Explorer

Grade 4 | Term 1

Revised

CAMBRIDGE
UNIVERSITY PRESS

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University Printing House, Cambridge CB2 8BS, United Kingdom

One Liberty Plaza, 20th Floor, New York, NY 10006, USA

477 Williamstown Road, Port Melbourne, VIC 3207, Australia

314–321, 3rd Floor, Plot 3, Splendor Forum, Jasola District Centre, New Delhi – 110025, India

79 Anson Road, #06–04/06, Singapore 079906

Cambridge University Press is part of the University of Cambridge.

It furthers the University's mission by disseminating knowledge in the pursuit of education, learning and research at the highest international levels of excellence.

www.cambridge.org

First published 2018
Second edition 2019

20 19 18 17 16 15 14 13 12 11 10 9 8 7 6 5 4 3 2 1

Printed in India by Rajkamal Electric Press

ISBN 978-1-108-63986-6

Introduction

Explorer is an integrated term course for primary (1 to 5) levels. The revised edition comprises three books: Term 1, Term 2 and Term 3. Each book covers the curriculum of all the core subjects taught in these classes – English, Mathematics, Environmental Studies, Science, Social Studies and General Knowledge, integrated together for an all-in-one approach.

This series is designed to help facilitate 'learning without burden', as it eliminates the need for separate text books to be carried by young students every day.

The content is well-graded, beautifully illustrated and visually engaging. In addition to the hands-on activities, there are many value-based tips and suggestions for inculcation of moral and ethical values.

The books in the series are structured in the following way:

English

The English section is a comprehensive course aimed at developing an understanding and appreciation for prose and poetry. The course aims to develop communication skills in students by integrating the concepts with essential language skills of listening, speaking, reading and writing. It has well-graded grammar and vocabulary sections to help students grasp the core language structures and enrich their creative expression.

Mathematics

The Mathematics section consists of carefully-graded and activity-based mathematical concepts. It links mathematics to the everyday life of the students and makes it enjoyable.

Environmental Studies

The Environmental Studies section, for grades 1 and 2, helps learners understand the environment around them in totality and develops sensitivity towards environmental issues that we are faced with.

Science

The Science section, for grades 3, 4 and 5, involves students as participants in the journey towards scientific exploration. The subject gives students an opportunity to construct their own knowledge through activities and projects, enabling them to connect their learning to the real world.

Social Studies

The Social Studies section, for grades 3, 4 and 5, introduces the young learners to the basic concepts of history, geography and civics. The series attempts to make learners understand the evolution of human society and its fast-changing paradigms.

General Knowledge

The General Knowledge section includes an assortment of topics dealing with general awareness and life skills.

We hope the learners and teachers find the course apt for their learning-teaching needs.

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Contents

English

1 My Friend Ramu

Ruskin Bond

Warm-up

Do you recognise the characters in the pictures below?

....

Can you say what is common among them? Can you fill the last box with another such pair?

I soon grew into the habit of visiting the pond on my own, to explore its banks and shallows; and taking off my shoes, I would wade into the muddy water up to my knees, and pluck the water-lilies off the surface.

What other plants or flowers can grow in a pond?

One day, when I reached the pond, I found it already occupied by the buffaloes. Their owner, a boy a little older than I, was swimming about in the middle of the pond. Instead of climbing out on to the bank, he would pull himself up on the back of one of his buffaloes, stretch his naked brown body out on the animal's glistening back, and start singing to himself.

When the boy saw me staring at him from across the pond, he smiled, showing gleaming white teeth in his dark, sun-burned face. He invited me to join him in a swim. I told him I could not swim, and he offered to teach me. He dived off the back of his buffalo and swam across to me. And I, having removed my shirt and shorts, followed his instructions until I was struggling about among the water-lilies.

The boy's name was Ramu, and he promised to give me swimming lessons every afternoon. And so it was during the afternoons—especially summer afternoons when everyone else was asleep—that we met.

What are these associated with—butterfly, breast-stroke?

Very soon I was able to swim across the pond to sit astride a contented buffalo, standing like an island in the middle of a muddy ocean. Ramu came from a family of farmers and had as yet received no schooling. But he was well-versed in folklore and knew a great deal about birds and animals.

Folklore are the traditional stories and culture of a group of people. They were communicated through storytelling.

I liked the buffaloes too. Sometimes we would try racing them, Ramu and I riding

well-versed: knowing something well

on different buffaloes. But they were lazy creatures, and would leave one comfortable spot only to look for another or, if they were in no mood for games, would roll over on their backs, taking us with them into the mud and green scum of the pond. I would often emerge from the pond in shades of green and khaki, then slip into the house through the bathroom, bathing under the tap before getting into my clothes.

Ramu and I sat on our favourite buffalo and watched a pair of *sarus* cranes prancing and capering around each other: tall, stork-like birds with naked red heads and long-red legs. They are always very devoted companions, and it is said that if a *sarus* is killed its mate will haunt the scene for weeks, calling sadly, and sometimes pining away and dying of grief. They are held in great affection by village people, and when caught young make excellent pets. Though Grandfather did not keep a *sarus* crane, he said they were as good as watch-dogs, giving loud trumpet-like calls when they were disturbed.

Cranes are one of the migrating birds. Migrating birds travel over very long distances once every year from the cold to the warm countries. This is known as migration.

"Many birds are sacred," said Ramu, as a blue-jay swooped down from the peepul tree and carried off a grasshopper. He told me that both the blue-jay and Lord Shiva were called *Nilkanth.* Shiva had a blue throat, like the bird, because out of compassion for the human race, He had swallowed a deadly poison meant to destroy the world. Keeping the poison in His throat, He did not let it go down any farther.

"Are squirrels sacred?" I asked.

"Lord Krishna loved squirrels," said Ramu. "He would take them in His arms and stroke them with His long fingers. That is why they have four dark lines down their backs from head to tail. Krishna was very dark, and the lines are the marks of His fingers."

It seemed that both Ramu and Grandfather were of the opinion that we should be more gentle with birds and animals, and not kill so many of them.

devoted: loving or caring very much about someone or something

compassion: a feeling of sympathy for people who are suffering

"It is also important that we respect them," said Grandfather. "We must acknowledge their rights on the earth. Everywhere, birds and animals are finding it more difficult to live because we are destroying their forests. They have to keep moving as trees disappear."

Ramu and I spent many a long summer afternoon at the pond. Only the buffaloes and the frogs and the *sarus* cranes knew of our friendship. They had accepted us as part of their world, their muddy but comfortable pond. And when finally I went away, both they and Ramu must have assumed that I would return like the birds.

About the Author

Ruskin Bond is an award winning Indian author of British descent, much renowned for his role in promoting children's literature in India. A prolific writer, he has written over 500 short stories, essays and novels. His short stories are delightful. Ruskin Bond's Children's Omnibus *is a collection of his famous stories for children.*

Can you find the author's picture? Paste it here.

Comprehension

A. Answer the questions.

1. Who were the two friends?
2. Where did they meet every day?
3. Do you think the speaker also came from a farmer's family? Give reasons for your answer.

B. Choose the correct options.

1. The speaker used to go to the pond ..... (frequently/rarely).
2. The speaker ..... (knew/had to learn) swimming.
3. Ramu was ..... (older than/younger than/of the same age as) the speaker.

C. Read the lines and answer the questions.

1. *"It is also important that we respect them,"...*
   a. Who said these words and to whom?

b. What is referred to as **them**?

c. How can we show respect to **them**?

2. *And when finally I went away, both they and Ramu must have assumed that I would return like the birds.*

a. Who went away?

b. Did Ramu believe that his friend would return?

c. Explain what is meant by **return like the birds**.

D. Choose the correct options.

1. The speaker says that Ramu *had as yet received no schooling. But he was well-versed in folklore and knew a great deal about birds and animals.* Do you think this sentence shows that the author believed that

a. only those who go to school are better informed about a lot of things. ☐

b. only those who go to school are not the only ones who know a lot of things. ☐

2. *Ramu came from a family of farmers and had as yet received no schooling.* Does this mean that

a. Ramu might go to school in the future? ☐

b. Ramu will never get a chance to go to school? ☐

E. Think and answer.

1. Why do you think the speaker and Ramu liked each other's company?
2. Do you agree with Grandfather's words about the condition of birds and animals in today's world? Give reasons for your answer.

Language in Use

Abstract and Concrete Nouns

Read the sentences.

- If a *sarus* is killed, its mate pines away and dies of **grief**.
- The village people have great **affection** for the *sarus* cranes.

Frame a question based on each sentence that will get you the answers—'grief' and 'affection'.

a. .....

b. .....

However, you may not be able to categorise these words into the categories of nouns that you have already learnt.

An **abstract noun** is a noun that has no physical form. This means we cannot see or touch it. It denotes an idea (**education**, **discipline**), quality (**ability**, **beauty**) or state (**belief**, **hope**).

Concrete nouns, on the other hand, refer to anything that can be perceived through the five senses.

Examples:

- The **chair** is broken.
- The **food** tastes wonderful.
- I could feel the **wind** on my face.

The highlighted words are all concrete nouns.

A. Underline the abstract nouns in the sentences, and circle the concrete nouns.

1. Childhood is the best stage of life.
2. The little boy cried in pain when he fell from the swing.
3. I did not like the idea of being late for the show.
4. The workers of the farm lived in poverty.
5. The success of the girl was a good example for all.

B. Fill in the blanks with abstract nouns of the words in the brackets.

1. She is a woman of great ..... (strong).
2. Most of the population of India live below the ..... (poor) line.
3. To my mother, my ..... (safe) is of utmost importance.
4. You must try to avoid ..... (waste) of food or water.
5. In the eastern part of India, ... (dark) comes sooner with early sunset.
6. ..... (cruel) to animals is a punishable offence.

Expressions to Show Possession

We use the **apostrophe** (’)

1. to show that something belongs to a person.

   Example:

   The words of the Wise One came to his mind.

   The Wise One’s words came to his mind.

2. to show that some letters have been left out.

   Example:

it is/it has	➔	it’s
do not	➔	don’t
was not	➔	wasn’t
you have	➔	you’ve
cannot	➔	can’t

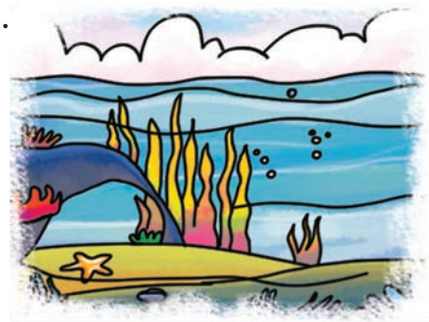
C. Rewrite the sentences using apostrophes at the correct places.

1. Its raining. Come inside, otherwise youll get drenched.
2. Dont waste it, please.
3. Sheetals advice was taken seriously.
4. Youve come to the right place!
5. I cant ride the bicycle, its too big for me.

Word Power

A. Answer the following questions.

1. In the first paragraph of the story, the word **shallows** refers to

   a.  ☐

   b.  ☐

2. In the sixth paragraph of story, the word **scum** means
   a. something unpleasant on the surface of the water. ☐
   b. something nice on the surface of the water. ☐
3. In the seventh paragraph, **pining away** means
   a. to be sad or to want something. ☐
   b. to be anxious because you know someone will return. ☐

Write the word/s or phrases that helped you choose the above options.

B. Circle the odd one out in the list of words below.

1. glisten, shine, darken, gleam
2. prance, caper, trot, swoop
3. hate, love, compassion, sympathy
4. take off, dive off, know of, go off

Dictionary Work

A letter or group of letters added to the beginning of a word to make a new word is called a **prefix**.

We use prefixes with nouns and adjectives to make new words.

- kind (adjective) – unkind (adjective)
- sure (adjective) – ensure (verb)
- list (noun) – enlist (verb)

A. Write five words each beginning with the prefixes un- and en-.

B. Fill in the blanks with words beginning with the prefix dis- from the box.

disagree	disable	disaster	disrespect
disappointment	disappearance	disadvantages	

1. You should not ..... your elders.
2. The topic is 'the ..... of the Internet'.
3. ..... the fire alarm immediately.
4. I strongly ..... with you on this matter.
5. The robbers who came last night are responsible for John's .....

6. The presentation was such a .....

7. Titanic's maiden voyage was a big .....

Listening and Speaking

A. Listen and repeat the sounds of the following words. Notice the change in the letters that produce the sound. This is a sound that is a combination of two vowel sounds within one syllable. It is a combination of the e and u sounds. The mouth also changes shape when you pronounce these sounds.

coal goat boat more rose omit row go

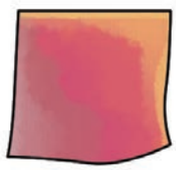
B. Let us sing a song.

Row, row, row a boat
Gently down the stream
Merrily, merrily, merrily, merrily
Life is but a dream.
Row, row, row your boat
Watch the water flow,
Rowing's fun but rowing's hard
That is what I know.

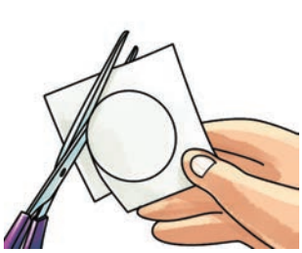
C. Look at the materials given below. Listen to the audio and tick the material you would need to make a finger puppet.






D. Listen to the instructions and number the steps in order.




☐ ☐ ☐ ☐

E. Sit in groups. According to you, what is the basis of a friendship? What do you look for in a friend? Have a group discussion with your friends. You may begin the sentences in the following ways—

- I think what is important in a friendship is...
- I believe...
- In my opinion, a friend should...
- Sorry to interrupt, but I think...

Let one of your teammates give a summary of the discussion.

Writing

A. Write a story titled 'The Stolen Bag' using the pictures and the clues.

boy in the park—playing hide-and-seek—hidden in a bush—sound of footsteps—a man and woman—woman has a brown bag—they hide bag under bush—man and woman hurries away—boy opens bag—full of gold ornaments—police station—reward

B. Write about a friend you have in school. Take the help of the following points.

- Write how you became friends.
- In which class did you meet?
- What did you say to each other?
- Why do you like your friend?
- How do you spend time together?

Activity

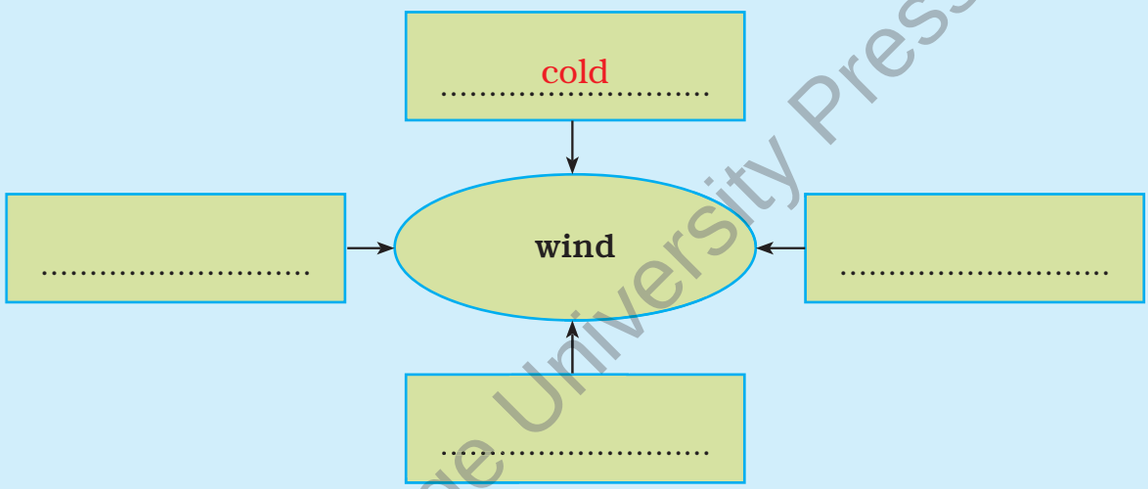
Using the finger puppets, build up a dialogue between two people meeting for the first time while travelling. Talk about anything that comes to your mind—weather/food/the service/professions/news, etc.

2 The Wind on the Hill

A A Milne

Warm-up

Can you think of some ways to describe wind? Work in groups of four and find out four words to describe it.



No one can tell me,
Nobody knows,
Where the wind comes from,
Where the wind goes.

It's flying from somewhere
As fast as it can,
I couldn't keep up with it,
Not if I ran.

But if I stopped holding
The string of my kite,
It would blow with the wind
For a day and a night.

wind: moving air

And then when I found it,
Wherever it blew,
I should know that the wind
Had been going there too.

So then I could tell them
Where the wind goes…
But where the wind comes from
Nobody knows.

About the Poet

Alan Alexander Milne (1882 – 1956) was an English author and playwright. He is best known for his books about Christopher Robin's teddy bear, Winnie-the-Pooh. He has also written several poems.

Can you find the poet's picture? Paste it here.

Comprehension

A. Choose the correct options.

1. The speaker
   a. knows where the wind comes from. ☐
   b. does not know where the wind comes from. ☐
2. If the speaker stopped holding the string of the kite,
   a. the kite would blow away with the wind. ☐
   b. the kite would fall near the speaker. ☐

B. Write true or false. Mention the line in the poem that tells you this.

1. The speaker could have kept up with the wind if he/she ran along with it. .....
2. The speaker would know where the wind had blown if he/she could find the kite. .....
3. The word **blew** rhymes with the word **too**. .....
4. The speaker says that someone must be knowing where the wind comes from or where it goes. .....

C. Answer in a few words.

1. What can no one say about the wind?
2. In what way can the speaker say how far the wind has blown?

D. Answer the questions.

1. Did you like or dislike the poem? Give reasons for your answer.
2. What is the rhyme scheme of this poem?

Appreciation

A. Do the lines of the poem rhyme? If so, then write the rhyming words.

B. Does it have rhythm? How is the rhythm created in the poem?

Writing

Imagine you are the wind. Write how you feel being so. What do you see on your way? What do you experience as you travel from one place to the other? Write a paragraph in 150 words.

Project

Do you know that wind can be used as usable energy? Find out how wind is used to generate power. Try to read how wind mills or wind turbines work. Make a poster about wind power. Paste pictures and write as much information you can gather on it.

3 School Breaks Up

R K Narayan

Warm-up

Form groups. Each member of the group must take a paper and write on it all the words he/she can associate with examinations or tests. When everyone has finished writing, any one of the group members must read aloud his/her answers. The others in the group should put a tick against the common answers. At the end, discuss in the group about how you feel about exams. Take turns to express your feelings.

This story is about Swami, who is a ten-year-old boy, studying at Albert Mission School in the fictional town of Malgudi. This excerpt is taken from the novel Swami and Friends. *The book recounts the adventures of a group of schoolboys.*

On the last day of the exams, Swaminathan strode out of the examination hall. He stood in the school veranda, turned back and looked into the hall. He began to feel slightly uneasy. He would have felt more comfortable if all the boys had given their papers as he had done, twenty minutes before time. But there they sat, many of them still writing hurriedly.

R K Narayan's *Malgudi Days* has also been made into a TV series.

With his left shoulder resting against the wall, Shankar was lost to the world. Rajam, sitting under the second ventilator between two Third Form boys, had become a writing machine. Mani was still gazing at the roof, scratching his chin with the pen. The Pea (little Samuel, the cleverest boy in class) was leaning back in his seat, revising his answers.

ventilator: an opening or a device that allows fresh air to come into a room

One supervisor was drowsily seated in his chair. Another was walking up and down with a distant look in his eye.

Swami suddenly wished that he had not come out so soon. But how could he have stayed in the hall longer? The Tamil paper was set to go on till five o'clock. But he had found himself writing the last line of the last sentence at four-thirty.

Out of the six questions set, he had answered the first question to his satisfaction but the second was doubtful. The third and fourth were satisfactory, while the fifth was clearly wrong (but then, he did not know the correct answer). The sixth answer was the best of the lot. It took only one minute to answer it. The question was—'What is the moral of the story, *The Man and the Tiger?*' The story was about this man who was walking along the edge of the pond. A tiger called out to him from the other side of the pond. The man was offered a gold bangle by the tiger. The man, at first, refused the offer, but when the tiger repeated his offer, the man waded through the water. Before he could hold out his hand for the bangle, he was inside the tiger.

Swami took a minute to decide whether the moral was, 'We must

waded: walked through water that is not very deep

never accept a gold bangle when it is offered by a tiger', or 'Love of gold can be dangerous'. He saw more sense in the second one and wrote it down.

After writing, he looked at the big hall clock. Half an hour more! He wished the paper was set for two-and-a-half hours instead of three. He wanted to leave early but he felt awkward to be the first to go out. He could do many interesting things once he left—he could roam about the town all day, throw away his books and command Granny to tell endless tales.

He had seen a supervisor observing him, and had immediately pretended to be busy with the answer paper. He turned over the pages and kept gazing at the last answer as though he was revising. He set his pens to work. He went on improving the little dash under the last line indicating the end, till it became an elaborate complicated pattern.

He looked at the clock again, thinking that it must be nearly five now. It was only ten minutes past four-thirty. He saw two boys give their papers and go out, and he felt happy. He briskly folded the paper and wrote on the flap—the elaborate inscription:

Tamil
W S Swaminathan
First Form, A Section
Albert Mission School
Malgudi
South India
Asia

awkward: to feel embarrassed or nervous
command: to order
pretended: behaved in a particular way in order to make other people believe in something that is not true
gazing: looking at something or someone for a long time
elaborate: containing a lot of careful details or many detailed parts
pattern: a regular arrangement of lines, shapes or colours on a surface
briskly: quickly and energetically

About the Author

Rasipuram Krishnaswami Narayan (1906 – 2001) was an Indian writer, best known for his stories set in the fictitious town of Malgudi, titled The Malgudi Days. *He beautifully outlines his characters through their actions in everyday life, bringing out the peculiarities of human relationships. Narayan wrote his first novel* Swami and Friends *in 1935. It is also one of his best-received works.*

Can you find the author's picture? Paste it here.

Comprehension

A. Answer the questions.

1. What was Swami writing?
2. How many questions were there in the question paper?
3. Can you name some of Swami's classmates?
4. Was he happy with the test? Why did he worry about it later?

B. What idea have you formed about Swami's

1. nature.
2. age.
3. friends.

C. Read the lines and answer the questions.

1. *Swami suddenly wished that he had not come out so soon.*
   a. Where was Swami before he **came out**?
   b. Why had he come out so early?
   c. Why did he wish that he had not come out so early?
2. '*What is the moral of the story,* The Man and the Tiger?'
   a. In what context does this sentence appear in the story?
   b. What was Swami's answer?
   c. Do you agree with Swami's answer? Why or why not?

D. Think and answer.

1. Why did Swami pretend to revise his paper when the supervisor looked at him?
2. Describe what Swami's friends were doing when he left the exam hall.
3. What interesting things did Swami wish to do once he left the exam hall?

Language in Use

Possessive Pronouns

We know that a possessive pronoun indicates possession of something or someone. It does not precede a noun. Moreover, it has a particular form.

Examples:

mine, ours, yours

Read these sentences.

- Swami's friend came out of the hall with a pencil. He asked Swami, "Is this **yours**?"
- Swami replied, "Yes, it is **mine**."

Words used in place of nouns to show who or what owns something are called **possessive pronouns**.

The possessive pronouns **mine**, **yours**, **ours**, **hers/his**, **theirs** and **its** are never followed by nouns. The pronouns, except **mine**, are written without an apostrophe (') before or after **s**.

A. Fill in the blanks with possessive pronouns.

1. Are we going to watch the Finals at their house or at .....?
2. We are having our dinner now. When do you want to have .....?
3. Do you know Swami? That house over there is .....
4. Swami's friends came out of the hall happily. Swami was not sure about his exam but they were happy with .....
5. Rani goes to school on a red bicycle. That red bicycle is .....

Reflexive Pronouns

Read the sentence.

> Swami had found himself writing the last line of the last sentence at four-thirty.

Who does **himself** refer to here?

A **reflexive pronoun** is used to show that the person who does the action is also the person who is affected by it.

We use a reflexive pronoun as a direct object when the object is the same as the subject of the verb.

In the sentence given above, Swami is the person who does the work of writing the sentence and observing himself doing that.

We must remember that we do not use a reflexive pronoun after verbs which describe things people usually do for themselves, such as **wash**, **shave**, **dress**.

Example:

We do not say: He dressed himself up for the occasion.

We say: He dressed up for the occasion.

B. Fill in the blanks with correct reflexive pronouns.

1. The teacher hoped that the students would behave .....
2. Father made ..... a cup of coffee.
3. You shouldn't blame ..... for the accident.
4. Don't worry about the children. They can entertain ..... for some time.
5. We should always introduce ..... first, when we want to know who the other person is.

