests ?



## Zoom farming

Zoom farming is very interesting. After cutting one crop, the land is left as it is for some years. Nothing is grown there. The bamboo and weeds which grow on that land are not pulled out. They are cut and burnt. The ash makes the land fertile. While burning, care is taken so that the fire does not spread to the other parts of the forest. When the land is ready for farming it is lightly dug up, not ploughed. Seeds are dropped on it. In one farm different types of crops like maize, rice, vegetables can be grown.

Unwanted plants (weeds) are also not pulled out, they are just cut. So that they get mixed with the soil. This helps in making the soil fertile. If a family is not able to do farming on time, others help them and have to feed them.



**For the Teacher :** Discuss about the hilly terrain of the North East and the state of Mizoram, and also about the Zoom farming followed there.



The main crop here is rice. After it's harvested, it is difficult to take it home. There are no roads on the hilly areas. People have to carry the crop on their back. This takes many weeks.

When the work is over the entire village celebrates it. People get together to cook, eat, sing and dance. They do their special 'cheraw' dance. In this dance people sit in pairs facing one another, holding bamboo sticks on the ground. As the drum beats, the bamboo sticks are beaten on the floor. Dancers step in and out of the bamboo sticks and dance to the beat.



Daman Singh



Daman Singh

- Get more information about the 'cheraw' dance. Perform this dance in your class. But be careful and don't hurt one another.

About three-fourth people in Mizoram are linked to the forests. Life is difficult here but almost all children go to school. You can see some of them here, playfully blowing their leaf whistles ! You too have made such whistles, haven't you !

### What we have learnt

- What are the similarities and differences between Zoom farming and Bhaskerbhai's way of farming ?
- Why are forests important for the people living in forests ? Explain in your own words.
- Did you find something interesting in Zoom farming ? What is it ?





## 21. Like Father, Like Daughter



### Aaa... chhee!

Aayushi was sitting near the window and she was reading. It was windy and there was lot of dust in the air. Suddenly Aayushi sneezed loudly—aaa chhee !

Aayushi’s parents were sorting out vegetables in the kitchen. Her mother said, “She sneezes just like you do. If you were not here, I would have thought it was your sneeze.”



### Write :

- Aayushi sneezed just like her father. Do you have any such habit or trait which is similar to that of someone in your family ? What is it ? Whom is it similar to ?

Your special habit or trait	Whom is it similar to ?
_____	_____
_____	_____



**For the Teacher :** In Class III we had drawn attention to the similar traits children share with the immediate family members. Discussion can now focus on how some traits/features which are also similar in distant relatives in the extended family. This can be done through children’s own experiences.





### Tell :

- Does your face or anything else look similar to that of someone in your family ? What is it ?
- Did someone tell you this or did you find it out yourself ?
- How do you feel when people compare you with someone else in your family ? Why do you feel so ?
- Who laughs loudly in your family ? Laugh like that person.

### Who is whose Aunt ?

Nilam went to the house of her *nani* (mother's mother) during the school holidays. She saw someone coming and went to tell her mother, "Mother, a *masi* (mother's sister) has come to meet you." Her mother came out to see who had come. She told Nilam, "No, this is not your *masi*! She is your sister Kiran. Do you know your eldest *nani* ? Kiran is her elder daughter's daughter. Kiran is your cousin sister. In fact, you are the *masi* of her cute son Samir."



- Make a list of all the family members from Nilam's *nani* to little Samir. How are they all related to Nilam ? Write.



### Find out :

- In your family are there any such examples of uncle-nephews or brother-sisters, where there is a big difference in the age ? Find out from your elders.



You look exactly like your dadi's cousin sister's second daughter!



## How we are all related !

Nilam started playing with Samir. Her mother called Kiran and said, "See, my Nilam's hair is a lot like yours – thick, curly and black. It's good she does not have hair like mine – straight, silky and brown !" Nilam's *nani* laughed and said, "Yes, isn't it strange ? We sisters had thick hair and now our second generation has similar hair." Nilam was listening to all these. She thought,

"We are called 'distant' relatives, but, how closely related we are in many ways !"



### Find out and Write :

- Does Nilam have curly hair like her *nani*'s ? Now you look for some special trait in your sister or brother (could also be cousins). Like the colour of eyes, dimples on cheeks, height, broad or sharp nose, voice, etc. See if this trait comes from the father's side or the mother's side. An example is given. Make this table in your notebook and fill it.

Special trait	Whom does it resemble?	From whose side ?	
		Mother's	Father's
Nilam's Curly hair	her <i>nani</i> (grandmother)	✓	



- Have you seen an infant in your family ? Whom does the child's eyes, nose, hair or fingers look like in the family ? Write their names.
- Nilam's hair is like her *nani*'s – thick and curly. Nilam's mother has straight, brown and silky hair. What type of hair do you have – black or brown, oily or dry ?



- What is the colour of your hair ? Measure and write the length of your hair.
- Is your hair like that of anyone else in your family ? If yes, then write the name of the person.
- Measure the hair of other members of your family.
- Who has the longest hair in your family ?
- How many people do you know whose hair is longer than one metre ? Is having long hair inherited in their family ?

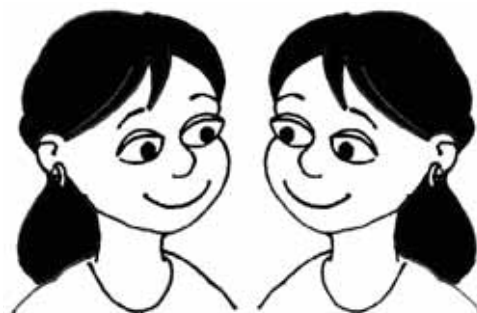
It's not easy to measure *dadaji's* hair !