Word Power

You already know what a prefix is. Look at the words given below.

trusted – **en**trusted able – **en**able

A. Circle the words which use the prefix en-.

1. **en**circle	2. **en**rage	3. **en**force	4. **en**core	5. **en**danger
6. **en**large	7. **en**try	8. **en**able	9. **en**rich	10. **en**tertain
11. **en**tice	12. **en**case	13. **en**ough	14. **en**ergy	15. **en**joy

Read the sentence.

Ravi is **as quarrelsome as** his sister.

Which of these does the sentence given above mean?

1. Ravi is more quarrelsome than his sister.
2. Ravi's sister is more quarrelsome than Ravi.
3. Ravi and his sister are both equally quarrelsome.

We can compare two or more things or people using the expression **as +** adjective **+ as.**

We can use the structure **not + as +** adjective **+ as** to show that two things are dissimilar.

I am **not as tall as** my father.

B. Use the structure as + adjective + as or not + as + adjective + as with suitable adjectives to complete the sentences.

1. Ice cream is ..... yoghurt.
2. The film is ..... the book.
3. Our new car is ..... our old one.
4. The T-shirt is ..... the white shirt.
5. Board games are ..... computer games.

Spelling

English spellings sometimes do not follow any rule particularly. Then you have to devise some means of remembering them either by a special word or a very short poem. These are called **mnemonic devices**.

The most interesting bit about mnemonics is that these are very personal. That means only you can create the perfect mnemonic device for remembering something for yourself.

1. **Gum**bo lost an **e** in an **ar***gum***ent**.
2. Goofy Greg loved to **exaggerate**.
3. Never **believe** a **lie**.
4. That liar looks **familiar.**

5. **Da**ra checked the **calendar** every **da**y.
6. Mom ate **immediately**.
7. **Emma** faced a **dilemma**.
8. An **island** is **land** surrounded by water.
9. A new **environment** will **iron** me out.
10. It's **necessary** to remember the **cess**pool in the middle.

Can you now write down ten words, the spelling of which you find difficult to remember? Also, create mnemonic devices to remember the spellings correctly.

Listening and Speaking

A. Listen to the words and repeat them. Notice how the b in the end of the words is silent.

com**b** tom**b** thum**b** dum**b**

B. The p in the end of these words is pronounced. Listen to the words and repeat them.

cam**p** dam**p** lam**p** jum**p** stam**p**

C. Listen and tick the words you hear.

1.	dumb	damp
2.	lamp	lamb
3.	thump	thumb
4.	ramp	ram
5.	plumper	plumber

D. Listen to a poem on friendship and repeat it.

E. Think of a friend in class and write the qualities you admire in her/him. Then write her/his faults. Do not write the name of the friend on the chit. After everyone has finished writing the qualities and faults, keep all the chits in a box. Take turns to read out the chits. Let the class guess the name of the person whose qualities and faults are read out.

Writing

A. Imagine you are any one of the following—a tree, a flower, a blackboard. You can talk about the place where you stay and about your surroundings, what you do throughout the day, who visits you and who your best friend is.

B. You arrive in school on the day of your English exam only to realise that the exam on that day is the Science exam and not English. What would your reaction be? How would you handle the test? Write about your feelings.

Activity

A. Make a poster celebrating friendship on Friendship Day.

B. Write a poem on friendship, each one of you taking turns to add a line to a poem that is passed from one person to the next in a group.

4 The Quarrel

Eleanor Farjeon

Warm-up

What is a quarrel? How do people behave when they quarrel? Have you ever quarrelled with anybody? How did you feel about the situation later?

I quarrelled with my brother,
I don't know what about,
One thing led to another
And somehow we fell out.
The start of it was slight,
The end of it was strong.
He said he was right,
I knew he was wrong!

We hated one another.
The afternoon turned black.
Then suddenly my brother
Thumped me on the back,
And said, "Oh, come along!
We can't go on all night—
I was in the wrong."
So he was in the right.

thumped: hit someone with your fist

About the Poet

Eleanor Farjeon (1881 – 1965) was an English author of children's stories, poems and plays. She was encouraged since the age of five by her father to write. She was educated at home, spending much of her time in the attic, surrounded by books. She won many awards, and the famous 'Eleanor Farjeon Award' for children's literature is presented annually in her memory.

Can you find the poet's picture? Paste it here.

Comprehension

A. Answer these questions.

1. Who had a quarrel?
2. How long did the quarrel last?
3. How did it all end?

B. Choose the correct options.

1. When the speaker says the **afternoon turned black**, she means
   a. the afternoon was black in colour. ☐
   b. the afternoon became depressing and sad. ☐
   c. the afternoon became happy because of the quarrel. ☐
2. When the speaker says, *The start of it was slight/but the end of it was strong*, she means
   a. the cause of the quarrel was serious. ☐
   b. the cause of the quarrel was trivial. ☐
   c. the initial cause of the quarrel was casual but it turned into a serious issue. ☐

C. Read the lines and answer the questions.

1. *"Oh, come along!*
   We can't go on all night—
   I was in the wrong."
   a. Who said this and to whom?

b. What does the person mean by these words?

c. Was the person really in the wrong? Give reasons for your answers.

2. *One thing led to another*
And somehow we fell out.

a. What is meant by **one thing led to another**?

b. What is meant by **we fell out**?

c. What happened after the speaker and her brother **fell out**?

D. Think and answer.

1. Do you think they are happy when they quarrel? Quote a line in support of your answer.

2. Did you have a quarrel with someone? How did it end?

Appreciation

A. Pay attention to the rhyme scheme of the poem. To begin with, give each line a number, from 1 to 16. You will notice a pattern. Lines 1 and 3 end with rhyming words—brother and another. So then, what do you think the rhyme scheme is?

1. ABAB 2. AABB 3. ABCB

B. Make a list of all the rhyming words in the poem.

C. How is this poem like a story?

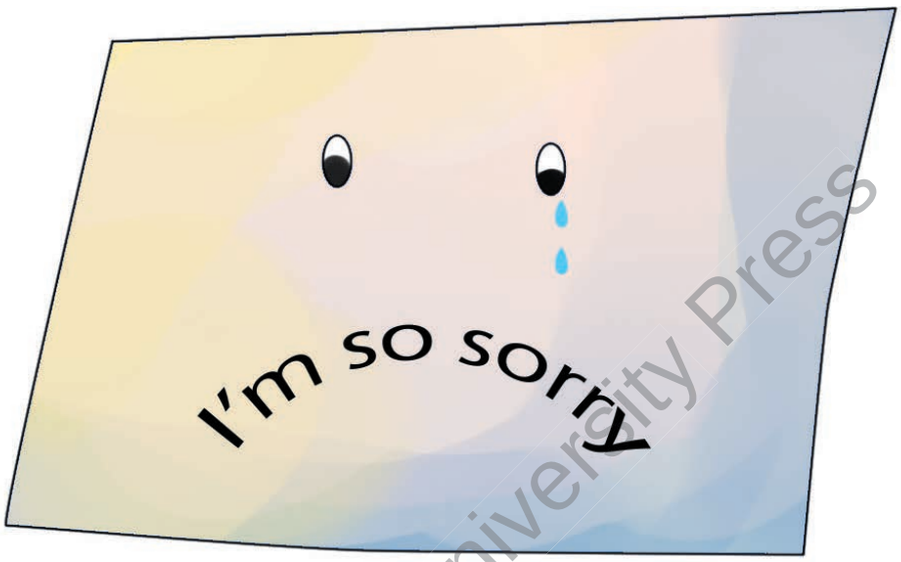
Writing

A. Imagine that your sibling has moved to a hostel. Write a letter to him/her about a quarrel you once had, and how you miss fighting and making up. You can write that now you have all the toys, comics and television to yourself but even then you cannot help missing him/her the most.

B. Imagine that you had a quarrel with your best friend. Write a short note apologising to her/him.

Activity

Sit in groups. Take turns to tell the others of a time when you quarrelled with someone. Narrate how the quarrel started. What happened after that and how did it end? Who made up first? How did you feel during the quarrel and afterwards?



5 Up the Mountain

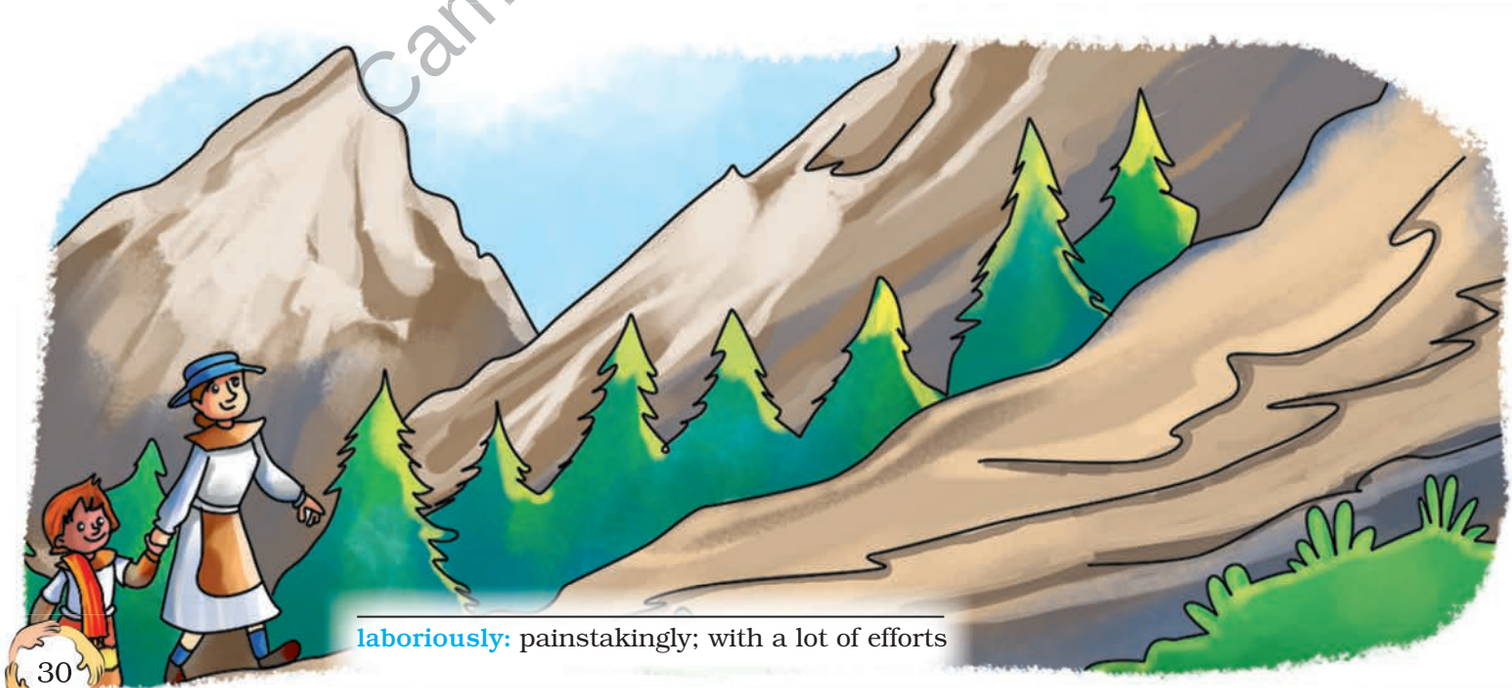
Johanna Spyri

Warm-up

What do you feel about the mountains? Let us think of words that we could associate with mountains: *gigantic*, *rocky*, *pine trees*, etc. Add some more words of your own.

One sunny morning in June, two people were climbing up a mountain path. One was a tall strong-looking woman, the other a child of five. The child had on two dresses, one above the other, over these a red woollen shawl, and on her feet were thick mountain-shoes. She had been made to put on all her clothes in order to save the trouble of carrying them. No wonder she laboriously plodded her way up in the heat.

Hiking means going for long walks, especially in the countryside.



laboriously: painstakingly; with a lot of efforts

"Are you tired, Heidi?" asked her companion.

"No, I am hot," answered the child.

"We shall soon get to the top now. You must walk bravely on a little longer, and take good long steps," said Dete in an encouraging voice.

As Dete walked ahead, the child spotted a young goatherd climbing up a footpath with his goats. She went after him, panting and struggling to catch up. But the heat and the weight of her clothes exhausted her. She looked at the goatherd clad in nothing but a pair of shorts and jumping swiftly along on his bare feet. All at once she sat down on the ground and pulled off her shoes and stockings.

Then she unwound the red shawl before unbuttoning her frock. It was off in a second, but there was another one underneath. Quick as lightning the second frock followed the first. Now the child stood only in her light short-sleeved undergarment. She put her clothes together in a little heap, then went climbing up after the goatherd and the goats. Able now to move at her ease, she leapt and skipped almost as nimbly as the goats.

After some time, Dete caught sight of the little girl and shrieked out: "Heidi, what have you been doing! Where are your two frocks and the red shawl? And the new shoes I bought, and the new stockings I knitted for you—everything gone! Not a thing left! Heidi, where are all your clothes?"

The child quietly pointed to a spot on the mountain side and answered, "Down there." Dete could just make out something lying on the ground, with a spot of red on the top.

"You good-for-nothing little thing!" exclaimed Dete angrily. "Who is going all that way down to fetch them? It's a good half-hour's walk! Peter, you go off and fetch them for me as quickly as you can!"

"I am already late," answered the goatherd, without moving from the spot.

"Well, you won't get far if you keep on standing there," was Dete's cross reply, "but see, you shall have something nice," and she held out a bright new coin. Peter was immediately off down the steep mountain side, taking the shortest cut, and in a very short time returned with the

nimbly: quickly and lightly

bundle of clothes. Dete handed him the promised money, which Peter promptly put in his pocket, his face beaming with delight.

"You can carry the things as far as Uncle's," said Dete. Peter agreed and followed after her, while Heidi and the goats went skipping and jumping joyfully beside him. After a climb of almost an hour, they reached the top of the Alm mountain where Uncle's hut stood. Behind the hut were three old fir trees with long, thick branches. Beyond these rose another wall of mountain.

Against the hut, on the side looking towards the valley, Uncle had put up a seat. Here he was sitting, his hands on his knees, quietly looking out, when the children and the goats climbed into view. Heidi went straight up to the old man and said, "Good-evening, Grandfather."

"So, so, what is the meaning of this?" he asked gruffly, gazing at her from under his bushy eyebrows. Heidi stared steadily back at him. Meanwhile Dete had come up, as Peter put down the bundle and went off with the goats.

Why do you think Heidi's grandfather was angry?

"I wish you good-day, Uncle," said Dete. "I have brought you Tobias and Adelaide's child."

"What has she to do with me?" asked the old man curtly.

"The child is to remain with you," Dete answered. "I have done my duty by her for these four years, and now it is time for you to do yours."

"That's it, is it?" said the old man, as he looked at her with a flash in his eye. "And when the child begins to fret after you, what am I to do with her then?"

"That is your affair," retorted Dete. "I had to put up with her without complaint when she was left on my hands as an infant. Now I have to go and look after my own earnings, and you are the next of kin to the child. If you refuse to keep her, do with her as you like. You will be answerable if harm comes to her."

As she uttered these last words, Uncle rose from his seat and said in a furious voice: "Be off with you this instant, and do not let me see your face again in a hurry."

Dete did not wait to be told twice. "Good-bye to you then, and to you too, Heidi," she called, turning quickly away and descending the mountain at a running pace. Dete was not very happy about what she was doing, for the child had been left in her care by her mother. She quieted herself, however, with the thought that she would do something for the child when she earns plenty of money.

About the Author

Johanna Spyri (1827 – 1901) was a Swiss author. Her book, Heidi, *is popular all over the world. Her other works include* Veronica and Other Friends, The Story of Rico, Moni the Goat-Boy *and* Erick and Sally. *Her works were originally in German and later translated into English. The landscape of Switzerland is very vividly represented in her works.*

Comprehension

A. Write true or false.

1. Heidi and her aunt lived in the mountains. .....
2. Heidi's grandfather lived in the mountains. .....
3. Heidi's aunt was a kind-hearted woman. .....

fret: to worry
infant: a baby or a very young child
next of kin: the closest relative
pace: speed

B. Answer the questions.

1. How was the child dressed? Why was she dressed in this manner?
2. What made her take off all her clothes?
3. How did her aunt react when she saw the child taking off her clothes?

C. Read the lines and answer the questions.

1. *Able now to move at her ease, she leapt and skipped almost as nimbly as the goats.*
   a. Who is **she** here?
   b. Why wasn't she able to move easily before? Why could she do so now?
   c. What does the above sentence tell us about the child?
2. *"I have done my duty by her for these four years, and now it is time for you to do yours."*
   a. Who said this and to whom? How had she done her duty?
   b. What did the speaker expect the other person to do?
   c. How did the listener react to this statement?

D. Think and answer.

1. What is your opinion about Dete? Give instances from the story to support your answer.
2. What do you think about Heidi? Give reasons for your answer.
3. Why do you think Heidi's grandfather became angry at Dete's words?

Language in Use

Adjectives Comparison: **-er/-est**

We know that adjectives talk of the qualities of people/living beings, things or ideas. Qualities of people and things may also be used for comparison.

For example, two sportspersons may compare whose jump was better or two pet-lovers can compare whose pet is better.

An adjective that merely states the quality of a noun without comparison is said to be in the positive degree.

Example:

That man is tall.

An adjective that compares two nouns is said to be in the comparative degree. To identify comparative adjectives, keep the following in mind.

1. When the adjective is monosyllabic, add **-er** to it to make the comparative degree.

   Examples:

   faster, bigger, slower

2. When the adjective has two or more syllables, the word **more** is added in front of it.
3. Comparative adjectives are always followed by the word **than** (not **then**).

Read these sentences.

- This colour is darker than that.
- She is more intelligent than the rest of her class.

An adjective that compares more than two nouns is said to be in the superlative degree. To identify superlative adjectives, keep the following in mind.

1. When the adjective is monosyllabic, **-est** will be added to the word (fast + -est = fastest).
2. When the adjective has two or more syllables, the word **most** is added in front of the adjective (most annoying).

Fill in the blanks with the correct degree of comparison formed from the adjectives in brackets.

1. The ..... (tall) man waiting at the station seemed familiar.
2. He was ..... (tall) than the other men near him.
3. He had on clothes that were ..... (neat) than the others.
4. He also carried a ..... (smart) suitcase.
5. It was obvious that this man was the ..... (smart) man at the station.

Word Power

Read the sentences.

- She had been made to **put on** all her clothes.
- She **pulled off** her shoes and stockings.

Look at the verbs and prepositions in isolation.

put: to keep something

pull: to move something

on: position above something

off: away from a particular position

Now, write the meanings of the phrases that you have derived from the above sentences.

put on: .....

pull off: .....

A **phrasal verb** is a combination of a verb and a preposition. The combination usually has a different meaning from the individual meanings of the two words or verbs or prepositions.

A. Match the phrasal verbs with their meanings.

A	B
1. find out	a. take care of
2. call off	b. omit
3. keep on	c. discover a fact or information
4. leave out	d. continue
5. look after	e. cancel

B. Complete the sentences with the correct phrasal verbs from the exercise above.

1. I can't go out of town unless I find someone to ..... my pets.
2. We will ..... the party if the news about the attack is true.
3. This shopping list is rather long. Can we ..... some items?
4. Never mind the bell; ..... writing till you complete the test.
5. Please ..... the meaning of the given word.

Punctuation

In order to show possession, we add **apostrophe** (') **s** to nouns.

1. For a singular noun, we add **'s** after the noun.
   Examples:
   - the **boy's** book
   - Mr **Mehta's** car
2. For a plural noun, if it ends in -**s**, we add (') after **s.**
   Examples:
   - the **boys'** books
   - the **Mehtas'** car
3. For plural nouns, if it is an irregular plural noun, we add **'s.**
   Examples:
   - the **children's** ball
   - **men's** rights

Place the apostrophe and s wherever required at the correct places.

1. The student comments were asked for by the teacher.
2. The man suit had a stain.
3. The girl pencil box was new.
4. Delhi Airport handles one million passengers luggage.
5. The Smiths boat sank.

Listening and Speaking

A. Listen to the words and repeat them.

answer	about	adult	arithmetic	ago
attic	half	park	father	
late	gate	rebate	mate	plate

B. Repeat the sentences below.

1. The vein was visible in his hand.
2. The train was loaded on the ship.

3. To win the cake you must guess its weight.
4. Mother weighed out a kilo of kindness and half a kilo of patience.

C. Listen to the words and put them under the right column.

Long *a* sound (attic)	Short *a* sound (answer)	Long *a* sound (late)

D. Listen to the teacher giving instructions to students going for an excursion. Now, fill up the following information:

1. Two students will carry ..... bags.
2. The students will carry as clothes five pants, ...
   .....
3. They are not allowed to carry .....
4. They can have ..... for emergency situations.
5. The utensils that they must carry are .....

E. Think and answer.

1. Why do you think two students will be sharing a bag?
2. Each student is asked to carry money for emergency purpose. What **emergency** is meant here?

F. "*Do not carry mobile phones. If found, they will be confiscated at once.*" Do you think this is fair? Those who think it's fair, get into one group. Those who think it's unfair, sit in another group. Both groups will discuss and jot down the reasons. Then have a small debate about the issue.

Writing

A. How do you think Heidi felt when walking up the hill with her aunt. Write eight sentences. Talk of her excitement about the new place, meeting her grandfather, the new animals and the goatherd. Talk of her discomfort with her clothing and her feelings towards her aunt.

B. How do you think Heidi felt after Dete left? Write a diary entry to describe her feelings. You may begin like this:

4 April 2018

Dear Diary, ...

Activity

The story you read is set in Switzerland. It is a mountainous region. Collect pictures (from magazines or the Internet) of flora, fauna, physical features and people that you find related to Switzerland and make a collage. Bring the collage to class.

Language in Use

Worksheet 1

A. Fill in the blanks with the correct abstract nouns.

1. When my friend Arun saw a monster, this is what he felt. .....
2. When my cousin's kitten was sick, this is what she felt. .....
3. When I get a present from my friends, this is the feeling I get. .....

B. Rewrite the sentences using possessive pronouns in place of the highlighted words.

1. This is my pair of spectacles. That is **your pair of spectacles**.

   .....

2. Is this Ira's book? No, **her book** is in the box.

   .....

3. Shireen, is this your book? No, **my book** is on the table.

   .....

Word Power

A. Answer the following questions.

1. The word **sun-burned** means
   a. skin getting sore due to excessive exposure to the sun. .....
   b. paper burnt by the sun. .....
2. The word **khaki** means
   a. green-brown colour. .....
   b. blue-black colour. .....

B. Use adjectives with the structure as + adjective + as or not + as + adjective + as to complete the sentences.

1. The second book in the series is ..... the first one.
2. My little sister jumps on the trampoline ..... any of her classmates.
3. I could work ..... anyone.

Writing

Write a paragraph based on the following clues.

you are visiting your family's old home in a village—you make a friend on the train—who is this friend—describe her/him—what do you like about her/him—what do you talk about—how do you want to keep in touch

Language in Use

Complete the following sentences by filling in words that are used for comparisons, and end with -er or -est. (There will be some exceptions in how these words are formed.)

1. My room is warm, but yours is ..... . The drawing room is the ..... . (warm)
2. This cake is good, but the one we ate for your birthday was ..... (tasty)
3. Mom's cooking is the ..... .(good)

Word Power

Rewrite the paragraph below by replacing the underlined sections with the appropriate form of the phrasal verbs from the box.

let (somebody) down	break down	bring up	chip in
count on (somebody)	get along with	give up	

Our car was so old that we knew it would stop working any day now. On this particular day, our friends were expecting us to help them, and we also wanted to contribute. Mr Biswas had raised Prakash since he was a child, and he did not want to disappoint him. It's true that we did not like Mr Das a lot, but we could not surrender so easily.

Writing

A girl who has lived in the mountains all her life goes to the city for the first time. Imagine you are that girl, and write a short paragraph describing her first experience in the city.

Sample Test Paper

Comprehension

Read the passage and answer the following questions.

"Lord Krishna loved squirrels," said Ramu. "He would take them in His arms and stroke them with His long fingers. That is why they have four dark lines down their backs from head to tail. Krishna was very dark, and the lines are the marks of His fingers." It seemed that both Ramu and Grandfather were of the opinion that we should be more gentle with birds and animals, and not harm them.

1. State whether the following statements are true (T) or false (F).
   a. The story Ramu told the speaker was a fairy tale. .....
   b. Ramu was a sensitive boy. .....