- Do you know how to measure your height ? Measure yourself from head to toe and write how tall you are.
- How tall do you think you will be when you grow up ? Is anyone else in your family of the same height ?
- Measure the height of your family members and write it down.

### Is this a Mirror ?

Look at the picture given on the side. Is Meena standing in front of a mirror ? No, this is her twin! Did you get confused ? Their mother's brother (*mama*) also gets confused when he sees them together. At times, Meena gets scolded for mischief done by Mamta. Sometimes Mamta tricks her *mama* and says, "Mamta has gone out."



**For the Teacher :** Encourage children to think of some ways of measuring hair and height.



But now *mama* has learnt a trick. He says, sing a song in *Marathi*! Why this funny trick ?  
Read about them and you will understand.

The sisters were just two weeks old when Meena's (wife of father's brother) *kaki* adopted her and took her to Pune. Everyone in *kaki's* house is very fond of music. Mornings begin with music in the house. Meena knows many songs in both the languages – Tamil and Marathi. At home everyone speaks Tamil and at school most of the children speak in Marathi.

Mamta stays with her father in Chennai. Her father is a karate coach. Since she was three, Mamta started doing karate with other children. On holidays, both father and daughter start practising in the morning.

Meena and Mamta look alike but are also quite different. Now you know that *mama* had his own way of finding out who is in front of from Meena and Mamta.



### Discuss :

- What is similar between Meena and Mamta? What is different ?
- Do you know any twins ? What is similar in them? How are they different ?
- Do you know of twins who don't look the same ?

Meena and Mamta look a lot like each other yet are different. For example, Meena knows two languages. If in Mamta's family two languages were spoken she could have also learnt both languages. We learn many things like language, music, reading, or knitting, when we get a chance and an environment to do so.



**For the Teacher :** Discuss with children that we acquire certain traits by birth from our parents and certain things we learn from our environment.





## This is from the family

First of all do this interesting survey in your class. Write how many children can do this :



1. Without touching your teeth twist your tongue towards the back of your mouth. \_\_\_\_\_



2. Roll your tongue by lifting it from the sides. \_\_\_\_\_

3. Open all the fingers of your \_\_\_\_\_ hands and feet. \_\_\_\_\_ . Now without moving the others, move the little one. \_\_\_\_\_



4. Touch the thumb to your wrist.  
\_\_\_\_\_



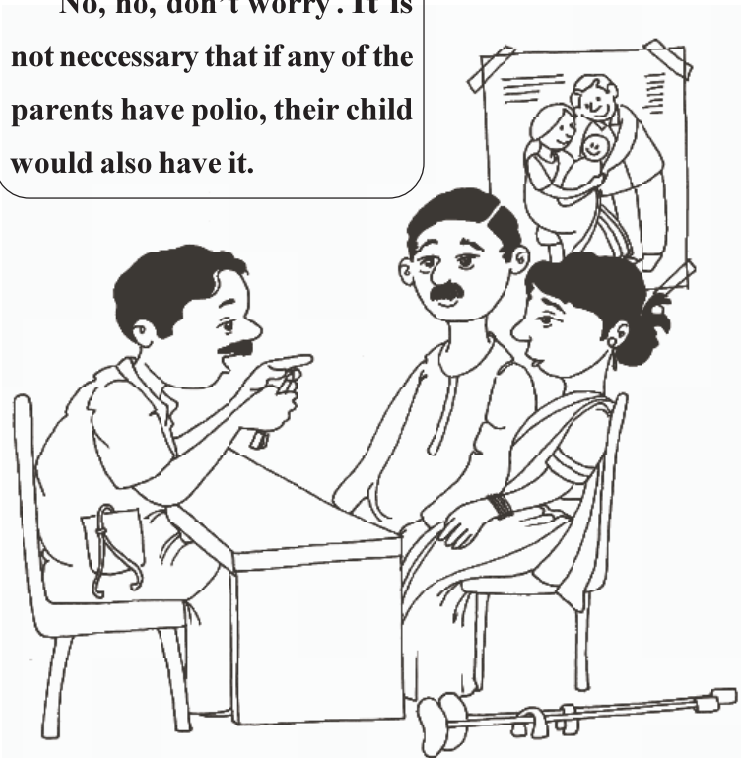
5. Make a 'V' by separating two fingers of your hand to each side. \_\_\_\_\_

6. Move your ears, without touching them. \_\_\_\_\_



Those children who could do any of these should ask their family members also to do so. So, how many children have got this trait from their family?

**No, no, don't worry . It is not necessary that if any of the parents have polio, their child would also have it.**



## But not this from parents...

Shital was too young when her legs were affected by polio. But she never let this come in the way of her work and her life. Walking long distances and climbing many stairs has been part of her work. Now Shital is married. But now she is worried that her child may also get polio ? She spoke to the doctor about this.



- Have you read or heard anything about polio ? Where ?
- Have you read or heard any news about ‘pulse polio’ ? What is it ?
- Do you know of anyone who has polio ?

### Experiments with Peas – Smooth or Rough ?

Gregor Mendel was born in a poor farmer’s family in Austria in 1822. He was very fond of studies but the very thought of examinations made him nervous. He did not have money to study at the University. So he thought of becoming a ‘monk’ in a monastery. He thought that from there he would be sent for further studies. Something that he had desired. But to become a science teacher he had to take an exam. Oh no! he got so nervous that he kept running away from the exam, and kept failing !

But he did not stop doing experiments. For seven years he did experiments on 28,000 plants in the garden of the monastery. He worked hard, collected many observations and made a new discovery ! Something which scientists at that time could not even understand ! They understood it many years after his death, when other scientists did such experiments and read what Mendel had already written.



What did Mendel find in those plants ? He discovered that the pea plant has some traits which come in pairs. Like the seed is either rough or smooth. It is either yellow or green, and the height of the plant is either tall or short. Nothing in between. The next generation (the children) of a plant which has either rough or smooth seeds will also have seeds which are rough or smooth. There is no seed which is mixed – a bit smooth and a bit rough. He found the same with colour. Seeds which are either green or yellow give rise to new seeds which are either green or yellow. The next generation does not have seeds with a mixed new colour made from both green and yellow. Mendel showed that in the next generation of pea plants there will be more plants having yellow seeds. He also showed that the next generation would have more plants with smooth seeds. What a discovery !



## Some from the Family, Some from the Environment

From the distance Vibha knows that her *nana* (grandfather) is coming – from his loud laughter. *Nana* also talks loudly and has with difficulty in hearing.

- Are there people in your house who talk loudly? Is it their habit, or they cannot also hear very well?
- Are there times when you do not talk loudly in front of some people? When? With whom? Why? When can you speak loudly?
- Some people wear a machine in their ear to help them hear better. Some use a stick or spectacles to help themselves in different ways. Do you know someone who does so?
- Talk to people who cannot hear very well. Find out if they had this problem from birth. When did they start facing the difficulty in hearing? What difficulties do they face?

We have seen that some traits or habits we get from our family. Some things and skills we learn from our environment. At times, our abilities change because of some illness or old age. All these together make us what we are.

### What we have learnt

What do you think –

What have you inherited from your mother?

What have you inherited from your father?



**For the Teacher :** Discuss with children about polio which is caused by a virus and is not inherited. Many a time people have such misconceptions about some diseases like leprosy. Discuss, how and where these can be treated. If possible, invite a doctor to respond to the children's questions.



## 22. On the Move Again



### Dhanu's village

Today all the relatives have come to Dhanu's house to celebrate Dussehra. They have come with their luggage in their bullock-carts. Dhanu's father is the eldest in the family. So all the festivals are celebrated at his house. Dhanu's mother (*Aai*), the wife of mother's brother (*mami*) and the wife of father's brother (*kaki*) are busy making *puranpoli* (sweet *rotis* made from jaggery and gram). Alongwith it a spicy *kadhi* dish is also made.

The day passes in laughing and chatting. But by evening everyone's mood changes. The women and children begin to pack their luggage. The men sit down with the *mukadam* (money lender) for the meeting. The *mukadam* gives the details of the loan taken by each family.

Then the talks for the next few months begin. The *mukadam* explains to the villagers in which areas they would go for the next six months. He also gives them some money as loan, for their expenses. Ever since Dhanu remembers, this has been the routine.



**For the Teacher :** Talk in the class about issues related to borrowing money, loans, debts and *mukadam*. Discuss these issues by taking examples from daily life.





Dhanu's family work on the lands of big farmers from monsoon to Dussehra. Many other families also work on such lands. They earn enough money during these months.

But how to manage the remaining six months, when there is no rain, and no work in the fields? So, everyone borrows money from the *mukadam*.

To pay back this money, they have to work for the *mukadam*. *Mukadam* is an agent for sugarcane factories. He helps them to find work in the sugarcane fields.



### Tell :

- Do all the farmers in Dhanu's village have their own land?
- During what time of the year did Dhanu's family get work in the village? During what time did they not have work?
- Do you know any families like Dhanu's, who have to leave their villages for months in search of work?



### Think and Find out :

- If people in Dhanu's village did not leave the village in search of work, what difficulties would they face in their own village?
- In Dhanu's village, there can be no farming when there is no rain. Do you think farming can be done even without rain water? How?



**For the Teacher :** Draw children's attention to the fact that sugarcane farming can be done during that period, when there is no rainfall. Discuss the various methods of irrigation in the farms like tubewells, canals, wheel for water lifting etc. Ask children to draw these. If possible take them or ask them to go with their family to see these.



In the next few months, Dhanu, his parents, his *kaka* (father's brother) and his two elder children, his *mama*, *mami* and their two daughters, and forty-fifty other families from the village will stay away from home. In these six months, Dhanu and many children like him will not be able to go to school. Dhanu's old grandmother, aunt who cannot see, and two-three months old cousin sister would stay back in the village.

In other homes too the old and the ill people stay behind. Dhanu misses his grandmother a lot. Dhanu always keeps wondering – who will take care of his grandmother ! But, what can Dhanu do ?



### Tell :

- Dhanu's family and many others from the village go far away for work but some people stay back in the village. Why does this happen ?
- When Dhanu and other children leave the village for six months, what happens in the village school ?
- What arrangements are made at your home for old and sick family members when everyone goes for work ?

### After Dussehra

The *caravan* of these families would now settle near the sugarcane fields and sugar factories. For six months they would stay in their huts made of dry sugarcane and its leaves. The men will get up early in the morning and go to cut sugarcane in the field. The women will tie the bundles of sugarcane. Then the bundles will be taken to the sugar factory. Dhanu often goes with his father. Sometimes, they spend night outside the factory on bullock-carts. There, Dhanu plays with the bullocks and wanders around.



**For the Teacher :** You may be very careful and sensitive to deal with children if they wish to share problems related to drug addiction of their family members. Discuss the harmful effects of drugs/narcotics in the class. Such issues should also be discussed in the training programmes.