Language in Use

A. Underline the concrete nouns in these sentences.

1. Tina is looking for a pet dog.
2. She went to the pet shop at New Market.
3. The owner showed her many dogs of many breeds.
4. Tina felt confused and so she took a bus and went home.
5. At her gate, she heard a tiny whine and found a small white pup.
6. It looked at her with melting eyes. She had found her friend.

B. Underline the abstract nouns in these sentences.

1. The soldiers showed a lot of bravery on the battlefield.
2. I respect the honesty that the little girl showed.
3. To my delight, everyone came to the party.
4. He was in great despair when his team lost the game.
5. Their parents have a lot of hope for the future of their kids.
6. They danced in joy when they won the trophy.
7. My mother always shows great compassion for the unfortunate.

C. Write the comparative forms for the following.

1. ugly ..... 2. good .....
3. grand ..... 4. wet .....
5. slippery ..... 6. smooth .....
7. warm ..... 8. hard .....
9. bad ..... 10. small .....

Word Power

A. Use adjectives with the structure as + adjective + as or not + as + adjective + as to complete the sentences.

1. This dress is ..... the one you found on sale. (good)
2. You are now ..... your mother! (tall)
3. Our army is ..... yours. (big)
4. Seema cut her hair to make it ..... her brother's. (short)
5. Small details are ..... the overall plan. (important)
6. I am ..... you. (tall)
7. Rini works ..... Shamu. (hard)

B. Fill in the blanks with the phrasal verbs from the box. Change the forms where necessary.

pass away	look forward to	do without	make up
carry away	break out	run out	keep

1. The dengue epidemic usually ..... at this time of the year.
2. I ..... to seeing you all soon.
3. That was great! ..... the good work.
4. She got ..... by all the glamour.
5. I have ..... my mind to go on the trip.
6. His grandfather ..... last night.
7. She just can't ..... ketchup.
8. The milk has ..... Please get some.

Writing

Write a letter to your friend telling her/him about an interesting place that you visited and the new friends that you made there.

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Mathematics

1 Numbers

warm-up

1. Write the numerals for the following number names.
   a. Four thousand six hundred twenty-nine
   b. Two thousand thirty-six
   c. Nine thousand nine hundred seventy-nine
   d. One thousand one hundred ten
2. Write the following numbers in words.
   a. 3569 b. 1001
   c. 2475 d. 1189
3. Fill in the boxes with >, <, or = sign.
   a. 6003 ☐ 6030 b. 4301 ☐ 4301
   c. 4891 ☐ 3988 d. 2499 ☐ 8111
4. Write the predecessors and successors of the following numbers.
   a. ..... 2495 ..... b. ..... 6481 .....
   c. ..... 2299 ..... d. ..... 1600 .....

Numbers

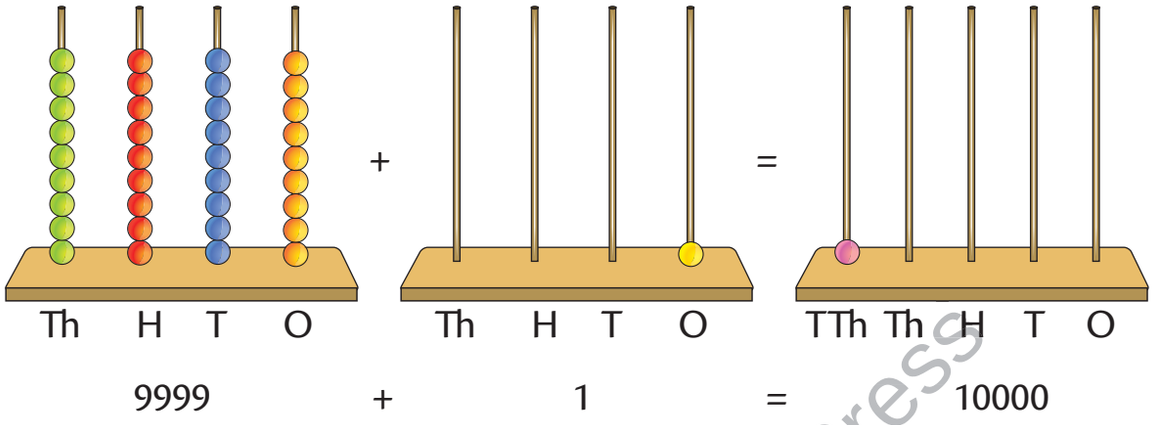
Knowledge Hub

A number is a count or measurement of anything, whereas a numeral is a symbol that stands for a number. We always write numbers using numerals, for example, writing a 4-digit number as 2,523, is known as a numeral.

Here, we are going to study two different systems of numeration. But before that, let us look into 5- and 6-digit numbers.

5- and 6-digit Numbers

From 1000 to 9999, all the numbers are 4-digit numbers. Now, let us count beyond 9999 i.e., largest 4-digit number. When we add 1 to the largest 4-digit number, we get the smallest 5-digit number i.e., 10000 (ten thousand).



Let us now read some 5-digit numbers.

10003 will be read as ten thousand three.

10043 will be read as ten thousand forty-three.

10914 will be read as ten thousand nine hundred fourteen.

18056 will be read as eighteen thousand fifty-six.

Similarly, 99999 is the largest 5-digit number. On adding 1 to the largest 5-digit number, we get the smallest 6-digit number, 100000 which is read as, one lakh.

Let us now read some 6-digit numbers.

100005 will be read as one lakh five.

100259 will be read as one lakh two hundred fifty-nine.

108541 will be read as one lakh eight thousand five hundred forty-one.

112951 will be read as one lakh twelve thousand nine hundred fifty-one.

Indian System of Numeration

To make reading easy, the digits are grouped into different periods or categories. The ones, tens and hundreds digits are grouped to form the **Ones** period. The thousands and ten thousands digits are grouped to form the **Thousands** period. The lakhs and ten lakhs digits are grouped to form the **Lakhs** period.

Lakhs Period		Thousands Period		Ones Period		
Ten Lakhs (TL)	Lakhs (L)	Ten Thousands (T Th)	Thousands (Th)	Hundreds (H)	Tens (T)	Ones (O)

Use of Commas

When a number is written, each period is separated by commas. These commas help us to recognise the numbers and read them. For example, a 3-digit number 528 has only ones period so no commas are used. It is read as, five hundred twenty-eight.

A 4-digit number 4239 has 2 periods (thousands and ones period), so a comma is used to separate them and it is written as 4,239. It is read as, four thousand two hundred thirty-nine.

A 5-digit number 63231 has 2 periods (thousands and ones period), so a comma is used to separate them and it is written as 63,231. It is read as, sixty-three thousand two hundred thirty-one.

A 6-digit number 649278 has 3 periods (lakhs, thousands and ones period), so two commas are used to separate them and it is written as 6,49,278. It is read as, six lakh forty-nine thousand two hundred seventy-eight.

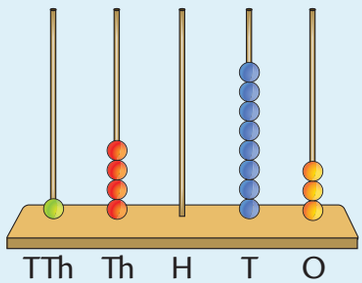
Active Maths

Numbers on Abacus

Bring an abacus to the classroom from the Mathematics Laboratory. Ask the students to work in pairs. Call out any one pair to form any 5- or 6-digit number on an abacus.

Now, ask another pair to read out the number represented by the pair. Extend the activity by asking them to write its number name on the blackboard.

For example, pair 1 represents the number as shown on the abacus. Then pair 2 should read out the number represented as 14,083 and the number name written should be fourteen thousand eighty-three.



Let's Practice 1.1

1. Write the numerals for the following number names.
   a. Eight lakh five hundred nine .....
   b. Sixty-two thousand fifty .....
   c. One lakh sixteen thousand fourteen .....
   d. Fifty-three thousand three hundred sixty-seven .....
   e. Four lakh eleven thousand two hundred two .....
   f. Seven lakh nineteen thousand nineteen .....

2. Write the number names for the following numerals.
   a. 20,539 b. 56,225 c. 89,999
   d. 2,09,538 e. 9,26,439 f. 1,30,000

3. Insert commas according to the Indian system of numeration.
   a. 51467 b. 81862 c. 80010
   d. 790611 e. 97970 f. 571253

Place Value and Face Value

As discussed, we can divide the place value chart into three periods, i.e., ones period, thousands period and lakhs period. The place value of a digit depends on the position of the digit in the number. Face value of a digit is the digit itself.

For example, the place value and face value of the digits in a number 6,49,278 is:

6,49,278	Place Value	Face Value
	8 Ones = 8 × 1	8
	7 Tens = 7 × 10	7
	2 Hundreds = 2 × 100	2
	9 Thousands = 9 × 1,000	9
	4 Ten Thousands = 4 × 10,000	4
	6 Lakhs = 6 × 1,00,000	6

Expanded and Standard Form of Numbers

Expanded form is the sum of the place value of all the digits of a number. For example, let us take 53,629. The expanded form of this number can be shown as:

$53,629 = 50,000 + 3,000 + 600 + 20 + 9$

Or $5 \times 10,000 + 3 \times 1,000 + 6 \times 100 + 2 \times 10 + 9 \times 1$

Let us take another number 7,30,916 and write its expanded form.

$7,30,916 = 7,00,000 + 30,000 + 0 + 900 + 10 + 6$

Or $7 \times 1,00,000 + 3 \times 10,000 + 0 \times 1,000 + 9 \times 100 + 1 \times 10 + 6 \times 1$

The reverse of expanded form is known as standard/short form. When we write a number for the given expanded form, it is called the standard/short form of the number. For example, the standard form of $6 \times 10,000 + 5 \times 1,000 + 6 \times 100 + 8 \times 10 + 0 \times 1 = 65,680$.

Let's Practice 1.2

1. Write the following numbers in the place value chart.

Numbers	L	T Th	Th	H	T	O
31,209						

74,368						
63,021						
8,00,519						
9,00,000						
2,69,739						

2. Write the place value of the underlined digit.

   a. 2̲9,381 b. 16,2̲89 c. 5̲,00,981

   d. 51̲,408 e. 92,51̲2 f. 1,00̲,236

3. Write the face value of the underlined digits.

   a. 4̲,09,288 b. 99,999̲ c. 26̲,153

   d. 1̲9,919 e. 9̲,25,981 f. 1,00,0̲00

4. Write the expanded form of the following numbers.

   a. 29,618 b. 68,192 c. 55,960

   d. 8,59,268 e. 6,27,634 f. 5,00,687

5. Write the standard form of the following numbers.

   a. 60,000 + 2,000 + 800 + 50 + 7

   b. 10,000 + 4,000 + 600 + 80 + 5

   c. 8,00,000 + 20,000 + 800 + 7

   d. 5 × 10,000 + 3 × 100 + 6

   e. 5 × 1,00,000 + 3 × 10,000 + 8 × 1,000 + 6 × 100 + 5 × 10 + 7 × 1

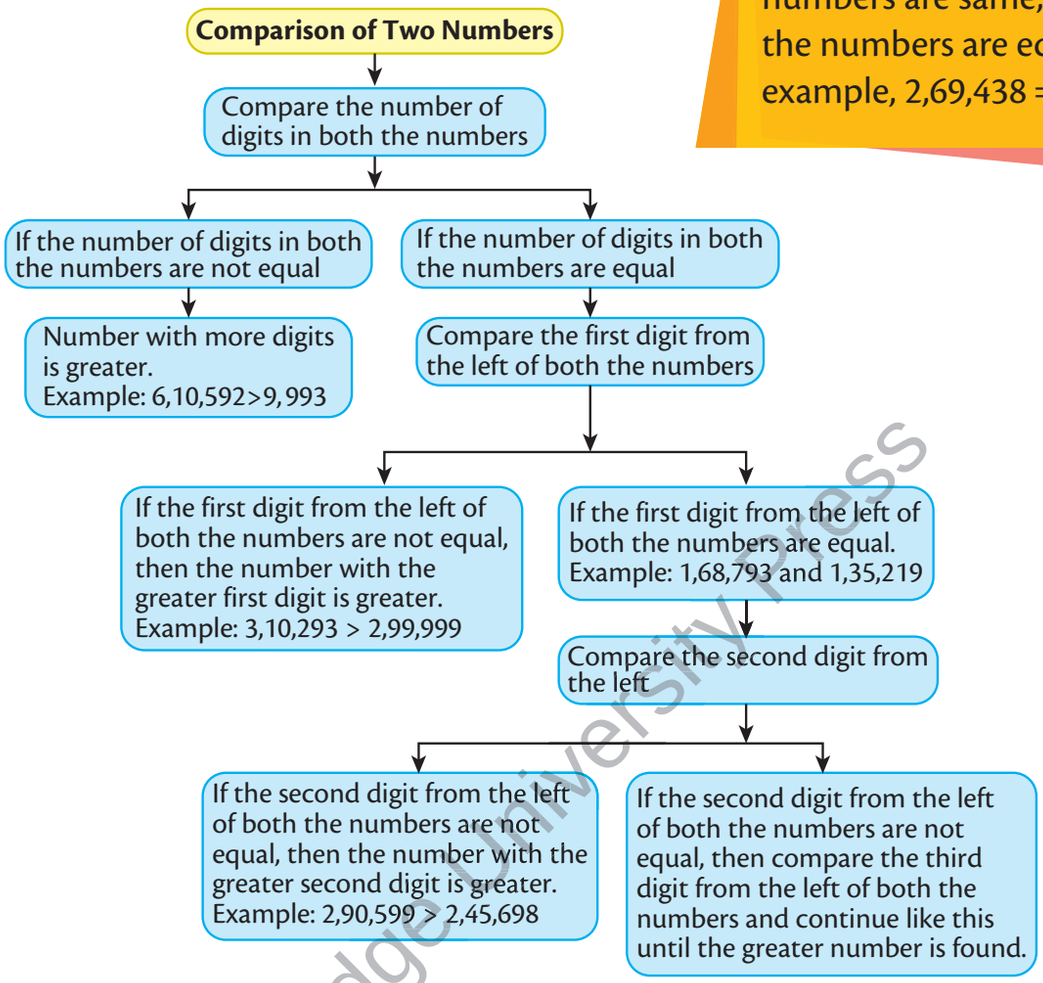
   f. 4 × 1,00,000 + 5 × 10,000 + 2 × 100 + 7 × 10 + 1 × 1

Comparing Numbers

To compare two or more numbers, follow these rules.

Remember

If all the digits of any two numbers are same, then both the numbers are equal. For example, 2,69,438 = 2,69,438.



Example: Compare the following numbers and write < or > in the given boxes.

a. 2,62,538 ☐ 3,70,439

b. 8,19,308 ☐ 8,12,569

c. 6,99,000 ☐ 99,999

d. 9,01,458 ☐ 9,01,459

Solution: a. 2,62,538 and 3,70,439 have equal number of digits.

So, let's compare the first digit from the left of both the numbers i.e., 2 and 3. Here, 2 < 3.

Therefore, 2,62,538 [<] 3,70,439.

b. 8,19,308 and 8,12,569 have equal number of digits. So, let's compare their first digits from the left i.e., 8 and 8. Here, 8 = 8.

Now, compare their second digits from the left i.e., 1 and 1. Here, 1 = 1.

Now, compare their third digits from the left i.e., 9 and 2. Here, 9 > 2.

Therefore, 8,19,308 [>] 8,12,569.

c. 6,99,000 has more digits than 99,999.

Therefore, 6,99,000 [>] 99,999.

d. 9,01,458 and 9,01,459 have equal number of digits.

Their first digits from the left are same (9 = 9).

Their second digits from the left are same (0 = 0).

Their third digits from the left are same (1 = 1).

Their fourth digits from the left are same (4 = 4).

Their fifth digits from the left are same (5 = 5).

On comparing their sixth digits from the left, we get 8 < 9.

Therefore, 9,01,458 [<] 9,01,459.

Ascending and Descending Orders

Ascending order means arranging numbers from the smallest to the greatest.
For example, the numbers 2,68,459; 8,15,291; 5,24,809; 10,000 are arranged in ascending order as 10,000 < 2,68,459 < 5,24,809 < 8,15,291.

Descending order means arranging numbers from the greatest to the smallest.
For example, the numbers 5,86,498; 9,13,299; 8,50,450 and 55,000 are arranged in descending order as 9,13,299 > 8,50,450 > 5,86,498 > 55,000.

Forming the Greatest and the Smallest Numbers

Without Repetition

To form the largest number using the given digits, we need to arrange the given digits in descending order. For example, to form the largest 6-digit number using the digits 4, 0, 9, 8, 2 and 3, without repeating the digits is 9,84,320.

To form the smallest number using the given digits, we need to arrange the given digits in ascending order. For example, to form the smallest 5-digit number using the digits 3, 7, 2, 4, 8, without repeating the digits is 23,478.

Remember

When forming the smallest number using the given digits, with zero as one of the digits, the second smallest digit comes in the leftmost place and the zero next to it. For example, to form the smallest 5-digit number using the digits 4, 0, 9, 8 and 3, without repeating the digits is 30,489.

With Repetition

To form the largest number using the given digits (when repeated only once), we keep the greatest of the given digits at the two left positions and the remaining places are filled with the remaining digits in descending order. For example, to form the largest 5-digit number using the digits 6, 7, 0, 2, when repetition of the digits is allowed only once is 77,620.

To form the smallest number using the given digits (when repeated only once), we keep the smallest of the given digits at the two leftmost positions and the remaining places are filled with the remaining digits in ascending order. For example, to form the smallest 6-digit number using the digits 5, 3, 4, 1, 6, when repetition of the digits is allowed only once is 1,13,456. While the smallest 6-digit number using the digits 5, 0, 4, 1, 6, when repetition of the digits is allowed only once is 1,00,456.

Let's Practice 1.3

1. Compare the following numbers and fill in the boxes using >, <, or = sign.
   a. 83,777 ☐ 8,92,376
   b. 2,13,195 ☐ 2,13,591
   c. 9,99,999 ☐ 1,00,000
   d. 2,19,538 ☐ 1,28,958
   e. 7,23,193 ☐ 8,23,913
   f. 53,298 ☐ 53,298
2. Arrange the following numbers in ascending order.
   a. 83,237; 83,219; 98,219; 99,308
   b. 60,958; 60,859; 60,589; 3,95,830
   c. 2,39,638; 2,63,938; 5,83,108; 5,83,801
   d. 6,85,209; 9,99,000; 8,10,000; 7,99,198
   e. 8,99,338; 8,99,833; 8,99,614; 99,200
   f. 5,19,236; 62,239; 9,299; 648
3. Arrange the following numbers in descending order.
   a. 69,298; 81,593; 66,283; 38,197
   b. 68,283; 61,204; 83,300; 61,337
   c. 4,38,196; 5,46,111; 6,20,133; 3,43,247
   d. 2,37,168; 5,96,214; 28,263; 66,429
   e. 6,71,247; 3,99,193; 6,83,144; 33,297
   f. 8,38,221; 1,21,119; 1,18,183; 4,43,100

4. Form the greatest 5- or 6-digit number using the following digits, without repeating any digit.

   a. 4, 6, 7, 5, 1 b. 8, 0, 1, 9, 2 c. 2, 0, 7, 1, 6

   d. 6, 4, 3, 2, 8, 1 e. 4, 6, 3, 5, 9, 1 f. 2, 4, 6, 8, 0, 9

5. Form the smallest 5- or 6-digit number using the following digits, without repeating any digit.

   a. 4, 6, 8, 5, 3 b. 2, 0, 1, 9, 8 c. 7, 1, 6, 8, 2

   d. 6, 5, 0, 1, 2, 4 e. 7, 9, 8, 1, 2, 0 f. 8, 1, 3, 7, 9, 5

6. Form the greatest 5-digit number using the following digits, when repetition of the digits is allowed only once.

   a. 8, 0, 1, 4 b. 7, 6, 1, 3 c. 4, 1, 0, 9

   d. 8, 7, 6, 5 e. 0, 2, 9, 1 f. 8, 0, 1, 9

7. Form the smallest 6-digit number using the following digits, when repetition of the digits is allowed only once.

   a. 5, 0, 1, 7, 9 b. 4, 3, 9, 6, 1 c. 8, 0, 1, 2, 3

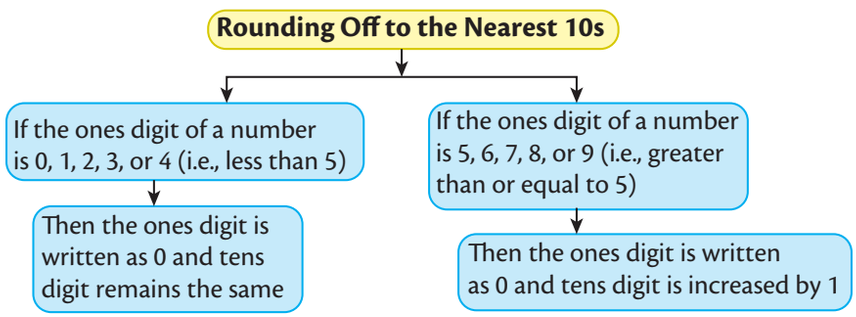
   d. 1, 9, 7, 6, 5 e. 8, 7, 0, 1, 3 f. 7, 9, 8, 0, 1

Rounding Off Numbers

Rounding off means making a number simpler but keeping its value close to what it was. For example, in a wedding, one can guess that there are around 300 people. Note that this a rough estimate. There can be 250 or 290 people attending the wedding. Let us study how we can round off the numbers.

Rounding Off to the Nearest 10s

To round off a number to the nearest 10s, we check the digit at the ones place of the number, and round off accordingly.



Example: Round off the following numbers to the nearest 10s.

a. 4,28,369 b. 2,31,422

Solution: a. The digit at the ones place in the number 4,28,369 is 9 (which is greater than 5).

So, the digit at the tens place, i.e., 6 will be increased by 1. Thus, 6 + 1 = 7.

And, the digit at the ones place becomes 0.

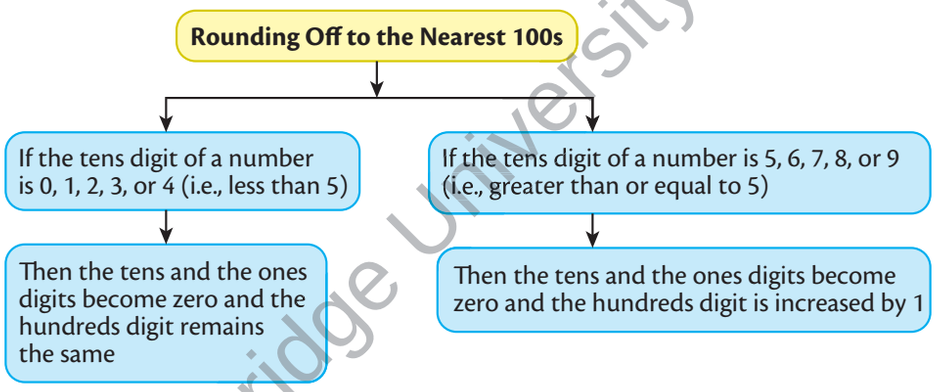
Thus, 4,28,369 rounded off to the nearest 10s becomes 4,28,370.

b. The digit at the ones place in 2,31,422 is 2 (which is lesser than 5). So, the digit at the tens place, i.e., 2 will remain the same and digit at the ones place becomes 0.

Thus, 2,31,422 rounded off to the nearest 10s becomes 2,31,420.

Rounding Off to the Nearest 100s

To round off a number to the nearest 100s, we check the second last digit (i.e., the digit at the tens place) of the number and round off as shown here.



Example: Round off the following numbers to the nearest 100s.

a. 6,38,519 b. 2,88,671

Solution: a. The tens digit of 6,38,519 is 1 (which is less than 5).

So, the digit at the hundreds place will remain the same and the tens and the ones digits will become zero.

Thus, 6,38,519 rounded off to the nearest 100s is 6,38,500.

b. The tens digit of 2,88,671 is 7 (which is greater than 5).

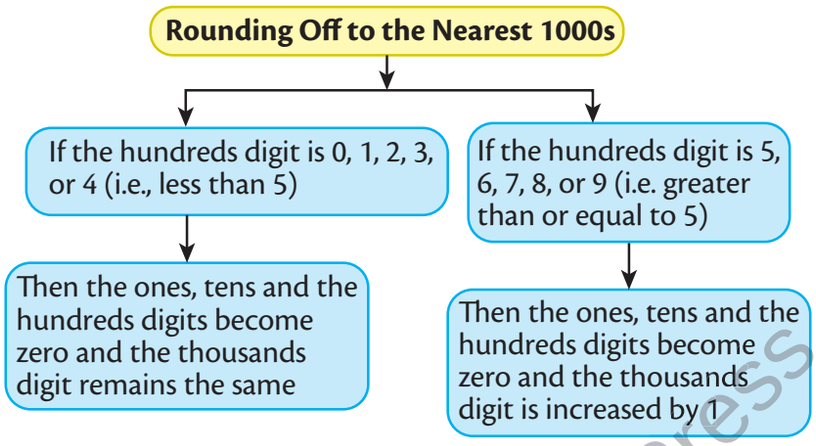
So, the digit at the hundreds place, i.e., 6 is increased by 1, i.e., 6 + 1 = 7.