At the factory, Dhanu's father gets the sugarcane weighed and takes a receipt (a note to say how much sugarcane he have given). They give this receipt to the agent who then keeps an account of their

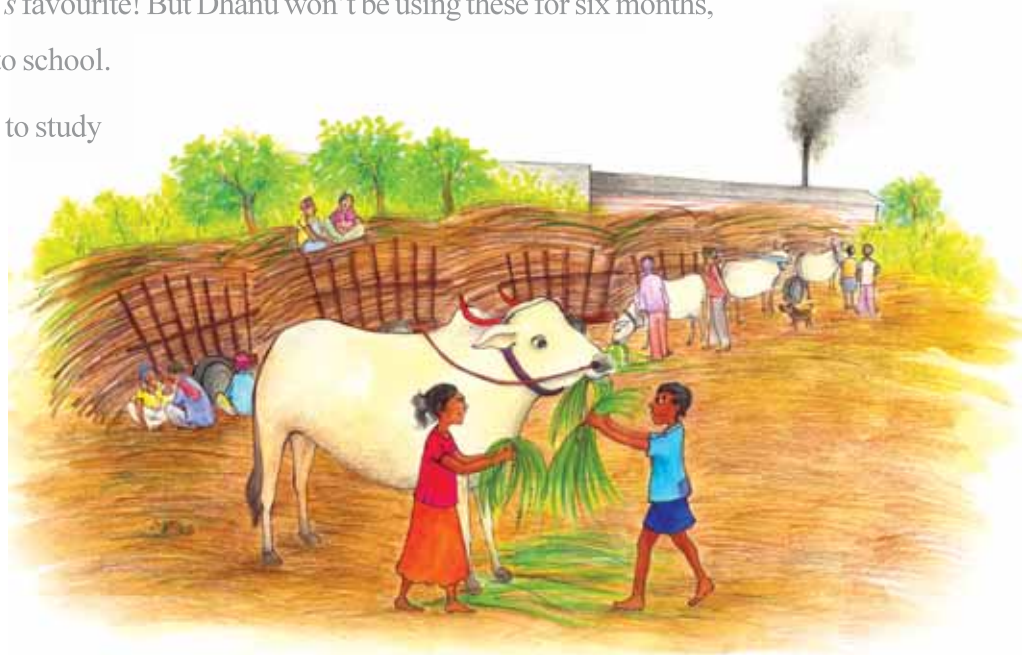
loan. The agent also gives them some money for the next week's expenses. Then Dhanu's

mother and *mami* take the children to the nearby village market, to buy *atta* (flour) and oil for the next week. Sometimes *mami* buys *laddoos* or some sweets for the children.

She also buys pencils, erasers and notebooks for

Dhanu. After all, he is *mami's* favourite! But Dhanu won't be using these for six months, because he won't be going to school.

*Mami* wants Dhanu to study and become somebody in life. She does not want Dhanu to move around with his family like this. *Mama* and *mami* tell Dhanu's parents, "Next time when we leave our village after Dussehra we will leave Dhanu with his *dadi* and *kaki*. He will go to school like other children in the village. He should continue his studies. He will study further and become someone."



**For the Teacher :** It may be possible that children from such families (Drug addicted members) may fall victim to such habits/practices. A timely action needs to be taken to prevent them. On this theme, charts and posters can be prepared by the children with the support of teachers and discuss in the class.





### Think and Tell :

- Why does *Mami* wish that Dhanu should go to school for the whole year and study ?
- What happens when you are not able to go to school for a long time ?



### Discuss and Write :



- Dhanu has to go with his village people to other places. Can there be some arrangements during that time so that Dhanu continues his studies ? Of what kind ?
- Do you know of any jobs/work for which people have to stay away from their families for many months ? Look for examples from this book and write.
- What are the similarities and differences in the lives of different kind of farmers ?
- For what reasons do people migrate ?

### What we have learnt

- You have read about many kinds of farmers in different lessons in this book. Fill the table.



Name of the farmer	Owens land? ( √ or X )	What do they grow?	What difficulties do they face?	Other Information
1. <i>Danjibhai</i> (Lesson...)				
2. <i>Hasmukh</i> (Lesson...)				



**For the Teacher :** Discuss with children that some arrangements can be made for educating children of communities that are on the move. Many times, the teacher also moves along with them. Discuss for what kind of work some communities migrate from one place to another.





## 23. We are Gujarati...



All friends gathered on the cricket ground. But today Bhavya did not come to play, so all went to his home to call him. As soon as the door bell rang, Bhavya's mother opened the door and called everyone in. As entered, we all heard the voice of Bhavya and his sister Maitry. They were singing a song. Bhavya's mother told everyone to sit quietly in a sign language. The words of song were....

*Jai Jai Garvi Gujarat !  
Jai Jai Garvi Gujarat,  
Dipe arunu parabhat,  
Jai Jai Garvi Gujarat !  
Dhwaj prakashshe jhalhal kasumbi, prem shaury aankit;  
Tu bhanav bhanav Nij santati sahune prembhaktini rit  
unchi tuj sunder jat  
Jai Jai Garvi Gujarat !  
Uttarma Amba mat,  
Puravma Kali mat,  
Chhe dakshin dishama karant raksha Kunteshwar mahadev;  
Ne Somnath ne Dwarkesh ae pashchim kera dev -  
Chhe sahayma sakshat  
Jai Jai Garvi Gujarat.  
Nadi Tapi Narmada Joi  
Mahi ne biji pan joi.  
Vali joya subhatna juddhramanne, Ratnakar sagar;  
Parvat uparthe vir purvajo, de aashish jaykar -  
Sampe sohe sau jat,  
Jai Jai Garvi Gujarat.  
Te Anhilwadna rang,  
Te Siddhraj Jaysingh,  
Te rang thaki pan adhik saras rang, thase satvare mat!  
Shubh sakun dise madhyahan shobhse, viti gai chhe rat;  
Jan ghoomo Narmada sath,  
Jai Jai Garvi Gujarat.*

-Narmad

(Transliteration of Gujarati song written by Narmad)

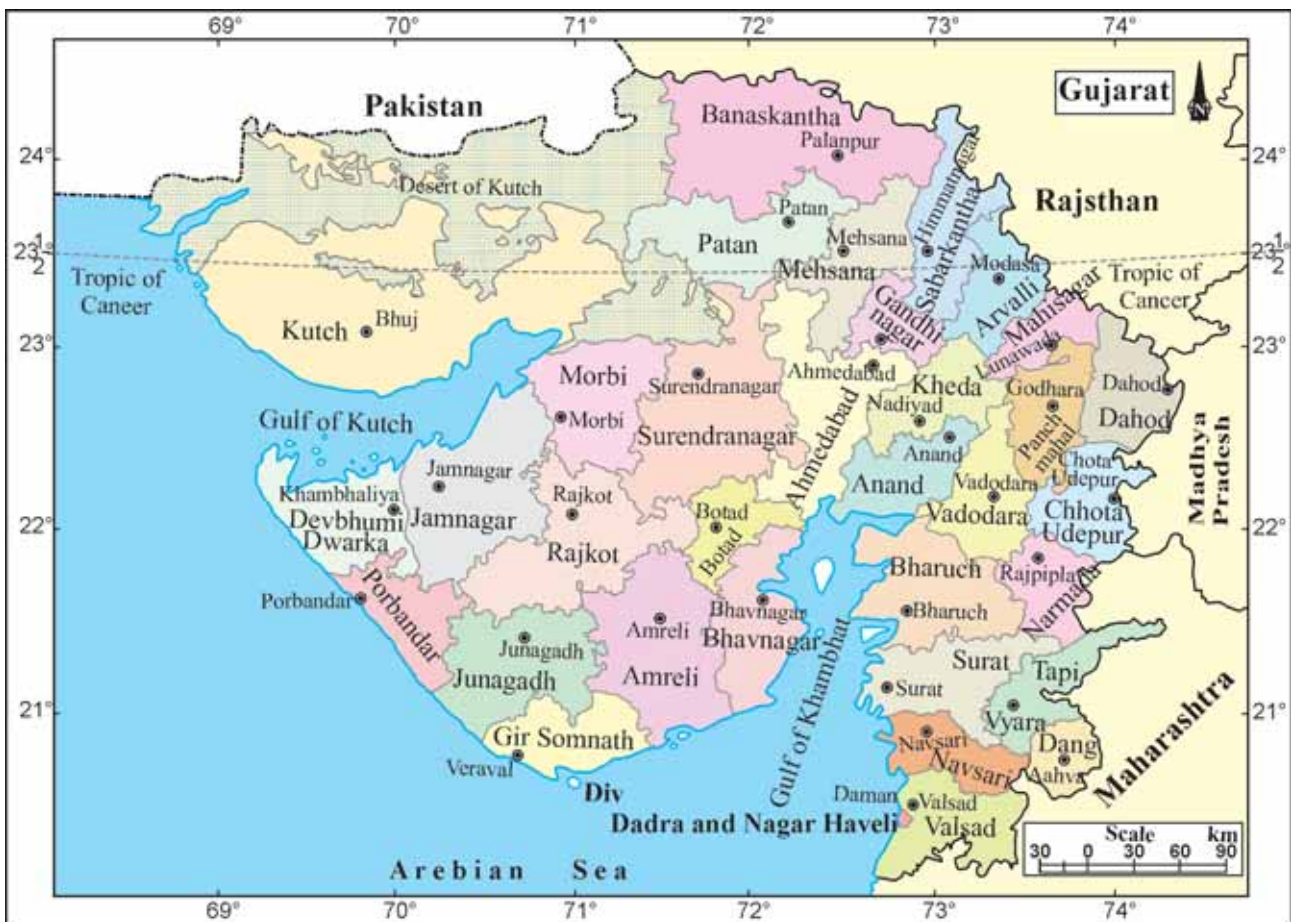


**For the Teacher :** Get a song composed by other poets about Gujarat and sing together in class with students. Encourage students to show the places mentioned in the song on the map. Find out more about these places and discuss them.



As soon as the song was over, all the friends went to meet Bhavya in his room with applauding. There along with Bhavya, his sister Maitry, Bhavya's *kaka* (paternal uncle) and *mama* (maternal uncle) were sitting there. Bhavya's *kaka* was proficient in playing harmonium and *mama* was playing tabla.

Bhavya was also happy to see all his friends. Bhavya's friend Jay asked *kaka*, "Kaka which song was this? I heard it for the first time." *Kaka* replied in detail, "This song enhances our Gujarat's identity and pride of Gujarat. In this song the geographical locations and special features of the Gujarat state have been described beautifully. The Gujarat state was established on May 1, 1960. At present, Gandhinagar is its capital. This song was composed by poet Narmad. Bhavya is going to sing this song in his school on the occasion of 'Gujarat state foundation day.' We were preparing for it."