And the digits at the tens and the ones place becomes zero.

Thus, 2,88,671 rounded off to the nearest 100s is 2,88,700.

Rounding Off to the Nearest 1000s

To round off a number to the nearest 1000s, check the digit at the hundreds place, i.e., the third last digit of the number and round it off as shown on the next page.



Example: Round off the following numbers to the nearest 1000s.

a. 4,88,299 b. 6,19,520

Solution: a. The digit at the hundreds place in 4,88,299 is 2 (which is lesser than 5).

So, the digit at the ones place, i.e., 9 becomes 0.

The digit at the tens place, i.e., 9 becomes 0.

The digit at the hundreds place, i.e., 2 becomes 0.

The digit at the thousands place remains the same, i.e., 8.

Therefore, 4,88,299 rounded off to the nearest 1000s becomes 4,88,000.

b. The digit at the hundreds place in 6,19,520 is 5 (which is equal to 5).

So, the digit at the ones place becomes 0.

The digit at the tens place becomes 0.

The digit at the hundreds place becomes 0.

The digit at the thousands place is increased by 1. Thus, $9 + 1 = 10$.

Since, 10 is a 2-digit number. So, 0 will remain at the thousands digit and 1 will be carried over to the ten-thousands digit. Thus, $1 + 1 = 2$.

Thus, 6,19,520 rounded off to the nearest 1000s becomes 6,20,000.

Remember

1. To round off a number to the nearest 10s, check the ones digit of that number.
2. To round off a number to the nearest 100s, check the tens digit of that number.
3. To round off a number to the nearest 1000s, check the hundreds digit of that number.

Let's Practice 1.4

1. Round off the following numbers to the nearest 10s.

   a. 29,013 b. 38,150 c. 6,99,281

   d. 2,88,519 e. 6,84,214 f. 6,75,399

2. Round off the following numbers to the nearest 100s.

   a. 83,243 b. 48,905 c. 6,00,200

   d. 8,70,281 e. 4,29,050 f. 18,999

3. Round off the following numbers to the nearest 1000s.

   a. 16,285 b. 90,065 c. 28,483

   d. 1,68,792 e. 1,00,199 f. 61,299

4. State whether the following statements are true or false.

   a. 85,293 rounded off to the nearest 100s is 85,200. .....

   b. 81,999 rounded off to the nearest 10s is 82,000. .....

   c. 8,90,681 rounded off to the nearest 1000s is 8,91,681. .....

   d. 4,28,156 rounded off to the nearest 10s is 4,28,160. .....

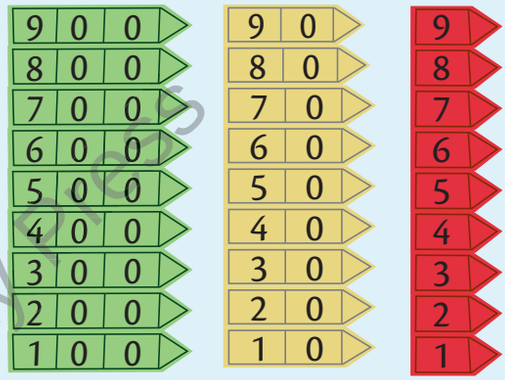
   e. 2,39,001 rounded off to the nearest 1000s is 2,39,001. .....

   f. 6,89,000 rounded off to the nearest 100s is 6,89,100. .....

Active Maths

Rounding Off Numbers

Form groups of 4. Ask each group to form arrow cards, such that, the red card depicts ones place and on it write numbers such as 1, 2, 3, …, 9; yellow card depicts tens place and on it write numbers such as 10, 20, 30, …, 90; and green card depicts hundreds place, therefore, write the numbers such as 100, 200, 300, …, 900, on it until lakhs place. Now, ask each student of the group to pick any one arrow card from each set. Overlap the cards and line up to form a 5- or 6-digit number and arrange the numbers in ascending or descending order.



Once all the students of the group have formed the numbers, ask them to round off the greatest/smallest number to the nearest 10s, 100s, or 1000s.

Knowledge Hub

Roman Numerals

The digits we use today i.e. 0 to 9 are Hindu-Arabic Numerals. Roman numbers are written using a few letters of English. Let us study these letters and their equivalent numbers.

Roman Numeral	I	V	X	L
Number	1	5	10	50

Ancient Romans used Roman numerals as their numbering system. We can write all the numbers in Roman numerals using the seven English letters, i.e, I, V, X, L, C, D and M.

Romans were very good in trade and commerce and they developed their number system centuries ago. Romans developed Roman numerals so that they could fix the price of goods and services. Even after the fall of the Roman Empire, Roman numerals continued to be used. Roman numerals are also used in the present time and in our present language.

Some of the examples showing the usage of Roman numerals are as follows:

1. Roman numerals are used to refer kings or queens or emperors, for example, Queen Elizabeth II, King Louis XII.
2. Famous games like Olympics and Commonwealth use Roman numerals to represent number or edition of the game being organised. For example, the Commonwealth games held in 2010 are represented as the XIX Commonwealth games.

3. In many schools, classes are identified by Roman numerals. For example, Class I, Class II, Class III, Class IV and so on.
4. Many clocks and wrist watches have hours marked in Roman numerals.

Let us observe the rules for writing Roman numerals.

1. An alphabet can be used for maximum 3 times to write a Roman numeral.
2. If the smaller symbol is written before the larger symbol, it means subtraction.

   For example, IV = V – I = 5 – 1 = 4

   IX = X – I = 10 – 1 = 9
3. If the smaller symbol is written after the larger symbol, it means addition.

   For example, VI = V + I = 5 + 1 = 6

   XV = X + V = 10 + 5 = 15

Remember

Romans didn't have any symbol for zero.

Example 1: Write the following in Hindu-Arabic numerals.

a. XXIV b. XXXIV c. XIX

Solution: a. XXIV means X + X + V – I = 10 + 10 + (5 – 1) = 24

b. XXXIV means X + X + X + V – I = 10 + 10 + 10 + (5 – 1) = 34

c. XIX means X + X – I = 10 + (10 – 1) = 19

Example 2: Write the following numbers in Roman numerals.

a. 32 b. 17 c. 25

Solution: a. 32 = 10 + 10 + 10 + 2 = XXXII

b. 17 = 10 + 5 + 2 = XVII

c. 25 = 10 + 10 + 5 = XXV

Let's Practice 1.5

1. Write the Hindu-Arabic numerals for the following Roman numerals.

   a. XXXIII b. XXIV c. XXXIX

   d. VIII e. X f. XVI

2. Write the following numbers in Roman numerals.

   a. 5 b. 12 c. 39

   d. 31 e. 11 f. 29

3. Check whether the Roman numerals written against the given number names are correct or not. Put (✓) if it is correct and (×) if it is wrong in the given table.

Number Names	Roman Numerals	✓ or ×
Twenty-seven	XXVII	
Thirty-eight	XXXVIII	
Twenty-six	XXIV	
Nineteen	XXI	
Thirty-two	XXXII	
Twenty-five	XXV	

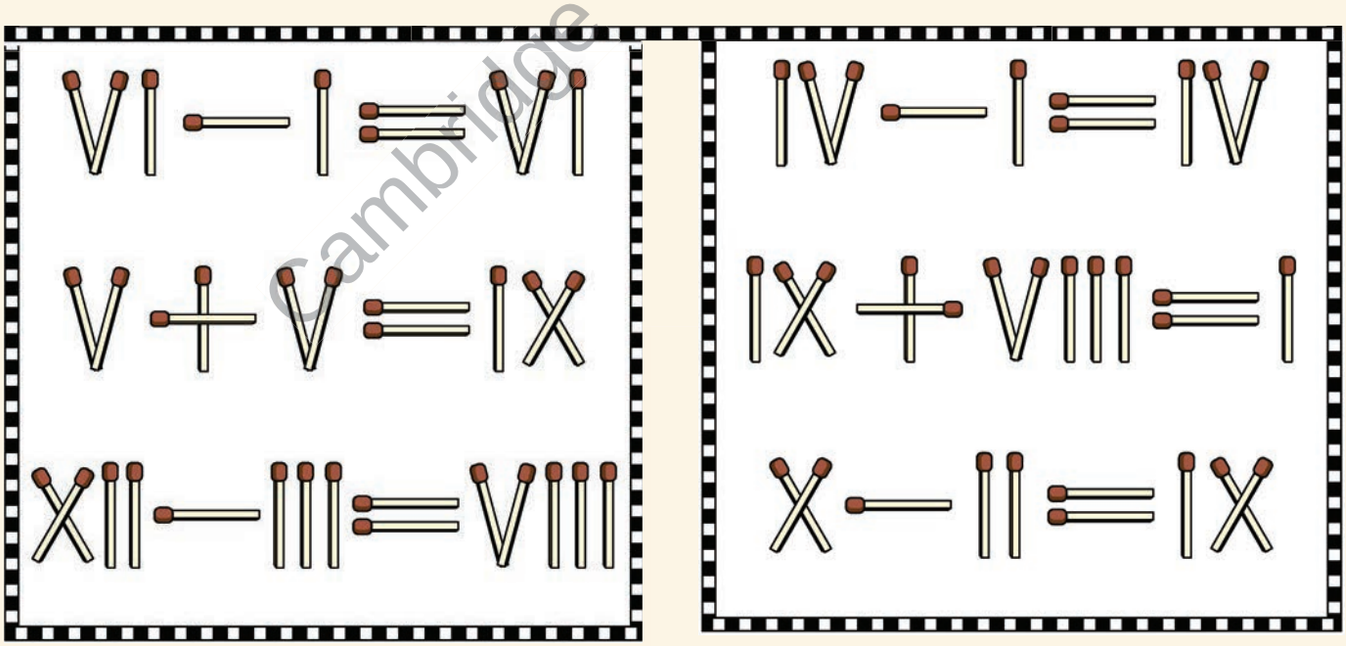
Summary

- Place value of a digit depends on the position of the digit in the number, whereas, the face value of a digit is the digit itself.
- Expanded form is the sum of the place values of all the digits of a number.
- Ascending order means arranging the numbers from the smallest to the largest.
- Descending order means arranging the numbers from the largest to the smallest.
- To compare two numbers, always compare their digits from the left to the right.

- To form the largest number using the given digits, arrange the digits in the descending order. While forming the smallest number using the given digits, arrange the digits in the ascending order.
- To round off a number to the nearest 10s, we check the ones digit of the number.
- To round off a number to the nearest 100s, we check the tens digit of the number.
- To round off a number to the nearest 1000s, we check the hundreds digit of the number.
- Roman numerals from 1 to 39 can be written using only three alphabets I, V and X.
- Roman numerals do not have any symbol (or alphabet) to represent zero.

Brain Teaser

1. Form the largest and the smallest 6-digit numbers using the digits 7, 0, 5, 1, when repetition of any digit is allowed maximum of two times.
2. In every row, cross out just one matchstick to make the statement correct.



Assessment

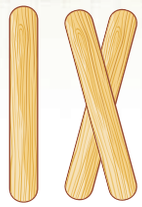
1. Insert commas according to the Indian system of numeration to separate the periods in the following numbers.
   a. 31450 b. 50071 c. 315160 d. 987231 e. 504040
2. Write the number names of the following numbers using the Indian system of numeration.
   a. 17324 b. 56754 c. 516164 d. 705006 e. 394873
3. Write the place value of the underlined digits of the following numbers.
   a. 16,<u>4</u>15 b. 68,49<u>5</u> c. 5,5<u>7</u>,430 d. <u>4</u>,15,560
4. Write the face value of the underlined digits of the following numbers.
   a. <u>6</u>8,481 b. 93,<u>8</u>92 c. 8,1<u>1</u>,500 d. 6,32,14<u>0</u>
5. Write the expanded form of the following numbers.
   a. 2,88,193 b. 16,890 c. 7,19,114 d. 65,394
6. Write the standard form of the following numbers.
   a. $4 \times 1,00,000 + 6 \times 10,000 + 2 \times 100 + 5$
   b. $6 \times 1,00,000 + 8 \times 10,000 + 4 \times 1,000 + 3 \times 100 + 5 \times 10 + 9$
   c. $5 \times 10,000 + 7 \times 1,000 + 2 \times 100 + 1$
7. Arrange the following numbers in descending order.
   4,93,218; 16,252; 18,295; 2,62,193; 5,99,000
8. Form the smallest 6-digit number using the digits 5, 1, 8, 6 and 3, when repetition of the digits is allowed only once.
9. Compare the following numbers and write > or < sign in the given boxes.
   a. 16,285 ☐ 4,83,210 b. 2,88,199 ☐ 8,22,991
   c. 6,80,000 ☐ 99,000 d. 4,22,198 ☐ 4,81,222
   e. 2,93,461 ☐ 2,93,416 f. 7,25,429 ☐ 2,61,722
10. Round off the following numbers to the nearest 100s and 1000s.
    a. 4,88,216 b. 6,89,299 c. 1,10,011 d. 5,67,200
11. Express the following numbers in Roman numerals.
    a. 32 b. 12 c. 29 d. 19

Activities

Individual work

Roman Numerals

Collect some ice creams sticks. Now, form at least 5 Roman numerals from 1 to 39 by arranging ice cream sticks on a chart paper. For example, 9 can be written by placing three ice cream sticks as shown.



After forming the Roman numerals, exchange the same with your partner and ask him/her to write the numeral for the same.

Group work

Forming Numbers

Form groups of four. Ask each group to collect cutouts from newspapers or magazines of news articles involving 5- and 6-digit numbers. Now, ask them to make a collage of these cutouts on a chart paper and write their number names using the Indian system of numeration.

Extend the activity by asking the following facts.

1. How many 5- and 6-digit numbers are there in the collage?
2. Pick up any 5 numbers and arrange them in ascending order.
3. Pick a 5-digit number and form the greatest and the smallest 6-digit numbers using its digits, when repetition of digits is allowed only once.

Enrichment

International System of Numeration

As we have studied about the Indian system of numeration, let us now have a look at another numeration system, i.e., International system of numeration.

Thousands Period			Ones Period		
Hundred Thousands (HTh)	Ten Thousands (TTh)	Thousands (Th)	Hundreds (H)	Tens (T)	Ones (O)

In International system of numeration, just like the Indian system, ones, tens and hundreds are placed under the ones period. Thousands, ten thousands and hundred thousands (i.e., lakhs in Indian system) are placed under the thousands period.

Here also, we use commas to separate periods. For example, 634176 is written as, 634,176 (as the thousands period is having three places) and is read as six hundred thirty-four thousand one hundred seventy-six.

2 Addition and Subtraction

warm-up

Subject Connect

Solve the following questions. Each digit of the answer represents a letter as shown in the table below. Decode the same to know the hidden words and write the answer in the given boxes.

Digits	1	2	3	4	5	6	7	8	9	0
Letters	E	D	A	W	S	I	U	N	O	R

1. 438 + 96 = ... 2. 109 + 251 = ... 3. 478 + 100 = ...

4. 620 − 107 = ... 5. 709 − 241 = ... 6. 464 − 250 = ...

Form sentences with the words formed.

Addition of 4-digit Numbers

Knowledge Hub

On a holiday, Samantha opened her piggy bank and found that she had the following notes.

Life Connect

Thus, Samantha has ₹ 500 + ₹ 500 + ₹ 500 = ₹ 1500 in her piggy bank.

If Samantha's father gave a ₹ 2000 note on her birthday to put in her piggy bank, then help her to find the total amount she has in all.

For this, let us first learn to add two 4-digit numbers.

Do you also save your money in a piggy bank?

Without Regrouping

Just like 3-digit numbers, addition of 4-digit numbers is also done from the right to the left. First, we add the digits at the ones place, then the digits at the tens place, then the digits at the hundreds place, followed by the thousands place. Let us solve the example discussed earlier and find the total amount Samantha has in her piggy bank.

Here we need to add ₹ 1,500 and ₹ 2,000. For this, let us arrange the numbers vertically and then add.

	Th	H	T	O
	1	5	0	0
+	2	0	0	0
	3	5	0	0

Thus, Samantha has ₹ 3,500 in her piggy bank now.

Let us understand the same using more examples.

Example 1: Add 2,536 and 462.

Solution: Let's add.

Step 1: Arrange the numbers vertically.

Step 2: Add the digits at the ones column.

6 + 2 = 8 ones.

Step 3: Add the digits at the tens column.

3 + 6 = 9 tens.

Step 4: Add the digits at the hundreds column.

5 + 4 = 9 hundreds.

Step 5: Add the digits at the thousands column.

2 + 0 = 2 thousands.

	Th	H	T	O
	2	5	3	6
+		4	6	2
	2	9	9	8

∴ The sum of 2,536 and 462 is 2,998.

Example 2: Add 6,059 and 3,640.

Solution: Let's add.

Step 1: Arrange the numbers vertically.

Step 2: Add the digits at the ones column.

9 + 0 = 9 ones.

Step 3: Add the digits at the tens column.

5 + 4 = 9 tens.

	Th	H	T	O
	6	0	5	9
+	3	6	4	0
	9	6	9	9

Step 4: Add the digits at the hundreds column.

0 + 6 = 6 hundreds.

Step 5: Add the digits at the thousands column.

6 + 3 = 9 thousands.

∴ The sum of 6,059 and 3,640 is 9,699.

Mental Maths

State whether the following statements are true or false.

1. 1,024 + 1,000 = 2,042 .....
2. 1,473 + 10 = 1,573 .....
3. 4,000 + 3,000 = 7,000 .....
4. 1,540 + 2,000 = 3,540 .....
5. 5 should be added to 2,764 to make it 2,769. .....

Let's Practice 2.1

1. Add the following numbers.

a.

	Th	H	T	O
	4	8	2	3
+				5

b.

	Th	H	T	O
	2	0	8	4
+				5

c.

	Th	H	T	O
	7	1	8	3
+			1	5

d.

	Th	H	T	O
	2	7	0	0
+		2	7	0

e.

	Th	H	T	O
	2	0	9	3
+	1	6	0	5

f.

	Th	H	T	O
	4	0	9	5
+	2	9	0	3

2. Solve the following.
   a. 3,251 + 17
   b. 6,666 + 113
   c. 1,246 + 700
   d. 6,143 + 1,354
   e. 1,111 + 5,555
   f. 2,145 + 1,232

With Regrouping

Regrouping or carry over is done if the sum of the digits exceeds 9.

- If sum of the digits at the **ones place** exceeds 9, then the sum is **regrouped** to the digits in the **tens column**.

- If sum of the digits at the **tens place** exceeds 9, then the sum is **regrouped** to the digits in the **hundreds column**.
- If sum of the digits at the **hundreds place** exceeds 9, then the sum is **regrouped** to the digits in the **thousands column**.
- If sum of the digits at the **thousands place** exceeds 9, then the sum is **regrouped** to the digits in the **ten thousands** column.

Let us study some of the examples to understand regrouping.

Example 1: Add 6,925 and 2,884.

Solution: Let's add.

Step 1: Arrange the numbers vertically.

Step 2: Add the ones column.

5 + 4 = 9 ones.

Step 3: Add the tens column.

2 + 8 = 10 tens = 1 hundred + 0 tens.

Write 0 in the tens column and regroup 1 hundred to the hundreds column.

Step 4: Add the hundreds column.

9 + 8 + 1(carry over) = 18 hundreds = 1 thousand + 8 hundreds.

Write 8 in the hundreds column and regroup 1 thousand to the thousands column.

Step 5: Add the thousands column.

6 + 2 + 1(carry over) = 9 thousands.

∴ The sum of 6,925 and 2,884 is 9,809.

	Th	H	T	O
	① 6	① 9	2	5
+	2	8	8	4
	9	8	0	9

Example 2: Add 6,223 and 5,639.

Solution: Let's add.

Step 1: Arrange the numbers vertically.

Step 2: Add the ones column.

3 + 9 = 12 ones = 1 ten + 2 ones.

Write 2 in the ones column and regroup 1 ten to the tens column.

	TTh	Th	H	T	O
	①	6	2	① 2	3
+		5	6	3	9
	1	1	8	6	2

Step 3: Add the tens column.

2 + 3 + 1(carry over) = 6 tens.

Step 4: Add the hundreds column.

2 + 6 = 8 hundreds.

Step 5: Add the thousands column.

6 + 5 = 11 thousands = 1 ten thousand + 1 thousand.

Write 1 in the thousands column and regroup 1 ten thousand to the ten thousands column.

Step 6: Add the ten thousands column.

0 + 0 + 1(carry over) = 1 ten thousands

∴ The sum of 6,223 and 5,639 is 11,862.

Let's Practice 2.2

1. Add the following numbers.

a.

	Th	H	T	O
	7	9	9	9
+				9

b.

	Th	H	T	O
	6	1	5	0
+			9	9

c.

	Th	H	T	O
	2	8	5	9
+		3	2	2

d.

	Th	H	T	O
	5	1	8	3
+	3	9	8	2

e.

	Th	H	T	O
	2	9	9	9
+	4	9	9	9

f.

	TTh	Th	H	T	O
		6	9	5	2
+		9	6	2	5

2. Solve the following.

a. 2,893 + 7

b. 5,681 + 19

c. 8,324 + 127

d. 6,732 + 1,358

e. 2,417 + 1,365

f. 1,009 + 2,101

Addition of Three or More Numbers

Addition of more than two numbers can be done by writing them vertically one below the other.

Let us see an example to understand it better.

Without Regrouping

Example: Add 4,218; 1,371 and 210.

Solution: Let's add.

Step 1: Arrange the numbers vertically.

Step 2: Add the digits at the ones column.

$8 + 1 + 0 = 9$ ones.

Step 3: Add the digits at the tens column.

$1 + 7 + 1 = 9$ tens.

Step 4: Add the digits at the hundreds column.

$2 + 3 + 2 = 7$ hundreds.

Step 5: Add the digits at the thousands column.

$4 + 1 + 0 = 5$ thousands.

$\therefore$ The sum of 4,218; 1,371 and 210 is 5,799.

	Th	H	T	O
	4	2	1	8
	1	3	7	1
+		2	1	0
	5	7	9	9

With Regrouping

Example: Add 6,823; 2,038; 628 and 37.

Solution: Let's add.

Step 1: Arrange the numbers vertically.

Step 2: Add the ones column.

$3 + 8 + 8 + 7 = 26$ ones $= 2$ tens $+ 6$ ones.

Write 6 in the ones column and regroup 2 to the tens column.

Step 3: Add the tens column.

$2 + 3 + 2 + 3 + 2$(carry over) $= 12$ tens $= 1$ hundred $+ 2$ tens.

Write 2 in the tens column and regroup 1 hundred to the hundreds column.

Step 4: Add the hundreds column.

$8 + 0 + 6 + 0 + 1$(carry over) $= 15$ hundreds $= 1$ thousand $+ 5$ hundreds.

Write 5 in the hundreds column and regroup 1 thousand to the thousands column.

Step 5: Add the thousands column.

$6 + 2 + 0 + 0 + 1$(carry over) $= 9$ thousands.

$\therefore$ The sum of 6,823; 2,038; 628 and 37 is 9,526.

	Th	H	T	O
	① 6	① 8	② 2	3
	2	0	3	8
		6	2	8
+			3	7
	9	5	2	6

Let's Practice 2.3

1. Add the following numbers.

a.

	Th	H	T	O
	6	2	1	3
	2	3	1	5
+	1	2	5	1

b.

	TH	H	T	O
	2	1	1	9
	3	2	5	0
+	3	5	2	0

c.

	Th	H	T	O
	6	1	5	9
			3	5
+	2	2	6	3

d.

	Th	H	T	O
		2	3	9
	6	8	5	0
			7	7
+				8

e.

	Th	H	T	O
				9
			1	8
		2	3	7
+	3	1	2	5

f.

	Th	H	T	O
	6	8	9	3
			7	7
		2	3	8
+				5

2. Find the following sums.

a. 3,900 + 500 + 2,016

b. 2,500 + 70 + 5,160

c. 7,119 + 250 + 1,001

d. 5,001 + 49 + 1,289 + 450

e. 1,286 + 39 + 3,210 + 716

f. 2,400 + 69 + 1,288 + 149

Properties of Addition

The same properties of addition that you have learnt in earlier classes apply to larger numbers also.

Order Property

When we add any two numbers, the sum does not change, even if we change the order of the numbers. This is known as order property.