Dev said, "Yes *kaka*, we were also taught that our Gujarat state has the longest coastal area about 1600 km. 15 districts of Gujarat are bound by the sea. Our Gujarat state holds the 6<sup>th</sup> rank in area and 9<sup>th</sup> rank in population in the country. The area of Gujarat is 1,96,024 sq km (5.97% of the total area of India)." Shiv continue the talk and said, "Tropic of Cancer passes through the northern part of Gujarat." Bhavya also could not resist. He said, "The land boundaries of Gujarat state are connected with our neighbouring country Pakistan and three states of India – Rajasthan, Madhya Pradesh and Maharashtra. Beside this, Gujarat is the only state in India that has two gulfs (Gulf of Kutchh and Gulf of Khambhat)."





Find the answers of the following questions from the map given on page no. - 206 :

- How many districts are there in Gujarat state ?
- Which district is the largest in terms of area in Gujarat State ?
- Which district is the smallest in terms of area in Gujarat State ?
- Write the names of any three districts of Gujarat from which the Tropic of Cancer is passing through.

With some hesitation Ved said, “*Mama*, there are only the names of rivers Mahi, Tapi and Narmada in the song, other than that which rivers flow in Gujarat ?” *Mama* said hoarsely, “In the song there are names of only few rivers but other than these rivers like Sabarmati, Banas, Bhadar, Shetrunji, Bhogavo, Machchhu, Ghelo, Purna, Vishwamitri, etc. flow across Gujarat. Usually, the rivers meet the ocean, but some rivers merge into the desert instead of meeting ocean. Hence these rivers are called Inland rivers or *Kunwarikas*.” Prem said, “When I went to see ‘The Statue of Unity’, I visited the Sardar Sarovar Dam built over the Narmada river. It is the important irrigation project of the state.” *Kaka* said, “Well done! beside this, Dams have also been constructed over rivers Tapi, Mahi, Sabarmati, etc.”

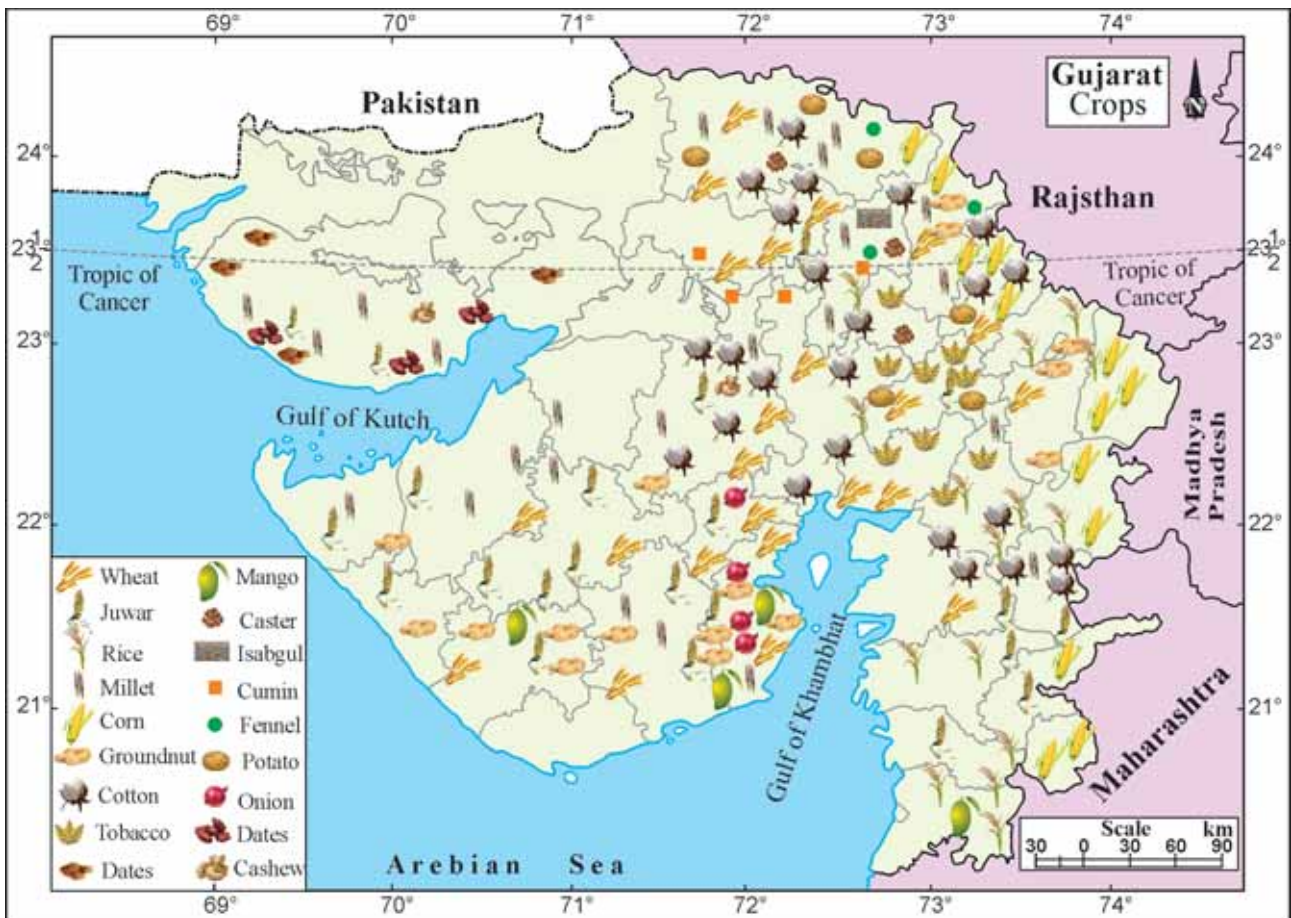




Find the answers of the following questions from the map given on page no. - 207 :

- Make a list of rivers of Gujarat other than given in the chapter.
- Make a list of inland rivers, write their final destination.
- Write down the irrigation projects of the state and the river on which it is built.
- Collect the information about the hilly regions of Gujarat and present it in the class.