For example, 4,497 + 3,735 = 8,232

3,735 + 4,497 = 8,232

Thus, 4,497 + 3,735 = 3,735 + 4,497 = 8,232.

Grouping Property

The sum of three or more numbers added in any order gives the same answer. This is known as grouping property.

For example, 3,232; 4,304, and 1,242 can be added in any order. Their sum will be the same.

$(3,232 + 4,304) + 1,242 = 7,536 + 1,242 = 8,778$

$3,232 + (4,304 + 1,242) = 3,232 + 5,546 = 8,778$

Thus, $(3,232 + 4,304) + 1,242 = 3,232 + (4,304 + 1,242) = 8,778$.

Zero Property

The sum of a number and zero is the number itself. This is known as property of zero.

For example, $2,765 + 0 = 0 + 2,765 = 2,765$

Let's Practice 2.4

Fill in the blanks.

1. $3,425 + 1,290 =$ ..... $+ 3,425$
2. $1,023 + 0 =$ .....
3. $2,543 + (1,240 + 2,100) = (2,543 +$ .....$) + 2,100$
4. ..... $+ 2,178 = 2,178$
5. $3,190 + (2,100 +$ .....$) = (3,190 + 2,100) + 1,000$
6. $1,275 + (2,730 +$ .....$) = (1,275 +$ .....$) + 3,140$

Subtraction of 4-digit Numbers

Life Connect

Ankit has the notes as shown below.

₹500 + **₹500** + **₹500** = **₹1500**

Thus, Ankit has ₹1500 with him. Out of this, he spent ₹500 for purchasing his books. So, he is left with the notes as shown in the picture below.

₹500 + **₹500** = **₹1000**

Thus, he has ₹1000 left with him.

Search and Gain

Find at least 5 features of ₹500 and ₹2000 notes.

Let us now study more about subtracting 4-digit numbers.

Without Regrouping

Let us do the subtraction and try to understand the actual process of subtracting 4-digit numbers by studying the following examples.

Example 1: Subtract 653 from 2,975.

Solution: Let's subtract.

	Th	H	T	O
	2	9	7	5
−		6	5	3
	2	3	2	2

Step 1: Arrange the numbers vertically.

Step 2: Subtract the digits at the ones column.

5 − 3 = 2 ones.

Step 3: Subtract the digits at the tens column.

7 − 5 = 2 tens.

Step 4: Subtract the digits at the hundreds column.

9 − 6 = 3 hundreds.

Step 5: Subtract the digits at the thousands column.

2 − 0 = 2 thousands.

∴ The difference of 2,975 and 653 is 2,322.

Example 2: Subtract 4,285 from 5,399.

Solution: Let's subtract.

	Th	H	T	O
	5	3	9	9
−	4	2	8	5
	1	1	1	4

Step 1: Arrange the numbers vertically.

Step 2: Subtract the digits at the ones column.

9 − 5 = 4 ones.

Step 3: Subtract the digits at the tens column.

9 − 8 = 1 ten.

Step 4: Subtract the digits at the hundreds column.

3 − 2 = 1 hundred.

Step 5: Subtract the digits at the thousands column.

5 − 4 = 1 thousand.

∴ The difference of 5,399 and 4,285 is 1,114.

Let's Practice 2.5

1. Find the difference of the following.

a.

	Th	H	T	O
	1	4	3	9
–				8

b.

	Th	H	T	O
	5	0	7	9
–			3	5

c.

	Th	H	T	O
	2	3	8	0
–		2	7	0

d

	Th	H	T	O
	3	6	8	1
–		5	8	0

e.

	Th	H	T	O
	9	8	5	4
–	7	8	0	0

f.

	Th	H	T	O
	2	8	2	5
–	1	4	1	5

2. Subtract the following.

a. 6,829 – 8

b. 1,651 – 50

c. 2,500 – 100

d. 6,091 – 6,080

e. 3,600 – 1,600

f. 9,259 – 2,146

With Regrouping

Regrouping is required in 4-digit subtractions in one of the following cases.

Digit at the ones place of minuend (<) Digit at the ones place of subtrahend

Digit at the tens place of minuend (<) Digit at the tens place of subtrahend

Digit at the hundreds place of minuend (<) Digit at the hundreds place of subtrahend

Digit at the thousands place of minuend (<) Digit at the thousands place of subtrahend

Let us observe the examples to understand it better.

Example 1: Subtract 999 from 6,000.

Solution: Let's subtract.

Step 1: Arrange the numbers vertically.

Step 2: Subtract the digits at the ones column. As 0 < 9, so we regroup 1 from the tens digit. But the digit at the tens place is 0, so we borrow 1 from the hundreds digit. The digit at the hundreds place is also 0, so we borrow 1 thousand from the thousands digit.

So, the digit at the thousands place will become 6 – 1 = 5 thousands.

At hundreds place, the digit will become 0 hundreds + 1 thousand = 10 hundreds.

Now, the digit at the tens place will borrow 1 hundred from the digit at the hundreds place.

So, 10 − 1 = 9 hundreds.

Finally, the digit at the ones place will borrow 1 ten from the digit at the tens place, i.e., 10 − 1 = 9 tens.

Hence, 0 ones + 1 ten = 10 ones.

So, on subtracting, we have 10 − 9 = 1.

	Th	H	T	O
	⑤ ~~6~~	⑨ ~~10~~ ~~0~~	⑨ ~~10~~ ~~0~~	⑩ ~~0~~
−		9	9	9
	5	0	0	1

Step 3: Subtract the digits at the tens column.

9 − 9 = 0.

Step 4: Subtract the digits at the hundreds column.

9 − 9 = 0.

Step 5: Subtract the digits at the thousands column.

Since, 1 thousand was regrouped so we have 5 − 0 = 5.

∴ 6000 − 999 = 5001.

Example 2: Subtract 6,893 from 9,918.

Solution: Let's subtract.

Step 1: Arrange the numbers vertically.

Step 2: Subtract the digits at the ones column.

8 − 3 = 5.

Step 3: Subtract the digits at the tens column.

Since, 1 < 9, so we regroup 1 hundreds from the hundreds column.

Therefore, 10 tens + 1 ten =11 tens.

	Th	H	T	O
	9	⑧ ~~9~~	⑪ ~~1~~	8
−	6	8	9	3
	3	0	2	5

On subtracting, we have 11 − 9 = 2 tens.

Step 4: Subtract the digits at the hundreds column.

Since, 1 hundred was borrowed, so we are left with 9 − 1 = 8 hundreds.

Therefore, we have 8 − 8 = 0.

Step 5: Subtract the digits at the thousands column.

9 − 6 = 3.

Thus, 9,918 − 6,893 = 3,025.

Let's Practice 2.6

1. Subtract the following.

a.

	Th	H	T	O
	2	6	8	6
–				9

b.

	Th	H	T	O
	4	8	3	9
–			5	0

c.

	Th	H	T	O
	1	7	8	1
–			7	9

d.

	Th	H	T	O
	4	2	8	1
–		7	9	5

e.

	Th	H	T	O
	7	7	0	0
–	6	8	9	9

f.

	Th	H	T	O
	6	3	2	9
–	1	5	3	0

2. Subtract.

a. 2,625 – 8

b. 9,839 – 378

c. 2,500 – 1,900

d. 6,001 – 5,003

e. 9,644 – 8,765

f. 8,599 – 2,610

Active Maths

Add or Subtract 999 Mentally

To add 999 to any number, add 1,000 to that number and then subtract 1 from the sum.
[Since, 999 = 1,000 – 1]

For example, consider the numbers 4295 and 999.

4,295 + 1,000 = 5,295

Now, 5,295 – 1 = 5,294

∴ 4,295 + 999 = 5,294

To subtract 999 from any number, subtract 1,000 from the number and then add 1 to the difference.

For example, consider the numbers 999 and 6,087.

6,087 – 1,000 = 5,087

Now, 5,087 + 1 = 5,088

∴ 6,087 − 999 = 5,088

Isn't it easy?

Now, amaze your parents and friends by adding and subtracting 999 to any number, mentally.

Properties of Subtraction

Subtraction with Zero

When we subtract zero from any number, we get the number itself.

For example; 1,343 − 0 = 1,343; 9,247 − 0 = 9,247

One Property

When we subtract 1 from any number, we get the predecessor of the given number.

For example; 7,622 − 1 = 7,621; 3,245 − 1 = 3,244

Subtracting a Number from Itself

When we subtract a number from itself, we get zero.

For example, 8,212 − 8,212 = 0; 6,348 − 6,348 = 0

Let's Practice 2.7

Fill in the blanks.

1. 3,425 − ..... = 3,424
2. 9,817 − 0 = ...
3. 7,362 − 7,362 = ...
4. 9,327 − ..... = 0
5. 4,517 − ..... = 4,517
6. 2,314 − 1 = ...

Addition and Subtraction Together

To solve the questions involving addition and subtraction both, we first add the numbers and then subtract from the total.

Example: Solve: 4,357 + 2,710 − 2,476

Solution: Let's solve.

	Th	H	T	O
	① 4	3	5	7
+	2	7	1	0
	7	0	6	7

Step 1: Add 4,357 and 2,710.

Step 2: Subtract 2,476 from 7,067 (sum of 4,357 and 2,710).

Thus, 4,357 + 2,710 − 2,476 = 4,591.

	Th	H	T	O
	⑥ 7̸	⑨ 0̸	⑯ 6̸	7
−	2	4	7	6
	4	5	9	1

Let's Practice 2.8

Solve the following problems.

1. 1,456 + 2,319 −1,200
2. 7,819 + 1,245 − 2,310
3. 9,182 + 3,428 − 4,567
4. 7,638 − 3,421 + 4,527
5. 4,527 − 1,527 + 2,549
6. 4,229 − 2,483 + 1,924

Word Problems

Sometimes we need to solve the problems in the form of statements. These are called word problems. To solve word problems, read every word of the given statement carefully and find out the numbers to be added/subtracted. Then add/subtract these numbers. Let us look at some examples.

Example 1: In a school, there are 2,895 students in primary classes and 6,273 students in secondary classes. How many students are there in all?

Solution: Number of students in primary classes = 2,895

Number of students in secondary classes = 6,273

Total number of students = 2,895 + 6,273 = 9,168

Thus, there are 9,168 students in all.

	Th	H	T	O
	① 2	① 8	9	5
+	6	2	7	3
	9	1	6	8

Teacher's Tip

Ask the students to check their addition problems using subtraction.

Example 2: The price of a music player was ₹7,498 in January but it dropped to ₹6,599 in June. How much price was reduced in 6 months?

Solution: Price of the music player in January = ₹7498

Price of the music player in June = ₹6599

Difference in price = ₹7498 − ₹6599 = ₹899

Thus, in 6 months, the price of the music player reduced by ₹899.

	⑥	⑬	⑱	⑱
₹	~~7~~	~~4~~	~~9~~	~~8~~
−₹	6	5	9	9
₹		8	9	9

Subject Connect

Active Maths

Frame and Act

Divide the class in four groups, i.e., group A, B, C and D. Each group should prepare 5 word problems each, related to addition and subtraction. Once all the groups are ready, then give these word problems to another group to solve.

Extend the activity by asking them to enact their word problems to the class to make it engrossing.

Let's Practice 2.9

1. Saumya has ₹1500 in her piggy bank. She went to her grandmother during vacations and came back after a month and added ₹500 to her piggy bank, which she had saved. How much amount does she have now?
2. Sheela has 1900 stamps with her and she borrowed 100 stamps from Amit. Find the total stamps Sheela has now?
3. Karuna bought a dress for ₹4,999 and Kanika bought a dress for ₹3,589. Who bought the costlier dress and by how much?

Engrossing: Something that is very interesting and holds your attention completely

4. Sohan and his friends collected ₹3,568 from their neighbourhood for charity. They donated ₹2,000 to an old age home. How much amount is left with them to donate to an NGO?
5. A total of 1,681 passengers were in a train, when it started the journey. On the second station, 293 passengers got down. On the third station, 1,685 passengers boarded the train, and on the fourth station, 599 passengers got down from the train. How many passengers were there in the train after the fourth station?
6. Kavya purchased a purse for ₹1,500, a dress for ₹1,299 and a belt for ₹550 from a store. If she gave ₹4,000 to the shopkeeper, how much should she get back?

Estimating Sums and Differences

To estimate the sum or difference of given numbers, we first estimate the numbers to the nearest 10s and then add or subtract the estimated numbers.

Note: Recall that if the ones digit is 0, 1, 2, 3, or 4, then the number is rounded off to the previous ten and if the ones digit is 5, 6, 7, 8, or 9, then the number is rounded off to the next ten.

Example 1: Estimate the following numbers to the nearest 10s and then solve. Also, find the actual sum/difference.

a. 4,849 + 165 b. 2,371 − 1,028

Solution: a. Estimated sum

4,849 rounded off to the nearest 10s is 4,850 and 165 rounded off to the nearest 10s is 170.

So, 4,850 + 170 = 5,020.

Actual sum

4,849 + 165 = 5,014.

b. Estimated difference

2,371 rounded off to the nearest 10s is 2,370 and 1,028 rounded off to the nearest 10s is 1,030.

So, 2,370 − 1,030 = 1,340.

Actual difference

2,371 − 1,028 = 1,343.

Example 2: Estimate the following numbers to the nearest 100s and then solve. Also, find the actual sum/difference.

a. 5,481 + 4,266 b. 7,651 − 4,518

Solution: a. Estimated sum

5,481 rounded off to the nearest 100s is 5,500 and 4,266 rounded off to the nearest 100s is 4,300.

So, 5,500 + 4,300 = 9,800.

Actual sum

5,481 + 4,266 = 9,747.

b. Estimated difference

7,651 rounded off to the nearest 100s is 7,700 and 4,518 rounded off to the nearest 100s is 4,500.

So, 7,700 − 4,500 = 3,200.

Actual difference

7,651 − 4,518 = 3,133.

Example 3: Estimate the following numbers to the nearest 1000s and then solve. Also, find the actual sum/difference.

a. 6,207 + 5,234 b. 3,295 − 1,610

Solution: a. Estimated sum

6,207 rounded off to the nearest 1000s is 6,000 and 5,234 rounded off to the nearest 1000s is 5,000.

So, 6,000 + 5,000 = 11,000.

Actual sum

6,207 + 5,234 = 11,441.

b. Estimated difference

3,295 rounded off to the nearest 1000s is 3,000 and 1,610 rounded off to the nearest 1000s is 2,000.

So, 3,000 − 2,000 = 1,000.

Actual difference

3,295 − 1,610 = 1,685.

Let's Practice 2.10

1. Round off the following numbers to the nearest 10s and then find the sum or difference. Also, find the actual sum or difference.

   a. 5,016 + 2,798 b. 8,506 + 3,845 c. 7,461 − 2,199

   d. 3,219 + 2,241 − 1,298 e. 5,013 + 4,981 − 3,102

2. Round off the following numbers to the nearest 100s and then find the sum or difference. Also, find the actual sum or difference.

   a. 2,481 + 1,292 b. 7,192 + 6,192 c. 8,099 − 5,555

   d. 3,289 + 5,192 − 2,391 e. 7,891 + 2,301 − 4,910

3. Round off the following numbers to nearest 1000s and then find the sum or difference. Also, find the actual sum or difference.

   a. 5,289 + 3,491 b. 6,865 − 4,995 c. 6,278 − 5,639

   d. 9,728 + 4,278 − 4,557 e. 6,192 + 6,391 − 5,215

4. A flower shop vendor has 2,391 roses and 3,269 lily flowers. By first rounding off the numbers to the nearest 10s, estimate how many flowers does she have in all?

5. Rahul's piggy bank has ₹6,819 and her elder sister has ₹9,125. Find out who has more money and how much more, by first rounding off the numbers to the nearest 1000s.

Summary

- When we add any two numbers, the sum does not change, even if we change the order of the numbers. Example: 3,214 + 1,241 = 1,241 + 3,214
- The grouping property states that the sum of three or more numbers added in any order gives the same answer. Example: 2,141 + (3,216 + 1,290) = (2,141 + 3,216) + 1,290
- The sum of any number and zero is the number itself. Example: 1,210 + 0 = 1,210
- When we subtract zero from any number, we always get the number itself. Example: 1,265 − 0 = 1,265
- When we subtract one from any number, we get the number just before the given number. Example: 2,461 − 1 = 2,460
- When we subtract a number from itself, we always get zero. Example: 3,450 − 3,450 = 0

Brain Teaser

1. Form the greatest and the smallest 5-digit number using the digits 3, 0, 1, 9, repeating the digits only once. Also, find the difference of the numbers formed.

2. Compare the following.

   a. 2,345 + 2,343 − 1,002 ☐ 5,629 − 4,528 + 1,032

   b. 4,162 + 2,172 − 2,718 ☐ 9,000 − 2,391 + 4,518

3. If A = 4,262, B = 2,819 and C = 1,719, then find A + B − C. Also, compare A + B with A − C.

Assessment

1. Do as directed.

a.

	Th	H	T	O
	1	6	8	5
+		4	3	0

b.

	Th	H	T	O
	1	6	8	0
−		9	9	0

c.

	Th	H	T	O
	7	6	0	0
+	1	6	0	0

2. Solve the following.

a. 6,823 − 1,532 b. 2,985 + 1,899 c. 4,000 + 8,600

d. 3,526 + 2,323 − 192 e. 4,539 + 1,218 + 2,718

3. Find the missing numbers.

a. 1,281 + ☐ = 5,000 b. 1,699 - ☐ = 700

c. 1,200 + ☐ = 2,000 d. ☐ - 1,699 = 1,000

e. 1,642 − 1,297 = ☐ f. 2,928 − ☐ = 1,800

4. State whether true or false.

a. 4,315 + 0 = 4,316 b. 5,271 − 0 = 5,271 c. 2,178 + 1 = 2,177

d. 5,627 + (3,124 + 1,920) = (5,627 + 3,124) + 1,920

e. 6,723 + 2,319 = 2,190 + 3,819

5. A book has 792 pages and another book has 1,210 pages. How many total pages are there in both the books?

6. What should be added to 1,286 to get 1,486?

7. In an inter-school Maths quiz the top 3 scorers will be a given cash prize of ₹2,500, ₹2,000 and ₹1,500 respectively. Also, the fourth highest scorer (or runner up) will get a ₹500 cash prize along with a certificate. What is the total amount to be distributed among the top 4 scorers of the quiz?

8. By how much is 7,000 greater than 6,500?

9. In a 2-day exhibition, 2,048 tickets were sold on the first day and 3,658 tickets were sold on the second day. How many total tickets were sold on both the days? On which day, did more people visit the exhibition and by how many?

Activities

Life Connect

Individual work

Visit to the Market

Visit a grocery store or a supermarket with your parents for purchasing daily use items. Ask your parents to purchase the items with cash. Once the bill is generated, check the total amount on the bill and once your parents handover the cash, check the balance amount your parents receive after deduction of the bill amount. Then fill up the following.

Write the names and prices of items purchased

Items	Price

Total amount = _____

Amount paid = _____

Balance = _____

PASTE BILL HERE

Happy Shopping!!!

Group work

Add and Subtract

Form groups of 5–7 students. Ask each group to form a board game (as shown) with questions of his/her choice. Now, each group will take a dice and one counter for each of them. Place all the counters at the START cell and roll the dice in turns. Move the counter as many steps as the number shown on the dice and solve the problem in that cell. If the answer is correct, then make the counter remain in that cell, otherwise place it back in its last position. The one who reaches the FINISH cell first, will be the winner.

3 Time

warm-up

Match the following by shading the boxes using the same colour.

Half past 3	**11:15**	
Quarter to 10	**03:30**	
Quarter past 11	**05:00**	
5 o'clock	**09:45**	

Reading Minutes on a Clock

Longitudes and latitudes form a network called grid. The grid helps us to accurately locate places on maps and globes. Longitudes help in calculating time. The difference between two consecutive longitudes is of 4 minutes.

Grid of latitudes and longitudes

Similarly, in between every two counting numbers, there are 5 smaller divisions between the numbers and each division represents one minute. Thus, when the minute hand moves from one number to the next, 5 minutes have passed.

So, minute hand shows time as follows:

Search and Gain

Note the time of any five different countries of the world and compare their time with that of India. Make a list showing how much time are they behind or ahead of us.

Let us now learn to read time in hours and minutes.

Here in the clock (shown alongside), the minute hand is at 2, so it represents 2 × 5 = 10 minutes.

The hour hand is in between 9 and 10.

Therefore, the time is 9:10 or 10 minutes past 9.

Let us now read another clock.

Here in the clock, the minute hand is 3 marks after number 7.

So, it represents $(5 \times 7) + 3 = 35 + 3 = 38$ minutes and the hour hand is in between 1 and 2.

Therefore, the time is 1:38 or 22 minutes to 2.

Let's Practice 3.1

1. Read the following clocks and write the time in two ways.

a. 

6:11

11 minutes past 6

b. 

c. 

d. 

e. 

f. 

2. Draw the minute hand and the hour hand in the following clocks according to the given time. Also, fill in the boxes.

a. 

:

It's twenty minutes to seven

b. 

:

It's ten minutes to six

c. 

:

It's twenty-seven minutes to five

d.

:

It's five minutes after three

e.

:

It's ten minutes to four

f.

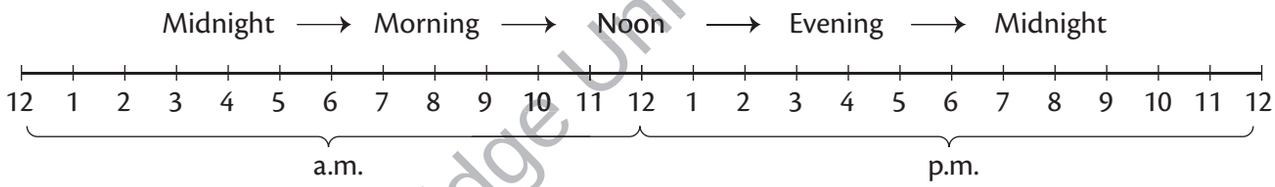
:

It's fourteen minutes past eight

Expressing Time in a.m. and p.m.

If you just look at the clock or any other watch, you will find that the dial has digits from 1 to 12 on it, representing 12 hours. But as we know, there are 24 hours in a day. The hour hand of a clock goes round the clock once in 12 hours. Therefore, the hour hand has to go round the clock twice in a day (24 hours).

The first half, i.e., starting from 12 midnight to 12 noon is called a.m., which stands for ante meridiem and the other half, i.e., starting from 12 noon to 12 midnight is called p.m., which stands for post meridiem.



Here, you can see that a.m. represents first 12 hours and p.m. represents remaining 12 hours of a day.

Thus, 11 o'clock in the morning means 11:00 a.m. and 11 o'clock in the evening/night means 11:00 p.m.

Remember

A clock has only 12 numbers written on it, so it does not clarify whether the time shown is in a.m. or in p.m. Hands of a clock shows only the numerical time (time in numbers).

4:00 a.m.

4:00 p.m.

Let's Practice 3.2

1. Write a.m. or p.m. for the following activities.

2. Given below are some of the sentences which describe Vibhor's activities. Write a.m. or p.m. for each of the following.

   a. Vibhor is taking sunbath at 10 o'clock. .....

   b. Vibhor is sleeping at 9 o'clock. .....

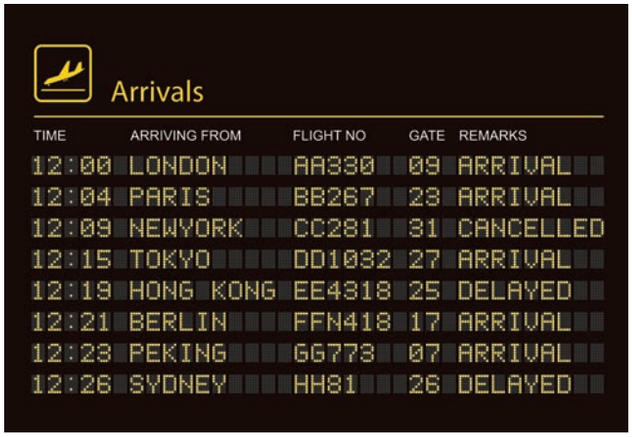
   c. Vibhor is packing his school bag at night. .....

   d. Vibhor is going to school at 7 o'clock. .....

   e. Vibhor went to the shopping mall with his parents at 5 o'clock. .....

Relation Between 24-hour and 12-hour Time

Generally, we use a 12-hour clock system. The hour hand of the clock goes round the clock twice a day, i.e., 24 hours. The 24-hour clock system is used by some departments like railways, airlines, etc. because they do not use a.m. and p.m. times.



In the 24-hour clock system, we express time in four digits. The first two digits represent the hours and the last two digits represent the minutes.

Consider, 3 hours 12 minutes. It can be written as 03:12 in the 24-hour clock time.

Conversion of 12-hour Clock to 24-hour Clock and Vice Versa

If the time is given in a.m., then there is no change and a.m. is replaced by hours.

For example, 8:15 a.m. is written as 08:15 hours.

If the time is given in p.m., then add 12 to the time and replace p.m. with hours.

For example, 6 p.m. is written as 6:00 + 12:00 = 18:00 hours. Thus, 18:00 hours mean 6 o'clock in the evening and for 6 o'clock in the morning, we write 06:00 hours.

To change from the 24-hours to the 12-hours clock time, if the given time is equal or less than 12 hours, then there is no change. We just replace hours by a.m.

For example, 10:00 hours = 10:00 a.m.

But, if the given time is more than 12 hours, then subtract 12 from the given time and replace hours with p.m. For example, 20:35 hours = 20:35 – 12 = 8:35 p.m.

Let's Practice 3.3

1. Convert the following 12-hour clock time to 24-hour clock time.

   a. 7:38 a.m. b. 6:45 a.m. c. 12:00 p.m.

   d. 4:52 p.m. e. 11:35 a.m. f. 8:43 p.m.

2. Convert the following 24-hour clock time to 12-hour clock time.

   a. 17:45 hours b. 08:30 hours c. 21:56 hours

   d. 01:35 hours e. 14:10 hours f. 23:45 hours

Active Maths

Create Your Own Clock

Let every student prepare a clock with moving hands using a straw, a paper plate, or a cardboard at home. They can take help of their elders to prepare the clock at home. Fix a day when all the students will bring their self-made clocks to school. On that day, give a time slip to each student (in 12-hour time format). Every student will fix the hands of their respective clocks according to the time given to them by the teacher and then talk one by one about the routine they follow at that time of the day.

Duration of Time

Duration of time is the time that passed from beginning of an event to its end.

Example 1: Sunaina went for her morning exercise at 5:00 a.m. and came back home at 6:55 a.m. For how long did she exercise?

Solution: We have,

Starting time = 5:00 a.m. = 05:00 hours

Ending time = 6:55 a.m. = 06:55 hours

Difference = 06:55 – 05:00

Thus, Sunaina exercised for 1 hour 55 minutes.

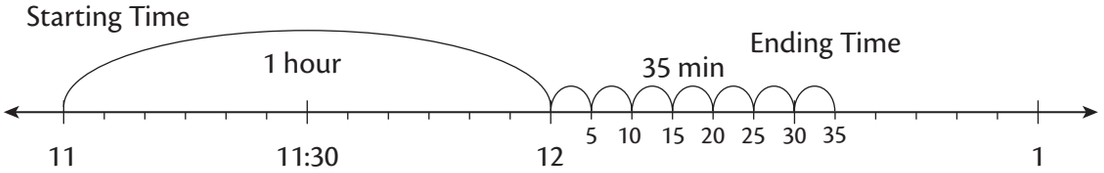
Hours	Minutes
6	5 5
– 5	0 0
1	5 5

Example 2: Saurabh started his swimming practice at 11 o'clock and kept practicing till 12:35 p.m. For how long did he practice swimming?

Solution: We have,

Starting time = 11:00 a.m. and Ending time = 12:35 p.m.

Observe the timeline below.



Therefore, Saurabh practiced swimming for 1 hour 35 minutes.

Teacher's Tip

In the later term, students will learn about conversion of units of time.

Duration of Days

To find the number of days that have elapsed between the two dates is to find the difference between them.

Example: Priyal's exams started on 20 February and ended on 6 March, assuming the year is a leap year. What was the total duration of the exam? (including both the days)

Solution: Number of days in February = 10 {Since, number of days in February is 29}

Number of days in March = 6

Total number of days = 10 + 6 = 16 days

Thus, the duration of Priyal's exams is 16 days.

Mental Maths

Choose the correct answer.

1. A train starts from a station at 10:45 a.m. and reaches the next station after 3 hours 10 minutes. The time of the train reaching the next station in 24-hour clock format is shown by:

   a. 13:35 hours b. 13:45 hours c. 13:55 hours d. 14:05 hours

2. The time on a 24-hour clock is 21:35, what will be the time on the same clock after 6 hours 15 minutes?

   a. 03:30 hours b. 04:30 hours c. 03:40 hours d. 03:50 hours

3. Amit visited the shopping mall at 11:00 a.m. and spent 45 minutes there. At what time, did he come back?

   a. 11:15 p.m. b. 11:45 a.m. c. 12:20 p.m. d. 12:15 p.m.

4. Kriti started her journey in a train from Patna at 7:50 a.m. What time will be 7 hours 05 minutes after her journey started?

   a. 1:30 p.m. b. 12:30 p.m. c. 2:30 p.m. d. 2:55 p.m.

5. Arjun's watch is showing time slower by 15 minutes. What will be the actual time when Arjun's watch shows time as 12:35 p.m.?

   a. 12:10 a.m. b. 12:50 p.m. c. 12:15 p.m. d. 12:15 p.m.

Let's Practice 3.4

1. Find the elapsed time for the following time in the given table.

	Start time	End time	Elapsed time
a.	4:30 a.m.	5:35 a.m.	
b.	8:50 a.m.	12 noon	
c.	11 a.m.	4:00 p.m.	
d.	05:00 hours	18:00 hours	
e.	16:05 hours	20:45 hours	
f.	21:30 hours	23:10 hours	

2. Find the duration of days between the given dates. (excluding the end date)

Starting date	Ending date	Duration of days
2 September	31 December	120 days
3 March	15 July	
21 November	16 February	
4 June	28 August	
8 October	21 December	
11 March	6 May	

3. Mehak went to school at 7:30 a.m. and came back home at 1:30 p.m. For how long did she stay in the school?

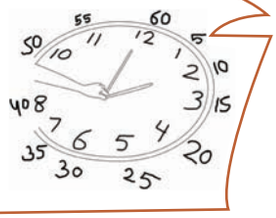
4. Amit left his house for school at 6:30 a.m. He travelled for 10 minutes to reach school and stayed there for 7 hours 10 minutes. At what time, did he leave the school?

5. Rubina went for a school excursion on 5 September and came back on 18 September. Find the duration of her excursion. (18th September not included)

6. Parul joined the art classes on 5 May. If she attended the class for 44 days, then on which date did the art class end?

Explore

Take the students to the ground and make a hula hoop clock as shown here (use dry twigs to make hands of the clock). Call the students one after the other and ask them to show the correct time as asked by the teacher in the clock. For example, 3 minutes to 12, 10 minutes past 6.



Brain Teaser

1. A football game started at 4:30 p.m. and lasted for 90 min. At what time, did the football game finish, if there were 2 breaks of 10 min each other than the 90 min?
2. Sampada started her school project in the evening. She spent 150 minutes to complete her project. If she finished her project at 20:00 hours, at what time did she start her project?
3. Lakshmi started her homework at 2:45 p.m. and worked till 3:30 p.m. Then she took a break and again started her homework from 4 p.m. till 5:30 p.m. Then she went out to play and after coming back worked on her homework from 6:15 p.m. to 7:30 p.m. Find the total time spent by her in doing her homework.

Summary

- The first half, i.e., starting from 12 midnight to 12 noon is called a.m., which stands for ante meridiem and the other half, i.e., starting from 12 noon to 12 midnight is called p.m., which stands for post meridiem.
- In a 24-hour clock system, we express time in four digits. The first two digits represent hours and the last two digits represent the minutes.
  - If the time is given in a.m., then there is no change and a.m. is replaced by hours.
  - If the time is given in p.m., then add 12 to the time and replace p.m. with hours.
- To change from the 24-hours to 12-hours time format, if the given time is equal or less than 12 hours, then there is no change. Just replace hours by a.m. If the given time is more than 12 hours, subtract 12 from the given time and replace hours with p.m.
- The relation between different units are as follows.
  - 1 day = 24 hours
  - 1 hour = 60 minutes

Assessment

1. Read the following time in two ways.

a. 

b. 

c. 

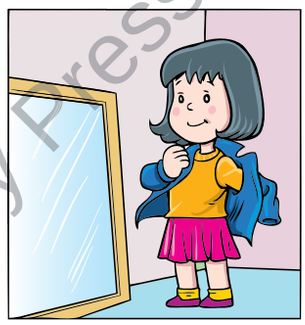
2. Write a.m. or p.m. for the following activities.

a. 

Sleeping at night

b. 

Returning from school

c. 

Getting ready for school

3. Convert the following times in 12-hour/24-hour clock time.

   a. 23:45 hours b. 12:30 a.m. c. 16:57 hours d. 5:37 p.m. e. 6:50 p.m.

4. Jasjeet boarded the train at 16:00 hours on Monday and reached his destination at 10:00 hours on Tuesday. For how long did he travel in the train?

5. The qualifying matches of football world cup started on 19 September 2016 and ended on 2 November 2016. For how many days did the qualifying matches last?

6. A doctor works in his clinic in the morning till 11:30 a.m. and then reopens it in the evening at 5:30 p.m. after a long break. Calculate the number of hours that he takes as break.

Activities

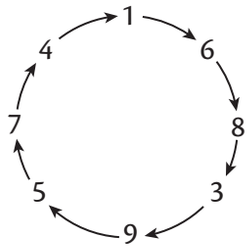
Individual work

Create Your Duration Cards

Ask everyone to form 9 cards which includes the answer and the question to the problem. These should be framed in such a manner that each card is linked with the other and it forms a complete cycle. Observe the cards given.

1. I have 7:50, who has 22 minutes after 4 o'clock?	2. I have 12:40, who has 15 minutes before midnight?	3. I have 3:09, who has 37 minutes after 11 o'clock?
4. I have 10:50, who has 10 minutes before 8 o'clock?	5. I have 12:19, who has 20 minutes before 10 o'clock?	6. I have 4:22, who has 15 minutes before 9 o'clock?
7. I have 9:40, who has 10 minutes before 11 o'clock?	8. I have 8:45, who has 9 minutes after 3 o'clock?	9. I have 11:37, who has 19 minutes after noon?

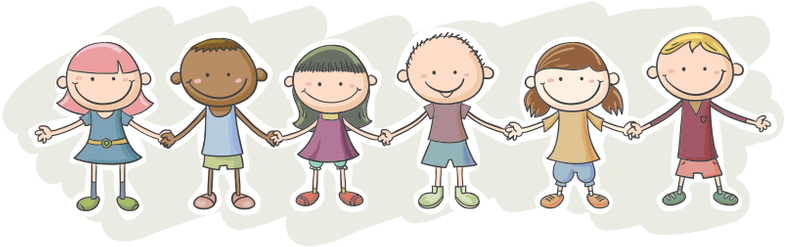
Here, the cards are linked as.



Group work

Let's Play

Divide the class in groups of 9. Use the cards as formed above. Shuffle and pass them out in each group.



Ask each group to choose a student who will begin the activity reading out their card.

Student 1 will read aloud his/her card, the group has to identify his/her pair by answering the question. For example, suppose student 1 read aloud 'I have 7:50, who has 22 minutes after 4 o'clock?', then the group has to identify the answer of the question '22 minutes after 4 o'clock', i.e., 4:22. Thus, pair up student 1 with the student holding the card 'I have 4:22, who has 15 minutes before 9 o'clock?'. Continue this till the group can arrange themselves in order. The group who identifies and order themselves correctly and quickly, will be the winner.

4 Multiplication

warm-up

Read the clues and solve the multiplication problems to find Payal's phone number.

Digit at ones place in the product of 12×7 .....

Digit at hundreds place in the product of 58×6 .....

Digit at tens place in the product of 89×4 .....

Digit at ones place in the product of 53×8 .....

Digit at tens place in the product of 63×5 .....

Digit at hundreds place in the product of 56×2 .....

Digit at tens place in the product of 78×5 .....

Digit at ones place in the product of 19×3 .....

Digit at hundreds place in the product of 89×8 .....

Payal's phone number is .....

Multiplication Tables

Did you know that in every harvest season, about 7,000 cherries are produced on each cherry tree? Cherries are available in a variety of colours ranging from yellow to black and red in colour. They also come in different shapes from round to heart and are a great source of nutrients and vitamins.

Now, let us count a bunch of cherries.

2 + 2 + 2 + 2 + 2 = 10

Using repeated addition or multiplication, we have

$5 \times 2 = 10$

Let us now build multiplication tables by repeated addition method.

Table of 2

	Total number of bells	Multiplication table
	2	$1 \times 2 = 2$
	$2 + 2 = 4$	$2 \times 2 = 4$
	$2 + 2 + 2 = 6$	$3 \times 2 = 6$
	$2 + 2 + 2 + 2 = 8$	$4 \times 2 = 8$
	$2 + 2 + 2 + 2 + 2 = 10$	$5 \times 2 = 10$
	$2 + 2 + 2 + 2 + 2 + 2 = 12$	$6 \times 2 = 12$

	Total number of bells	Multiplication table
	2 + 2 + 2 + 2 + 2 + 2 + 2 = 14	7 × 2 = 14
	2 + 2 + 2 + 2 + 2 + 2 + 2 + 2 = 16	8 × 2 = 16
	2 + 2 + 2 + 2 + 2 + 2 + 2 + 2 + 2 = 18	9 × 2 = 18
	2 + 2 + 2 + 2 + 2 + 2 + 2 + 2 + 2 + 2 = 20	10 × 2 = 20

Now, use the same method and build multiplication tables as given below. Also, write the missing products.

1 x 3 = 3	1 x 4 = 4	1 x 5 = 5	1 x 6 = 6
2 x 3 = 6	2 x 4 = 8	2 x 5 = 10	2 x 6 = ...
3 x 3 = 9	3 x 4 = ...	3 x 5 = 15	3 x 6 = 18
4 x 3 = 12	4 x 4 = 16	4 x 5 = ...	4 x 6 = 24
5 x 3 = 15	5 x 4 = 20	5 x 5 = 25	5 x 6 = ...
6 x 3 = 18	6 x 4 = ...	6 x 5 = ...	6 x 6 = 36
7 x 3 = 21	7 x 4 = 28	7 x 5 = 35	7 x 6 = 42
8 x 3 = 24	8 x 4 = 32	8 x 5 = 40	8 x 6 = 48
9 x 3 = 27	9 x 4 = ...	9 x 5 = ...	9 x 6 = ...
10 x 3 = 30	10 x 4 = 40	10 x 5 = 50	10 x 6 = 60

1 x 7 = 7	1 x 8 = 8	1 x 9 = 9	1 x 10 = ...
2 x 7 = 14	2 x 8 = ...	2 x 9 = 18	2 x 10 = 20
3 x 7 = 21	3 x 8 = 24	3 x 9 = ...	3 x 10 = ...
4 x 7 = ...	4 x 8 = 32	4 x 9 = 36	4 x 10 = 40
5 x 7 = 35	5 x 8 = ...	5 x 9 = 45	5 x 10 = 50
6 x 7 = 42	6 x 8 = ...	6 x 9 = ...	6 x 10 = ...
7 x 7 = ...	7 x 8 = 56	7 x 9 = 63	7 x 10 = 70
8 x 7 = 56	8 x 8 = ...	8 x 9 = 72	8 x 10 = ...
9 x 7 = ...	9 x 8 = 72	9 x 9 = ...	9 x 10 = 90
10 x 7 = ...	10 x 8 = 80	10 x 9 = 90	10 x 10 = ...

Let's Practice 4.1

Write the following products.

1. $2 \times 4 =$ ____
2. $6 \times 3 =$ ____
3. $3 \times 7 =$ ____
4. $6 \times 8 =$ ____
5. $4 \times 9 =$ ____
6. $7 \times 9 =$ ____
7. $3 \times 8 =$ ____
8. $9 \times 9 =$ ____

Multiplication of a 2- and a 3-digit Number by a 2-digit Number

Let us observe some examples to multiply a 2- and a 3-digit number by another 2-digit number.

Example 1: Multiply 63 by 82.

Solution: Let's multiply.

Step 1: Multiply 63 by 2. $63 \times 2 = 126$

Step 2: Multiply 63 by 80.
$63 \times 80 = 5040$

Step 3: Add both the products.
$126 + 5040 = 5166$

Therefore, $63 \times 82 = 5166$.

$$\begin{array}{r} 63 \\ \times\ 82 \\ \hline 126 \\ 5040 \\ \hline 5166 \end{array}$$

Example 2: Multiply 125 by 61.

Solution: Let's multiply.

Step 1: Multiply 125 by 1.
$125 \times 1 = 125$

Step 2: Multiply 125 by 60.
$125 \times 60 = 7500$

Step 3: Add both the products.
$125 + 7500 = 7625$

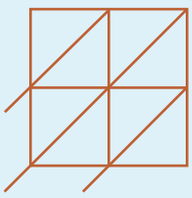
Therefore, $125 \times 61 = 7625$.

$$\begin{array}{r} 125 \\ \times\ 61 \\ \hline 125 \\ 7500 \\ \hline 7625 \end{array}$$

Active Maths

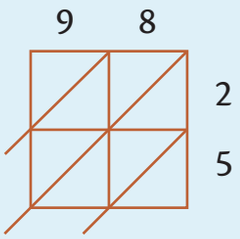
Lattice Algorithm

To multiply a 2-digit number by a 2-digit number using lattice algorithm, we need a 2×2 lattice grid with diagonals drawn in each box as shown in the figure.

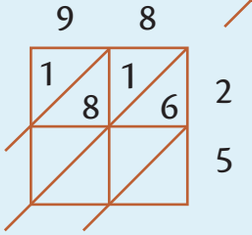


Let us multiply 98 by 25.

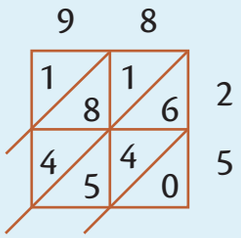
Step 1: Draw a 2×2 lattice grid, write the multiplicand 98 on the top and the multiplier 25 on the right of the grid.



Step 2: Multiply 9 and 8 by 2 and write the products in the first row of the grid.



Step 3: Multiply 9 and 8 by 5 and write the products in the second row of the grid.



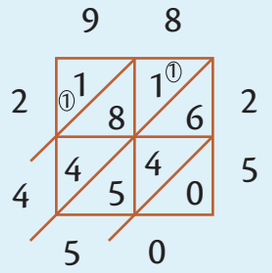
Step 4: Now, going from right to left, add the digits along the diagonal, i.e., first diagonal has only 0, so we write 0 below it as shown. The second diagonal gives the sum 6 + 4 + 5 = 15.

Write 5 below it and carry over 1 to the next diagonal.

Repeat the procedure as shown and write the product starting from the left to the right.

Thus, $98 \times 25 = 2450$.

Now, try the same method to multiply 3-digit numbers as well.



Let's Practice 4.2

1. Write the missing number in the boxes in the following multiplication problems.

a.
$$\begin{array}{r} 4\ 8 \\ \times\ 2\ 3 \\ \hline 1\ 4\ 4 \\ \square\ \square\ 0 \\ \hline \square\ \square\ 4 \end{array}$$

b.
$$\begin{array}{r} 6\ 1 \\ \times\ 2\ 3 \\ \hline \square\ \square\ \square \\ 1\ 2\ 2\ 0 \\ \hline \square\ \square\ \square\ \square \end{array}$$

c.
$$\begin{array}{r} 1\ 3\ 4 \\ \times\ 1\ 3 \\ \hline \square\ \square\ \square \\ \square\ \square\ \square\ 0 \\ \hline 1\ 7\ 4\ \square \end{array}$$

d.
$$\begin{array}{r} 1\ 6\ 6 \\ \times\ 4\ 5 \\ \hline \square\ \square\ \square \\ \square\ \square\ \square\ 0 \\ \hline 7\ 4\ 7\ 0 \end{array}$$

e.
$$\begin{array}{r} 1\ 2\ 2 \\ \times\ 2\ 7 \\ \hline \square\ \square\ \square \\ \square\ \square\ \square\ 0 \\ \hline 3\ 2\ 9\ 4 \end{array}$$

2. Find the following products.

a. 87×36 b. 21×21 c. 51×25

d. 144×21 e. 328×36 f. 321×38

3. Multiply.
   a. Five hundred forty-three by twelve
   b. Two hundred ninety-seven by fifteen
   c. Eighty-nine by forty-five
   d. Six hundred forty-nine by thirteen
   e. Two hundred nine by thirty-two

Word Problems

While solving word problems of multiplication, we first need to find out the numbers to be multiplied and then multiply them. The situations given in word problems are sometimes tricky, so find out the multiplier and the multiplicand carefully before proceeding with multiplication.

Example: Akashdeep notices that he blinked his eyes 35 times in one minute. If he keeps blinking at the same speed, how many times will he blink in one hour?

Solution: We know that, 1 hour = 60 minutes

Number of times Akashdeep blinked his eyes in 1 minute = 35

Number of times Akashdeep blinked his eyes in 60 minutes = 35×60

Thus, Akashdeep will blink 2100 times in 1 hour (or 60 minutes).

$$\begin{array}{r} 35 \\ \times\ 60 \\ \hline 00 \\ 2100 \\ \hline 2100 \end{array}$$

Let's Practice 4.3

1. Nikita noticed that she breathes 15 times in a minute. If she keeps breathing with the same speed, how many times will she breathe in an hour?
2. A city has 19 post offices. On 29th August, each post office received 47 letters. How many total letters are received by them on that day?
3. How many hours are there in a year, if the year is not a leap year and has 365 days in it.
4. If 240 pens are packed in one carton, then how many pens will be packed in 18 such cartons?

5. On her birthday, Kashish went to watch a movie along with 13 more people (her family members and relatives). If one movie ticket costs ₹249, what will be the total amount to be paid for all the movie tickets?
6. Supriya walks 850 m in the park every day. How many metres does she walk in the park in a month, assuming the month is of 30 days?

Multiplication by 10, 100 and 1000

- To multiply a number by 10, put one zero to the right of the number. For example, $316 \times 10 = 3160$
- To multiply a number by 100, put two zeroes to the right of the number. For example, $24 \times 100 = 2400$
- To multiply a number by 1000, put three zeroes to the right of the number. For example, $5 \times 1000 = 5000$

Estimating Products

Like in addition and subtraction, we also estimate the products to make it easier. Let us understand using some examples.

Example: Estimate the product of 159×13 by first rounding off the numbers to the nearest 10s.

Solution: First round off the numbers to the nearest 10s,

$159 \rightarrow 160$

$13 \rightarrow 10$

Therefore, $160 \times 10 = 1600$.

Thus, the estimated product of 159 and 13 is 1600.

Let's Practice 4.4

1. Fill in the blanks.

a. $42 \times 100 =$ ..... b. $536 \times$ ..... $= 5360$ c. ..... $\times 100 = 900$

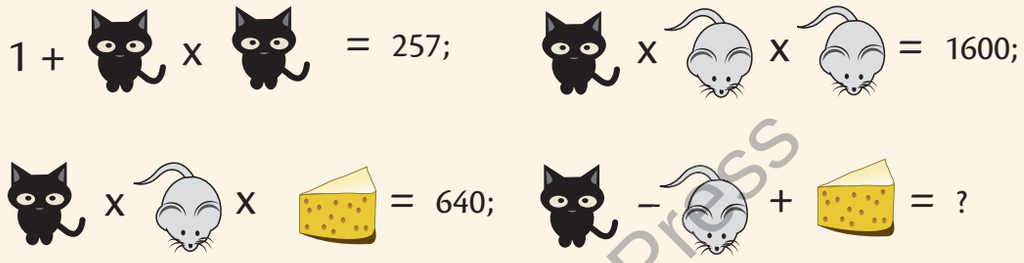
d. $591 \times$ ..... $= 5910$ e. $72 \times$ ..... $= 72000$ f. $51 \times 1000 =$ .....

2. Estimate the product by first rounding off the numbers to the nearest 10s.

a. 45×87	b. 219×71	c. 514×25
d. 127×77	e. 256×52	f. 77×85

Brain Teaser

1. Given that,



Find the value of each of the given images (i.e., cat, rat and cheese).