Zeel said, “Once I went to Manpur village of Banaskantha district with my uncle, it was very cold over there. When my uncle and I went to a farm, I saw the wheat was planted there. Where as potatoes were sown in the adjoining farm. Uncle said that the crop was harvested as per the type of the soil. All these crops are known as Rabi crop.”



Find the answers of the following questions from the map above :

- Make a district-wise list of crops grown in Gujarat state.
- Classify the different crops into Rabi crop, Zaid crop and Kharif crop.



**For the Teacher :** Provide an understanding of crops grown in different seasons to the students. Categorize these crops into Rabi crop, Zaid crop and Kharif crop.

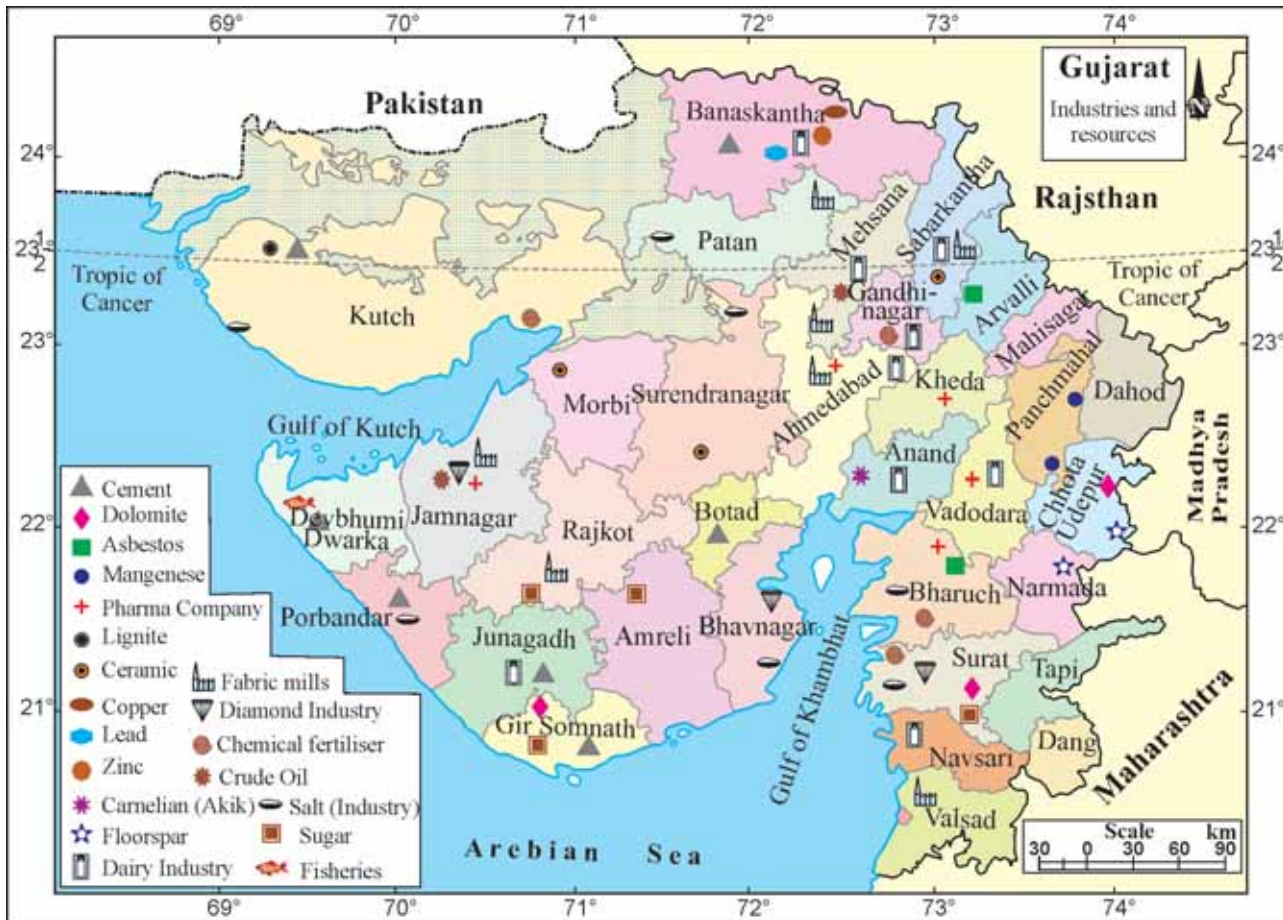


Rabi crop	
Zaid crop	
Kharif crop	

Immediately Pratham said, “I also went to my aunty’s place during vacation. In their yard there were five cows, four buffaloes and two calves : one was white and the other black. Uncle used to go to deliver the milk of cows and buffaloes to the village dairy. In that dairy of village, there were photographs of Amul dairy located in Anand, Tribhuvandas Patel and Dr. Verghese Kurien. Below the photo of Dr. Kurien ‘Father of the White Revolution’ was also written.”