2. Mr Kamal saves ₹ 875 per month. Find out how much did he save in three years, if his savings increased by ₹ 100 every year.
3. Saurabh brought 45 kg of rice costing ₹ 42 per kg and 12 kg of *dal* costing ₹ 117 per kg. Find the total money he paid.
4. Find out 3 different pairs of numbers which on multiplication give result:

a. 200	b. 1000	c. 2500

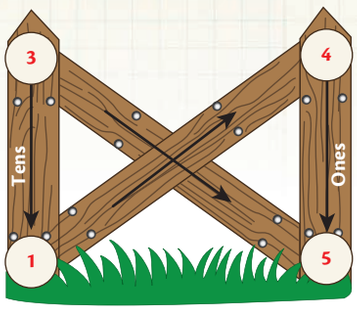
Summary

- To multiply a number by 10, put one zero to the right of the number.
  Example: $25 \times 10 = 250$
- To multiply a number by 100, put two zeroes to the right of the number.
  Example: $14 \times 100 = 1400$
- To multiply a number by 1000, put three zeroes to the right of the number.
  Example: $8 \times 1000 = 8000$

Assessment

1. Choose the correct option.
   a. On multiplying 321 by 15, we get the product as:
      i. 7730 ii. 5143 iii. 4815 iv. 3825
   b. If we multiply 312 by 10, the product that we get is:
      i. 312 ii. 3120 iii. 0 iv. 3012
   c. If we multiply 100 by 36, we get the product as:
      i. 360 ii. 3600 iii. 3006 iv. 3006
   d. We need to multiply 9 by ..... to get the product 72.
      i. 5 ii. 8 iii. 3 iv. 9
   e. 9×7 = ...
      i. 65 ii. 64 iii. 63 iv. 54
2. Fill in the blanks.
   a. $48 \times$ ..... = 4800 b. ..... $\times 20 = 600$ c. $100 \times$ ..... = 4200
   d. 440×39 = ... e. 661×24 = ... f. 283×22 = ...
3. Multiply the following using lattice algorithm.
   a. 27×17 b. 45×34 c. 56×89
   d. 78×78 e. 115×96 f. 345 x 19
4. If a carton can hold 54 toy cars, then find the number of toy cars in 24 such cartons.
5. A newly opened swimming pool offered its 2-months membership for ₹ 999. If 38 people opted for this membership in the first week, then how much money was collected in the first week?
6. A group of 80 students went for a school trip to the National Museum. Outside the museum, every student bought an ice cream for ₹ 20 from an ice cream vendor. What amount did the ice cream vendor earn from these students?
7. In a corporate office, 657 watts of electricity is used per hour. Find the total electricity consumed by the office in five working days of a week, if the office is open for 8 hours per day.
8. Aprajita bought a dozen boxes to store pulses and rice in her kitchen. If the cost of one box is ₹ 180, then how much do a dozen such boxes cost? [Hint: 1 dozen = 12]

Activities



Individual work

Multiplying 2-digit by 2-digit Number

Take four ice cream sticks and stick them with arrows drawn on them, as shown.

Also, stick four laminated or white sheets as shown, so that we can erase and write new problems.

Understand the procedure of multiplying a 2-digit number by a 2-digit number.

For example, consider 34×15 and write the digits as shown. Now, we have

$3 \times 5 = 15$	Tens × Ones = (TO)	$3 \times 1 = 3$	Tens × Tens = (TT)
$4 \times 5 = 20$	Ones × Ones = (OO)	$1 \times 4 = 4$	Tens × Ones = (TO)

Now, the final answer is:

[TT	(TO + TO)	OO]	
3	(4 + 15)	20	
3	19	20	
3	(19 + 2)	0	[2 carried over from 20]
3	21	0	
(3 + 2)	1	0	[2 carried over from 21]
5	1	0	

So, $34 \times 15 = 510$

Now, solve as many problems as possible.

Group work

Fun with Multiplication

Form pairs and ask each pair to take two small marbles or dice and an egg carton. Flip it and write some 2-digit and 3-digit numbers on each egg cell.

Ask them to place two marbles inside the egg carton and ask the students to shake it up and whatever the two numbers they land on, the student should multiply them.

If the students answer incorrectly, the pair will be out and the one that plays till the end will be the winner.

Take a maximum of five rounds. If more than one is left till the end, then they all are declared as winners.

Enrichment

Multiplication of a 3-digit Number by a 3-digit Number

Multiplying a 3-digit number by a 3-digit number is similar to multiplying by 2-digit numbers.

Example: Multiply 463 by 132.

Solution: Let's multiply.

Step 1: Multiply 463 by 2.
$463 \times 2 = 926$

Step 2: Multiply 463 by 30.
$463 \times 30 = 13890$

Step 3: Multiply by 100.
$463 \times 100 = 46300$

Step 4: Add the products.
$926 + 13890 + 46300 = 61116$

$$\begin{array}{r} 463 \\ \times\ 132 \\ \hline 926 \\ 13890 \\ 46300 \\ \hline 61116 \end{array}$$

Therefore, $463 \times 132 = 61116$

Now, solve the following questions.

1. 212×150
2. 137×234
3. 278×312
4. 500×125
5. 666×126
6. 245×179

Chapters 1 and 2

Worksheet 1

1. Write the following number in words and find the place and the face value of the underlined digits.

   a. 29,3<u>8</u>2 b. 8<u>3</u>,261 c. 5,<u>2</u>3,599 d. <u>6</u>,20,215

2. Write the standard forms of the following expanded forms.

   a. 30,000 + 6,000 + 300 + 40 + 2 b. 4 × 10,000 + 2 × 100 + 3

   c. 6,00,000 + 40,000 + 8000 + 500 + 70 + 7 d. 8 × 10,000 + 3 × 1,000 + 9 × 100 + 5

3. Arrange the following numbers in ascending order.

   a 42,567; 23,200; 67,234; 7,234; 53,300 b. 99,234; 4,50,359; 99,235; 6,34,567; 24,909

4. Form the greatest as well as the smallest 5-digit number that can be formed using the following digits, without repetition.

   a. 4, 1, 2, 5, 8 b. 1, 5, 8, 0, 9 c. 6, 1, 9, 8, 0 d. 3, 9, 0, 0, 1

5. Express the following Hindu-Arabic numerals in Roman numerals.

   a. 23 b. 12 c. 7

   d. 30 e. 29 f. 27

6. Solve the following.

   a.

	Th	H	T	O
	3	7	6	8
–		1	2	4

   b.

	Th	H	T	O
	4	3	9	8
–	2	0	0	7

   c.

	Th	H	T	O
	1	3	7	6
			9	7
		3	2	1
+				4

   d.

	Th	H	T	O
				9
			4	2
		5	1	3
+	6	1	2	3

7. Find the actual and the estimated sum or difference of the following by first rounding of the numbers to the nearest 100s.

   a. 2345 + 3278 b. 9837 + 5683 c. 7895 – 1907 d. 3753 + 4523 – 5627

8. Solve the following word problems.

   a. George scored 1,536 points while Maya scored 1,087 points. Find the total number of points scored.

   b. Caesar bought a dictionary which contained 1,563 new words. If he read 147 words from the same, then how many words is he left with?

Worksheet 2

1. Read the time given in the following clocks and write the time in two ways.

a. 

.....

.....

b. 

.....

.....

c. 

.....

.....

d. 

.....

.....

2. Write a.m. or p.m. for each of the following:
   a. 2 o'clock in the morning .....
   b. 4:30 in the evening .....
   c. 1 o'clock in the afternoon .....
   d. 10 minutes past midnight .....

3. Convert the following 12-hour clock time to 24-hour clock time.
   a. 4:00 p.m.
   b. 8:45 p.m.
   c. 3:55 a.m.
   d. 11:20 p.m.
   e. 3:40 a.m.

4. Multiply the following.
   a. 42 × 23
   b. 27 × 45
   c. 321 × 12
   d. 714 × 24
   e. 247 × 63

5. Write the missing numbers in the following multiplications using the standard algorithm.

a.
$$\begin{array}{r} 17 \\ \times\ 25 \\ \hline \square 5 \\ \square 40 \\ \hline 4\square\square \end{array}$$

b.
$$\begin{array}{r} 92 \\ \times\ 53 \\ \hline \square\square 6 \\ 4\square 00 \\ \hline 4\square 76 \end{array}$$

c.
$$\begin{array}{r} 199 \\ \times\ 32 \\ \hline 3\square 8 \\ 5\square 70 \\ \hline \square\square 6\square \end{array}$$

d.
$$\begin{array}{r} 182 \\ \times\ 46 \\ \hline \square 09\square \\ 7\square 80 \\ \hline \square 37\square \end{array}$$

6. Marie bought 31 muffins for a birthday party. If the cost of a muffin is ₹12, then how much did all the muffins cost?
7. Rohit gave his final term exams which started on 14th March and ended on 3rd April. If the year is assumed to be a leap year, then what was the duration of the exam?
8. Ravi went for cycling in the early morning with his friends at 5:00 a.m. and returned home at 6:30 a.m. For how long did he cycle?

Sample Test Paper

1. Insert commas according to the Indian system of numeration and also write the number names of the following numerals.

   a. 12915 b. 189105 c. 289194

   d. 48290 e. 284021

2. Write the following in standard form.

   a. 60,000 + 5,000 + 400 + 30 + 2 b. 20,000 + 8,000 + 600 + 70 + 3

   c. 8,00,000 + 3,000 + 900 + 20 + 1 d. 30,000 + 4,000 + 300 + 60 + 7

3. Compare the following numbers and write >, < or = in the given boxes.

   a. 2,28,538 ☐ 3,70,442 b. 1,28,210 ☐ 1,11,232

   c. 95,618 ☐ 95,618 d. 9,94,233 ☐ 9,85,222

4. Round off the following numbers to the nearest 10s, 100s and 1000s.

   a. 2,23,528 b. 95,641

   c. 4,81,325 d. 89,771

5. Write the Hindu-Arabic numerals for the following Roman numerals.

   a. XXV b. XII

   c. XXVI d. XXXIV

6. Solve the following.

   a. 5218 + 342 + 2394 b. 6218 + 321 + 134

   c. 2567 – 248 d. 7236 + 219 – 2199

   e. 83 × 26 f. 237 × 65

7. Fill in the blanks using the property of addition.

   a. 8,734 + 1,163 = ... + 8,734

   b. 2,365 + 0 = ... + 2,365

   c. 1,382 + (5,401 + 1,200) = (1,382 + 5,401) + ...

   d. (1,902 + 3,103) + ... = 1,902 + (3,103 + 581)

8. Choose the correct option.

   a. We need to multiply 10 by ..... to get 80 as the product.

      i. 5 ii. 8 iii. 10 iv. 3

b. If we multiply 45 by 1000, the product that we get is……...

i. 45 ii. 450 iii. 45000 iv. 40

c. On multiplying 625 by 12, we get the product as:

i. 2580 ii. 4503 iii. 7500 iv. 7800

d. 11 × 11 = ……..

i. 111 ii. 133 iii. 128 iv. 121

9. Find the following products.

a. 35 × 16 = ……

b. 43 × 22 = ……

c. 226 × 64 = ……

d. 176 × 82 = ……

e. 133 × 11 = ……

f. 525 × 12 = ……

10. Estimate the product by first rounding off the numbers to the nearest 10s.

a. 23 × 12 b. 235 × 62 c. 55 × 27 d. 421 × 34

11. Ahmed has ₹2378 in his piggy bank and his younger sister has ₹1267 in her piggy bank. Find the total amount they have. Also, find out how much more money does Ahmed have.

12. A newly opened gym offered a membership for 3 months for ₹2000. If 15 people joined it in the first month, then what amount did they pay?

13. Read and write the time shown on the given clocks. Also, convert the time in 24-hour clock format.

a.

…… a.m.

b.

…… p.m.

14. Shivani went for a birthday party at 10:15 a.m. She enjoyed the party for 1 hour 35 minutes. At what time did she reach home?

15. Ravi joined the dance classes during summer vacations on 5 May. If the duration of her classes is for 40 days, then when would be her last class? (include the starting and the ending date)

Answer Key

Chapter 1 – Numbers

Warm-up

1. a. 4629 b. 2036 c. 9979 d. 1110
2. a. Three thousand five hundred sixty-nine
   b. One thousand one
   c. Two thousand four hundred seventy-five
   d. One thousand one hundred eighty-nine
3. a. < b. = c. > d. <
4. a. 2494, 2496 b. 6480, 6482
   c. 2298, 2300 d. 1599, 1601

Let's Practice 1.1

1. a. 8,00,509 b. 62,050 c. 1,16,014
   d. 53,367 e. 4,11,202 f. 7,19,019
2. a. Twenty thousand five hundred thirty-nine
   b. Fifty-six thousand two hundred twenty-five
   c. Eighty-nine thousand nine hundred ninety-nine
   d. Two lakh nine thousand five hundred thirty-eight
   e. Nine lakh twenty-six thousand four hundred thirty-nine
   f. One lakh thirty thousand
3. a. 51,467 b. 81,862 c. 80,010
   d. 7,90,611 e. 97,970 f. 5,71,253

Let's Practice 1.2

1.

Numbers	L	TTh	Th	H	T	O
31,209		3	1	2	0	9
74,368		7	4	3	6	8
63,021		6	3	0	2	1
8,00,519	8	0	0	5	1	9
9,00,000	9	0	0	0	0	0
2,69,739	2	6	9	7	3	9

2. a. 20,000 b. 200 c. 5,00,000
   d. 1,000 e. 10 f. 0
3. a. 4 b. 9 c. 6
   d. 1 e. 9 f. 0
4. a. 20,000 + 9,000 + 600 + 10 + 8
   b. 60,000 + 8,000 + 100 + 90 + 2
   c. 50,000 + 5,000 + 900 + 60
   d. 8,00,000 + 50,000 + 9,000 + 200 + 60 + 8
   e. 6,00,000 + 20,000 + 7,000 + 600 + 30 + 4
   f. 5,00,000 + 600 + 80 + 7
5. a. 62857 b. 14,685 c. 8,20,807
   d. 50,306 e. 5,38,657 f. 4,50,271

Let's Practice 1.3

1. a. < b. < c. >
   d. > e. < f. =
2. a. 83,219; 83,237; 98,219; 99,308
   b. 60,589; 60,859; 60,958; 3,95,830
   c. 2,39,638; 2,63,938; 5,83,108; 5,83,801
   d. 6,85,209; 7,99,198; 8,10,000; 9,99,000
   e. 99,200; 8,99,338; 8,99,614; 8,99,833
   f. 648; 9,299; 62,239; 5,19,236
3. a. 81,593; 69,298; 66,283; 38,197
   b. 83,300; 68,283; 61,337; 61,204
   c. 6,20,133; 5,46,111; 4,38,196; 3,43,247
   d. 5,96,214; 2,37,168; 66,429; 28,263
   e. 6,83,144; 6,71,247; 3,99,193; 33,297
   f. 8,38,221; 4,43,100; 1,21,119; 1,18,183
4. a. 76,541 b. 98,210 c. 76,210
   d. 8,64,321 e. 9,65,431 f. 9,86,420
5. a. 34,568 b. 10,289 c. 12,678
   d. 1,02,456 e. 1,02,789 f. 1,35,789
6. a. 88,410 b. 77,631 c. 99,410
   d. 88,765 e. 99,210 f. 99,810
7. a. 1,00,579 b. 1,13,469 c. 1,00,238
   d. 1,15,679 e. 1,00,278 f. 1,00,789

Let's Practice 1.4

1. a. 29,010 b. 38,150 c. 6,99,280
   d. 2,88,520 e. 6,84,210 f. 6,75,400
2. a. 83,200 b. 48,900 c. 6,00,200
   d. 8,70,300 e. 4,29,100 f. 19,000
3. a. 16,000 b. 90,000 c. 28,000
   d. 1,69,000 e. 1,00,000 f. 61,000
4. a. False b. True c. False
   d. True e. False f. False

Let's Practice 1.5

1. a. 33 b. 24 c. 39
   d. 8 e. 10 f. 16
2. a. V b. XII c. XXXIX
   d. XXXI e. XI f. XXIX
3.

Number names	Roman numerals	Correct or wrong
Twenty-seven	XXVII	Correct
Thirty-eight	XXXVIII	Correct
Twenty-six	XXIV	Wrong
Nineteen	XXI	Wrong
Thirty-two	XXXII	Correct
Twenty-five	XXV	Correct

Brain Teaser

1. Greatest 6-digit number – 777510
   Smallest 6-digit number – 100057

Assessment

1. a. 31,450 b. 50,071 c. 3,15,160
   d. 9,87,231 e. 5,04,040
2. a. Seventeen thousand three hundred twenty-four
   b. Fifty-six thousand seven hundred fifty-four
   c. Five lakh sixteen thousand one hundred sixty-four
   d. Seven lakh five thousand six
   e. Three lakh ninety-four thousand eight hundred seventy-three
3. a. 400 b. 5 c. 7000 d. 4,00,000
4. a. 6 b. 8 c. 1 d. 0
5. a. 2,00,000 + 80,000 + 8,000 + 100 + 90 + 3
   b. 10,000 + 6,000 + 800 + 90
   c. 7,00,000 + 10,000 + 9000 + 100 + 10 + 4
   d. 60,000 + 5,000 + 300 + 90 + 4
6. a. 4,60,205 b. 6,84,359 c. 57,201
7. 5,99,000; 4,93,218; 2,62,193; 18,295; 16,252

8. 113568
9. a. < b. < c. > d. < e. > f. >
10. a. 4,88,200; 4,88,000 b. 6,89,300; 6,89,000
    c. 1,10,000; 1,10,000 d. 5,67,200; 5,67,000
11. a. XXXII b. XII c. XXIX d. XIX

Chapter 2 – Addition and Subtraction

Warm-up

1. 534 SAW 2. 360 AIR 3. 578 SUN
4. 513 SEA 5. 468 WIN 6. 214 DEW

Mental Maths

1. F 2. F 3. T 4. T 5. T

Let's Practice 2.1

1. a. 4828 b. 2089 c. 7198
   d. 2970 e. 3698 f. 6998
2. a. 3268 b. 6779 c. 1946
   d. 7497 e. 6666 f. 3377

Let's Practice 2.2

1. a. 8008 b. 6249 c. 3181
   d. 9165 e. 7998 f. 16577
2. a. 2900 b. 5700 c. 8451
   d. 8090 e. 3782 f. 3110

Let's Practice 2.3

1. a. 9779 b. 8889 c. 8457
   d. 7174 e. 3389 f. 7213
2. a. 6416 b. 7730 c. 8370
   d. 6789 e. 5251 f. 3906

Let's Practice 2.4

1. 1290 2. 1023 3. 1240
4. 0 5. 1000 6. 3,140; 2730

Let's Practice 2.5

1. a. 1431 b. 5044 c. 2110
   d. 3101 e. 2054 f. 1410
2. a. 6821 b. 1601 c. 2400
   d. 11 e. 2000 f. 7113

Let's Practice 2.6

1. a. 2677 b. 4789 c. 1702
   d. 3486 e. 801 f. 4799
2. a. 2617 b. 9461 c. 600
   d. 998 e. 879 f. 5989

Let's Practice 2.7

1. 1 2. 9817 3. 0
4. 9327 5. 0 6. 2313

Let's Practice 2.8

1. 2575 2. 6754 3. 8043 4. 8744
5. 5549 6. 3670

Let's Practice 2.9

1. ₹2000 2. 2000
3. Karuna, ₹1410 costlier 4. ₹1568
5. 2474 6. ₹651

Let's Practice 2.10

1. a. Actual sum: 7814, estimated sum: 7820
   b. Actual sum: 12351, estimated sum: 12360
   c. Actual difference: 5262, estimated difference: 5260
   d. Actual sum: 4162, estimated sum: 4160
   e. Actual sum: 6892, estimated sum: 6890
2. a. Actual sum: 3773, estimated sum: 3800
   b. Actual sum: 13384, estimated sum: 13400
   c. Actual difference: 2544, estimated difference: 2500
   d. Actual sum: 6090, estimated sum: 6100
   e. Actual sum: 5282, estimated sum: 5300
3. a. Estimated sum: 8000, actual sum: 8780
   b. Estimated difference: 2000, actual difference: 1870
   c. Estimated difference: 0, actual difference: 639
   d. Estimated sum: 9000, actual sum: 9449
   e. Estimated sum: 7000, actual sum: 7368
4. 5660 5. Rahul's sister; ₹2000

Brain Teaser

1. Greatest 5-digit number – 99310, smallest 5-digit number – 10039
   Difference – 89271
2. a. > b. <
3. A + B – C = 5362, A + B > A – C

Assessment

1. a. 2115 b. 690 c. 9200
2. a. 5291 b. 4884 c. 12600
   d. 5657 e. 8475
3. a. 3719 b. 999 c. 800
   d. 2699 e. 345 f. 1128
4. a. F b. T c. F d. T e. F
5. 2002 6. 200 7. ₹6500
8. 1500 9. 5706, second day by 1610

Chapter 3 – Time

Warm-up

Half past 3 – 3:30
Quarter to 10 – 9:45
Quarter past 11 – 11:15
5 o'clock –- 05:00

Let's Practice 3.1

1. a. 6:11, 11 min past 6 b. 5:40, 20 min to 6
   c. 2:54, 6 min to 3 d. 7:12, 12 min past 7
   e. 8:20, 20 min past 8 f. 3:47, 13 min to 4
2. a. 6:40 b. 5:50 c. 4:33
   d. 3:05 e. 3:50 f. 8:14

Let's Practice 3.2

1. a. p.m. b. a.m. c. a.m.
   d. p.m. e. a.m. f. p.m.
2. a. a.m. b. p.m. c. p.m.
   d. a.m. e. p.m.

Let's Practice 3.3

1. a. 07:38 hours b. 06:45 hours
   c. 12:00 hours d. 16:52 hours
   e. 11:35 hours f. 20:43 hours
2. a. 5:45 p.m. b. 8:30 a.m.
   c. 9:56 p.m. d. 1:35 a.m.
   e. 2:10 p.m. f. 11:45 p.m.

Mental Maths

1. (c) 2. (d) 3. (b) 4. (d) 5. (b)

Let's Practice 3.4

1. a. 1 hour 5 min b. 3 hours 10 min
   c. 5 hours d. 13 hours
   e. 4 hours 40 min f. 1 hour 40 min
2.

Starting date	Ending date	Duration of days
2 September	31 December	120 days
3 March	15 July	134 days
21 November	16 Feb	87 days
4 June	28 August	85 days
8 October	21 December	74 days
11 March	6 May	56 days

3. 6 hours 4. 1:50 p.m.
5. 13 days 6. 17 june

Brain Teaser

1. 6:20 p.m. 2. 5:30 p.m. or 17:30 hours
3. 3 hours 30 min

Assessment

1. a. 1:35 or 25 minutes to 2
   b. 11:42 or 18 minutes to 12
   c. 6:50 or 10 minutes to 7
2. a. p.m. b. p.m. c. a.m.
3. a. 11:45 p.m. b. 00:30 hours
   c. 4:57 p.m. d. 17:37 hours
   e. 18:50 hours
4. 18 hours 5. 45 days 6. 6 hours

Chapter 4 – Multiplication

Warm-up

435411977

Let's Practice 4.1

1. 8 2. 18 3. 21 4. 48
5. 36 6. 63 7. 24 8. 81

Let's Practice 4.2

1. a.

			4	8
×			2	3
		1	4	4
		9	6	0
	1	1	0	4

b.

			6	1
×			2	3
		1	8	3
	1	2	2	0
	1	4	0	3

c.

		1	3	4
×			1	3
		4	0	2
	1	3	4	0
	1	7	4	2

d.

		1	6	6
×			4	5
		8	3	0
	6	6	4	0
	7	4	7	0

e.

		1	2	2
×			2	7
		8	5	4
	2	4	4	0
	3	2	9	4

2. a. 3132 b. 441 c. 1275
   d. 3024 e. 11808 f. 12198
3. a. 6516 b. 4455 c. 4005
   d. 8437 e. 6688

Let's Practice 4.3

1. 900 2. 893 3. 8760 4. 4320
5. ₹3486 6. 25500 m

Let's Practice 4.4

1. a. 4200 b. 10 c. 9
   d. 10 e. 1000 f. 51000
2. a. 4500 b. 15400 c. 15300
   d. 10400 e. 13000 f. 7200

Brain Teaser

1. cat =16, rat =10, cheese = 4; cat – rat + cheese = 10
2. ₹35100 2. ₹3294
3. $200 = 50 \times 4 = 5 \times 40 = 10 \times 20$
   $1000 = 25 \times 40 = 20 \times 50 = 100 \times 10$
   $2500 = 50 \times 50 = 25 \times 100 = 625 \times 4$

Assessment

1. a. (iii) b. (ii) c. (ii) d. (ii) e. (iii)
2. a. 100 b. 30 c. 42
   d. 17160 e. 15864 f. 6226
3. a. 459 b. 1530 c. 4984
   d. 6084 e. 11040 f. 6555
4. 1296 5. ₹37962 6. ₹1600
7. 26280 watts 8. ₹2160

Enrichment

1. 31800 2. 32058 3. 86736
4. 62500 5. 83916 6. 43855

Worksheet 1

1. a. Twenty-nine thousand three hundred eighty-two, PV-80, FV-8
   b. Eighty-three thousand two hundred sixty-one, PV-3000, FV-3
   c. Five lakh twenty-three thousand five hundred ninety-nine, PV-20,000, FV-2
   d. Six lakh twenty thousand two hundred fifteen, PV-6,00,000; FV-6
2. a. 36342 b. 40203 c. 648577 d. 83905
3. a. 7,234; 23,200; 42,567; 53,300; 67,234
   b. 24,909; 99234; 99235; 4,50,359; 6,34,567
4. a. 85421, 12458 b. 98510, 10589
   c. 98610,10689 d. 93100, 10039
5. a. XXIII b. XII c. VII
   d. XXX e. XXIX f. XXVII
6. a. 3644 b. 2391
   c. 1798 d. 6687
7. a. 5623, 5600 b. 15520, 15500
   c. 5988, 6000 d. 2649, 2700
8. a. 2623 points b. 1416 words

Worksheet 2

1. a. 8:50, 10 min to 9
   b. 8:20, 20 min past 8
   c. 6:28, 28 minutes past 6
   d. 12:05, 5 min past 12
2. a. a.m. b. p.m. c. p.m. d. a.m.
3. a. 16:00 hours b. 20:45 hours
   c. 03:55 hours d. 23:20 hours
   e. 03:40 hours
4. a. 966 b. 1215 c. 3852
   d. 17136 e. 15561

5. a.