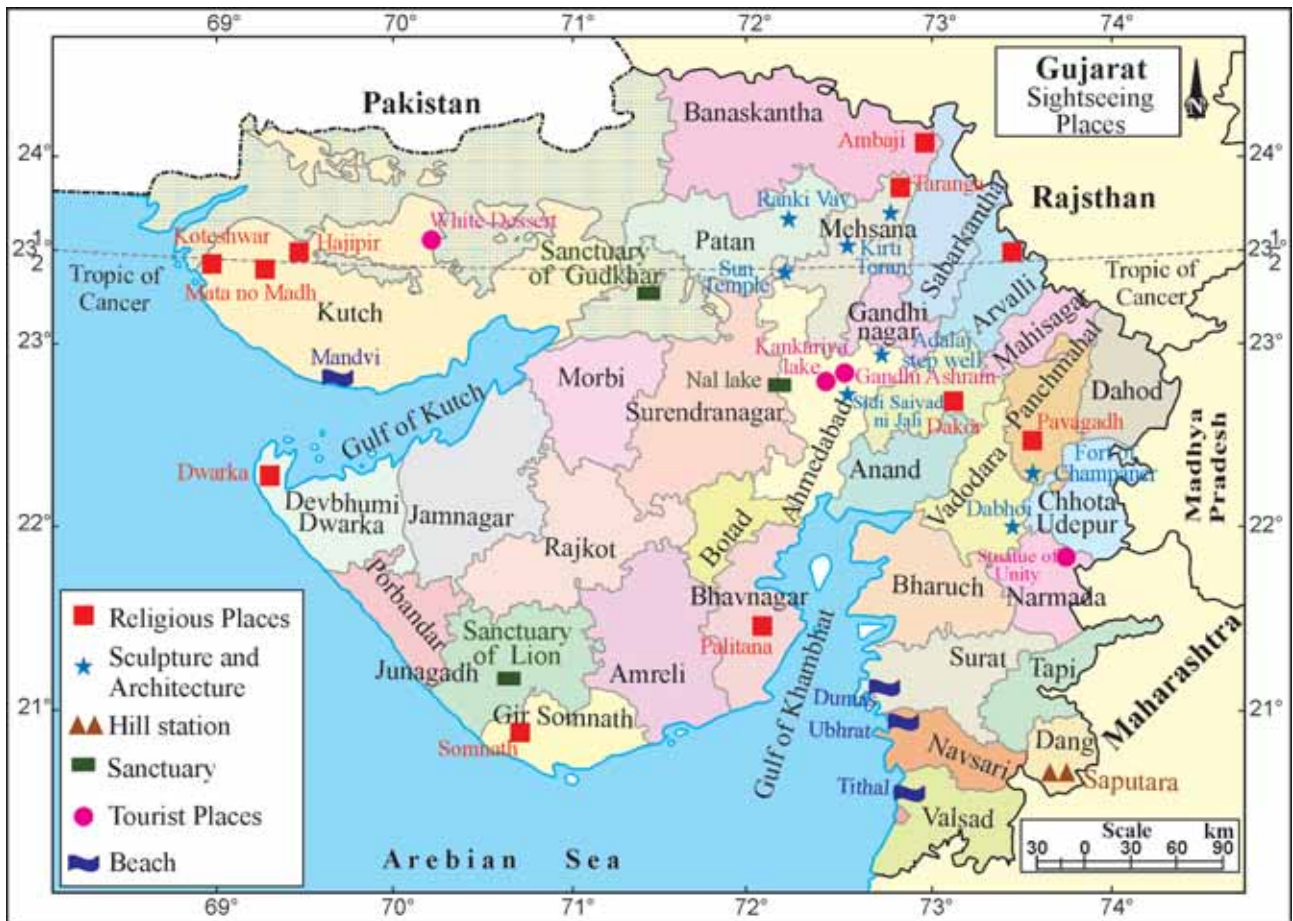
Bhavya’s mother brought milk in cups for everyone. Maitry said, “Mother, these are the same cups we have brought from Morbi ! Out of many varieties of cups, you and I have chosen these cups.”

While drinking the milk Harsh saw a *charkha* on the table and he asked Bhavya, “What is this ? From where did you bring this ?” Kaka replied, “This is *charkha*. We brought this *charkha* when Bhavya and I went to see the Gandhi Ashram (Sabarmati Ashram). With *charkha* Gandhiji fought for the use of indigenous goods and nonuse of foreign goods.”



- Make a list of different dairies and their districts.
- Make a list of industries developed in Gujarat.





### Discuss and Write it in Notebook :



- Make a district-wise list of sightseeing places. Who have visited which places from your class ? Discuss.
- Write down the name of the place you visited and its uniqueness.
- Make a list of religious places of different religions in your district and in your neighbouring district and write about any two of them.

*Mama* looked at the T-shirt worn by *Vraj*. Looking at the photo printed on it, he asked everyone, “Which temple’s picture is this ? Does anyone know ?” Everyone nodded their heads in denial. *Mama* said, “This photo is of Ambaji Mata’s Temple situated at Banaskantha district. The hilly area of *Talgujarat* extends from Banaskantha to Valsad district”. Continuing the conversation *Kathan* said, “Yes, *mama*. We went to Saputara, the hilly region of Dang, the only hill station in Gujarat, which is about 1000 meter above the sea level.”





### What we have learnt

- As per 2019 data, there are 33 districts in Gujarat state.
- The tropic of cancer passes through Gujarat state.
- The coastal area of Gujarat state is 1600 km long.
- The rivers of Gujarat state and their irrigation projects
- The main crops of Gujarat state
- The sightseeing places, industries and sculptural architecture of Gujarat state



**For the Teacher :** Discuss with the class about the following changes in rural life before and after independence due to pastoral (animal husbandry) activity developed in Gujarat.

- Standard of living
- Economic status
- Life style
- Social life etc.