		1	7
×		2	5
		8	5
	3	4	0
	4	2	5

b.

			9	2
×			5	3
		2	7	6
	4	6	0	0
	4	8	7	6

c.

		1	9	9
×			3	2
		3	9	8
	5	9	7	0
	6	3	6	8

d.

		1	8	2
×			4	6
	1	0	9	2
	7	2	8	0
	8	3	7	2

6. ₹372
7. 21 days
8. 1 hour 30 min

Sample Test Paper

1. a. 12,915–twelve thousand nine hundred fifteen
   b. 1,89,105–one lakh eighty-nine thousand one hundred five
   c. 2,89,194–two lakh eighty-nine thousand one hundred ninety-four
   d. 48,290–forty-eight thousand two hundred ninety
   e. 2,84,021–two lakh eighty-four thousand twenty-one
2. a. 65,432 b. 28,673
   c. 8,03,921 d. 34,367
3. a. < b. >
   c. = d. >
4. a. Nearest 10s-2,23,530, Nearest 100s-2,23,500, Nearest 1000s-2,24,000
   b. Nearest 10s-95,640, Nearest 100s-95,600, Nearest 1000s-96,000
   c. Nearest 10s-4,81,330, Nearest 100s-4,81,300, Nearest 1000s-4,81,000
   d. Nearest 10s-89,770, Nearest 100s-89,800, Nearest 1000s-90,000
5. a. 25 b. 12
   c. 26 d. 34
6. a. 7954 b. 6673
   c. 2319 d. 5256
   e. 2158 f. 15405
7. a. 1163 b. 0
   c. 1200 d. 581
8. a. (ii) b. (iii)
   c. (iii) d. (iv)
9. a. 560 b. 946 c. 14464
   d. 14432 e. 1463 f. 6300
10. a. 200 b. 14400 c. 1800
    d. 12600
11. ₹3,645, ₹1,111
12. ₹30,000
13. a. 11:55 a.m.; 11:55 hours b. 1;25 p.m.; 13;25 hours
14. 11:50 a.m.
15. 13 June

Science

Chapter 1

Human Body: Food We Eat

Chapter Objectives

- Learn about different food items having different nutrients
- Learn about balanced diet
- Understand how our body gets nutrients from food
- Understand the concept of balanced diet
- Learn how to avoid food wastage
- Know how we can preserve food

LET'S BEGIN

Imagine you did not eat anything for about three days. Would you be able to carry out everyday tasks like studying, playing or exercising? No. What would you need to be able to get your energy back and do work? F __ __ D.

Name any three food items that you eat every day.

....., ..., ...

Look at the pictures of the food items. Find their names in the respective word grids.

Life Connect

GRID A

C	V	R	G	T	S	V
Y	H	M	I	T	I	W
M	O	A	I	C	M	J
Y	P	U	L	S	E	S
J	R	W	K	A	I	X
F	U	C	I	D	T	Q
C	H	A	P	A	T	I

Food that is good for our health and helps us grow is known as **healthy food.**

GRID B

R	O	O	P	R	A	E
K	E	L	X	E	Z	W
G	Z	G	E	G	Z	U
U	X	I	R	R	I	F
W	R	A	B	U	P	M
F	F	S	U	B	B	F
Q	C	H	I	P	S	V

The food items in **Grid A** are healthy. The food items in **Grid B** are unhealthy. Such unhealthy food is known as **junk food.**

FOOD AND NUTRITION

All of us eat food. Food gives us energy to do everyday tasks like studying, playing and exercising. But, do you know what makes a food healthy or unhealthy? The components present in the food make it healthy and unhealthy. **Nutrients** make food healthy. They help us to grow and prevent us from falling ill. The process of taking in and utilising food for growth and development of our body is known as **nutrition**.

Make your own definition: unhealthy food

.....

.....

FOOD NUTRIENTS

Different food items have different nutrients. The main nutrients that are present in different food items are carbohydrates, proteins, fats, vitamins and minerals. Besides these, food also contains roughage and water. These can also be called as different **food groups**. These food groups have been categorised based on the kind of work they do for the body. Thus, we should eat food from each food group every day.

Carbohydrates

Nutrients that give us energy to do work are **carbohydrates**. They provide our body with instant energy and are also called **energy-giving food**. Food rich in carbohydrates are rice, wheat, fruit juices and potatoes. A sportsperson, rickshaw puller and those doing excessive physical activity should intake more of carbohydrate-rich food in their diet, as they do a lot of physical work.

Sources of carbohydrates

Instant: In a very short time | **Excessive:** More than necessary or too much

INFO HUB

The two main types of carbohydrates are sugar and starch. Grapes are a good source of sugar. Potatoes are a good source of starch.

Fats

Fats give our body more energy than carbohydrates. They also keep the body warm and provide taste to the food. Oilseeds, nuts and butter are food rich in fats. Food that are a rich source of fats are also called **energy-giving food**.

Sources of fats

Extra fat is stored in the body for later use. The stored energy is used when the body does not get sufficient amount of food. But too much fat is not good for our body.

Fats provide us with energy. Then, why do we gain weight upon eating a lot of butter? Discuss.

INFO HUB

- Excess fat consumed by us is stored in our body for future use. Too much intake of fats leads to obesity.
- Fats take more time to digest than carbohydrates.

Proteins

Proteins help us to grow. Food rich in proteins is known as **body-building food**. Pulses, fish, eggs, cheese and beans are rich in proteins. Growing children should include more protein-rich food in their diet.

Sources of proteins

Starch: A complex carbohydrate | **Obese:** State of being overweight

Vitamins and Minerals

Vitamins help our body to fight against diseases. Food rich in vitamins and minerals are known as **protective food**. They also help in the absorption of other nutrients from the food by our body. Although vitamins are needed in small amounts, they are essential for our body.

Sources of vitamins and minerals

Different vitamins play different roles in our body. For example, green vegetables and dairy products, which improve eyesight and maintain healthy skin, are a good source of vitamin A. Milk, fish and eggs which are important for healthy bones and teeth are good source of vitamin D.

INFO HUB

The most natural way to get vitamin D is by exposing your skin to sunlight.

Some of the important vitamins required by our body are vitamins A, B-complex, C, D, E and K.

INFO HUB

Food such as fruits, vegetables, meat and milk are rich in vitamins and minerals. Such food help us to keep fit and healthy.

- Vitamin A keeps our skin healthy and improves eyesight.
- Vitamin B-complex helps our body produce the energy it needs to function better.
- Vitamin C is responsible for the growth and repair of body tissues.
- Vitamin E boosts our body's resistance against bacterial and viral infections.

Minerals are required for the formation of healthy bones, blood and teeth. Examples of minerals include calcium, iron, potassium and iodine.

- Minerals, such as calcium, are required for the formation of bones. Milk, curd and cheese are some foods rich in calcium.
- Minerals, such as iron, are needed for the formation of blood. Green leafy vegetables, whole grains and beans are examples of foods rich in iron.

Teaching Tip: Vitamin B-complex can be explained to students. It is a class of vitamins that has an important role in metabolism in the body. | **Resistance:** Fighting back

Roughage and Water

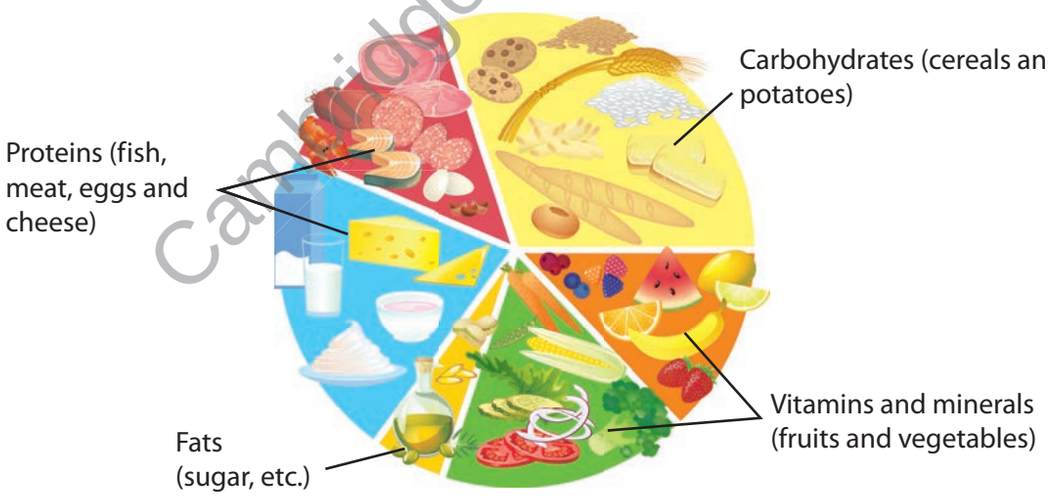
Apart from nutrients, food items such as oats, barley, corn, cereals, fruits and green leafy vegetables also contain fibres that cannot be digested by our body. This is known as **roughage**.

Roughage helps in removing waste material smoothly from our body in the form of stool. Water is also essential for the proper functioning of our body. We should drink plenty of water every day.

BALANCED DIET

The kind of food that we eat forms our diet. We must eat a diet that contains all the nutrients in the right amount, along with roughage and water, for the proper functioning of our body. Such a diet is known as **balanced diet**.

Balanced diet is necessary for the healthy growth and development of our body. If we take any nutrients in too much or too little quantity, it can affect our growth and weaken the disease-fighting capacity of our body.



ACTION TIME 1

With the help of an adult, prepare a balanced diet chart for a week. Your diet is healthy if it contains all the nutrients. Try to follow it strictly.

Smoothly: Without difficulty | **Capacity:** Capability to perform

Quick Check 1

Fill in the blanks.

1. The components that make food healthy and help us to grow and protect us from falling ill are known as ..... (**nutrients**/**fibres**).
2. ..... (**Vitamin E**/**Vitamin C**) is responsible for the growth and repair of body tissues.
3. ..... (**Roughage**/**Diet**) helps in removing waste material smoothly from our body in the form of stool.
4. Pulses, fish, eggs, cheese and beans are rich in ..... (**carbohydrates**/**proteins**).
5. ..... (**Minerals**/**Fats**) help in the formation of blood.

AVOIDING FOOD WASTAGE

There are various easy habits that you can adopt to reduce food wastage. This will not only help the environment, but also will help us save some money. Here are a few tips to get you started.

- We should buy only what is needed. Try to plan your meals ahead and make a shopping list.

Life Connect

- During meals, we should take small servings, so that we do not waste food.
- We should cook only as much food as can be consumed.
- We should learn ways to keep the food fresh and prevent it from spoilage, like when we buy fruits and vegetables, they should be washed in running water and kept in a refrigerator.
- We should set a good example for our family members by teaching them the value of food and explaining that they are blessed to have food on the table every day.

Teaching Tip: Spread awareness and have a class discussion on the importance of avoiding food wastage.

Now discuss in class:

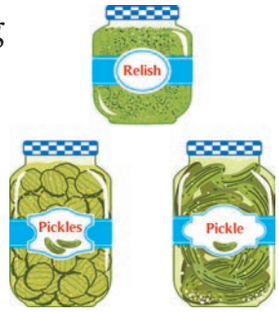
- Do you eat all the food in your tiffin box? Why or why not?
- Think of ways to reduce the amount of food wasted in schools.
- Think of ways to reduce the amount of food wasted at homes.

What will happen if we keep cooked vegetables in the kitchen for a day? Will you eat it the next day?

Some food items, if kept outside for a long period and not preserved, can get spoiled. Eating such food items can cause health problems. By preserving such food items, we can prevent them from getting spoiled. There are different ways in which we can preserve the food. Some of the food preservation methods are given here.

Refrigeration: Keeping food items such as cooked food, fruits and vegetables in the refrigerator can save them from getting spoiled. Thus, food stays fresh for longer.

Drying: Drying is the oldest method of food preservation. Drying removes the water content of food and helps them remain edible for a longer period. Food such as bananas, fish and prawns can be preserved by this method.



Pickling: Oils and spices are used to preserve food. Foods like mango and lime can be mixed with oil and spices to make pickles.

Deep freezing: Some food items are kept in a freezer and frozen so that they do not rot. Meat and fish can be preserved by this method.

Canning and bottling: In this method, food such as jams and sauces are kept in airtight cans and bottles. This helps keep the food fresh.

INFO HUB

Sugar is also used as a thick syrup, which acts as a preservative in many food items such as *murabba*.

Preserve: Prevent from rotting | **Rot:** Decay | ***Murabba:*** A sweet fruit preserve

Quick Check 2

State true or false.

1. Drying increases the water content of food and helps them remain edible for longer.
2. Oils and spices are used to preserve food by the method of pickling.
3. Roughage can be digested by our body.
4. Food such as bananas, fish and prawns can be preserved using canning and bottling method.

KEY TERMS

Nutrients: Components that make food healthy and help us grow and prevent us from falling ill

Nutrition: The process of taking in and utilising food for growth and development of our body

Carbohydrates: Energy-giving nutrients. They give us instant energy.

Fats: Energy-giving nutrients

Proteins: Body-building nutrients

Vitamins, Minerals: Protective nutrients

Roughage: The fibres present in food items which cannot be digested by our body

Balanced diet: Diet that contains all the nutrients in the right amount, for the proper functioning of our body. It includes roughage and water.

QUICK NOTES

- Food gives us energy to do our everyday tasks like studying, playing and exercising.
- There are seven important nutrients that are present in different food items and are required by our body. These are carbohydrates, proteins, fats, vitamins, minerals, roughage and water.
- Roughage is generally derived from plant parts. It helps in removing waste material smoothly from our body in the form of stool.
- We should not waste food. This will not only save the environment, but also will help us save some money.
- If we preserve food items, we can prevent them from getting spoiled.

RUN-THROUGH

I. Very Short Answer Questions

A. Tick (✓) the correct answer.

1. Energy is stored in our body in the form of ..... .

   a. protein ☐ b. fat ☐ c. vitamin ☐ d. mineral ☐

2. ..... is rich in calcium.

   a. Milk ☐ b. Rice ☐ c. Oil ☐ d. Fish ☐

3. The following food is rich in proteins.

   a. fish ☐ b. meat ☐ c. cheese ☐ d. all of these ☐

4. The fibres that help you to get rid of waste from the body are called:

   a. fat ☐ b. roughage ☐ c. protein ☐ d. carbohydrate ☐

5. ..... is a method of food preservation.

   a. Pickling ☐ b. Deep frying ☐ c. Boiling ☐ d. None of these ☐

B. Fill in the blanks.

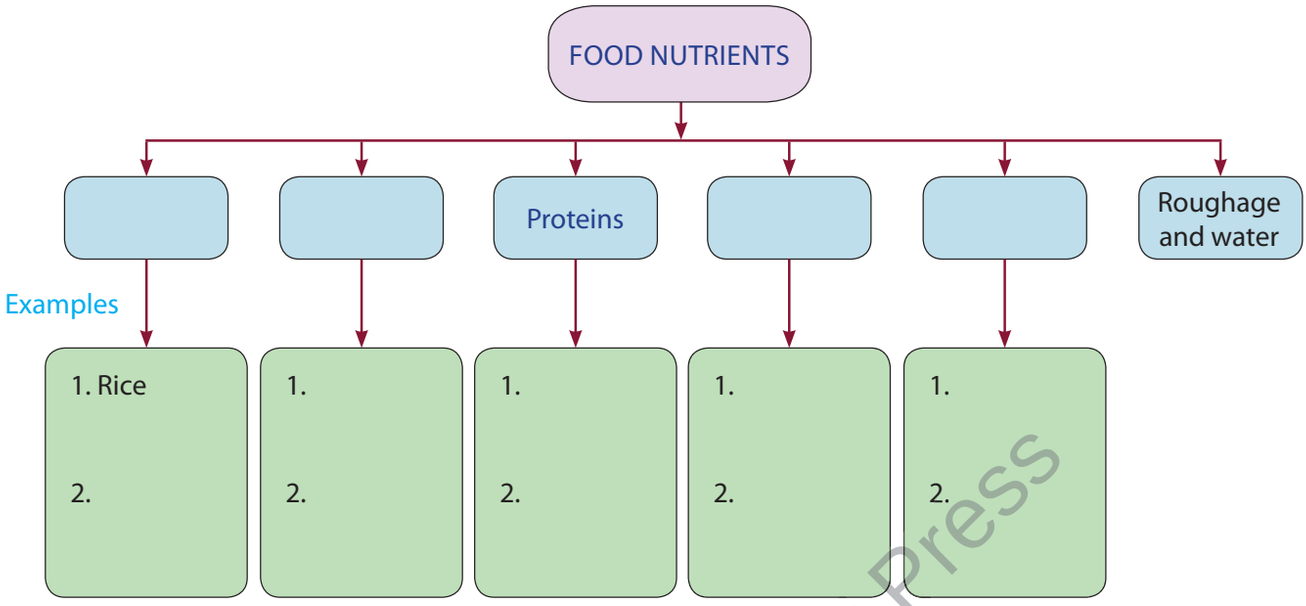
bones, carbohydrates, balanced diet, drying, obesity

1. Excessive consumption of fats can lead to ..... .
2. A diet that contains all the nutrients in the right amount for the proper functioning of our body is known as ..... .
3. Instant energy-giving food are called ..... .
4. ..... is the oldest method of food preservation.
5. Calcium is required by our body for the formation of ..... .

C. State true or false.

1. Vitamin A helps improve our eyesight.
2. All food items have same nutrients.
3. Milk is rich in vitamins and minerals.
4. Eating too much or too little of any nutrients can cause diseases.
5. Proteins are protective nutrients.

D. Complete the concept map.

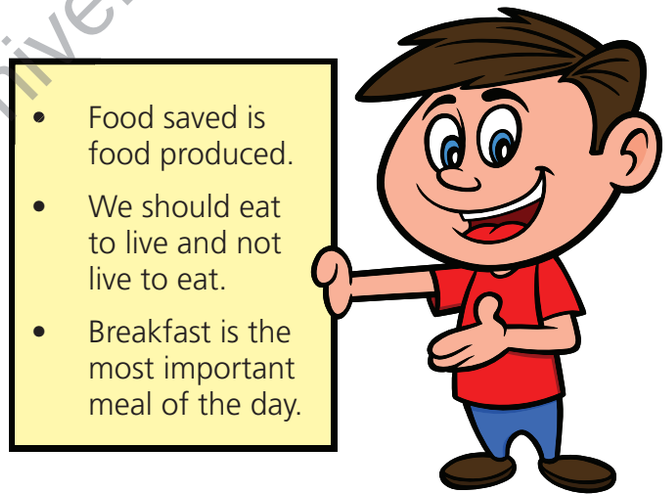


II. Short Answer Questions

1. Define nutrition.
2. How does iron help us? Name an iron-rich food.
3. Why should a sportsperson or a rickshaw puller intake more carbohydrate-rich food in their diet?

Subject Connect

4. Why should we not waste food?
5. What is meant by food preservation?
6. How are minerals important for our body?



III. Long Answer Questions

1. Briefly explain different food groups.
2. Why is balanced diet important? Explain.
3. Explain any four methods of food preservation.
4. Why is water essential in our diet?
5. Name the various vitamins. How are they useful for us and what are their sources?

Teaching Tip: Discuss the meaning of the phrases in the picture shown above.

IV. Challenge

1. Anaemia is a disease that is caused by insufficient blood formation. Which mineral will help to fight this disease?
2. Ravi has not been taking any protein in his diet and is totally surviving on fruits. What type of disease do you think can he can be prone to?

V. Enrichment

A. Case Study

Whether it is raining or sunny, the Mumbai ***Dabbawalas*** deliver home-cooked food to office-goers. The monthly charges of *dabbas* (lunch boxes) range from ₹400 to ₹1000, depending on the distance and time taken for the delivery.

In December 2015, about 400 *Dabbawalas* started a '*Roti Bank*'. This not only helped to reduce food wastage but also helped to feed the poor and needy in Mumbai.

Life Connect

What an example of **SAVE**, **SHARE** and **CARE**!

- Can you suggest any other idea(s) to these *Dabbawalas* to help the needy? You can fill up the contact form on their website mumbaidabbawala.in/contact-us/ with a suggestion or message.
- How can you organise a similar effort in your locality? Discuss in class.

B. What are summer crops and winter crops? Do they have any specific names? Find out from the library or Internet. Write the names of five plants of each category in a tabular form. Encourage each other to grow at least one crop in each season in your school or home garden.

C. Each One, Grow One!

Take a walk in your school. Discuss with your teacher and classmates about trees. You may discuss about: Which is your favourite tree? Why do you like trees? How do trees help us? Why should we plant more trees?

Life Connect

Planting a tree can mean so much more than just making your school or home look beautiful! It is a chance to 'put something back' into the environment and encourage birds, insects and other creatures visit your garden.

Teaching Tip: How do the *Dabbawalas' 'Roti Bank'* work? This can be narrated to students.

D. Crossword

Use the clues and name the following. Then make a crossword in your Science notebook.

1. Nutrients that help our body to fight diseases.
2. These energy-giving nutrients give less energy than fats.
3. This diet is necessary for healthy growth and development of our body.
4. This mineral is needed for the formation of blood.
5. We should drink plenty of this liquid every day.

Subject Connect

SCIENTIFIC QUEST

No Food Wastage

According to the United Nations, by 2016, there were about 795 million undernourished people around the world. This means that one in nine people do not get sufficient food to lead a healthy life. This gives rise to dizziness, fatigue, low energy and poor immune function. However, there is enough food present in the world to feed everyone and no special scientific discoveries are required. If we stop wasting food, we can contribute towards saving people from hunger.

Discuss with your peers and decide five action points to avoid food wastage. Share these action points with family and friends. Spread awareness!

ENJOY SCIENCE

Choose your food items from the grocery store. Now, list out which food items you will eat as breakfast, lunch and dinner. Make a chart and find out which nutrients did you take the maximum in a day.

Life Connect

Teaching Tip: The teacher can organise a visit of a dietician to the school. The students can discuss their diet patterns with him/her and the importance of eating healthy food.

Undernourished: Not getting enough food

PICTURE SURVEY

Look at the picture and answer the questions that follow.

1. Name the food items shown in the picture.

   .....

   .....

   .....

   .....

2. Why is it important to consume such food items? Discuss in class.

Chapter 2

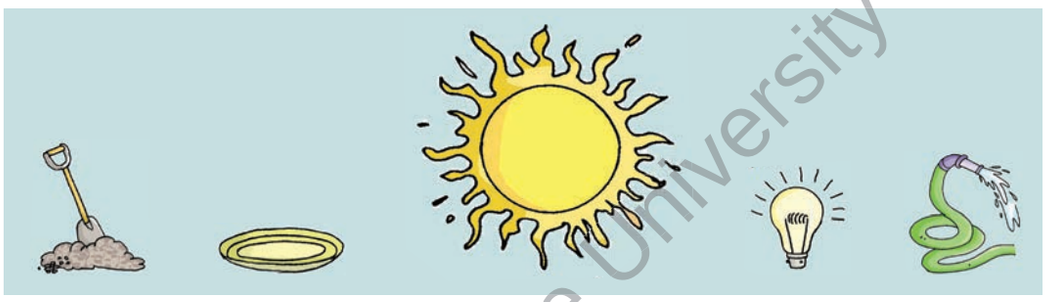
Plants in the Surroundings and Environment

Chapter Objectives

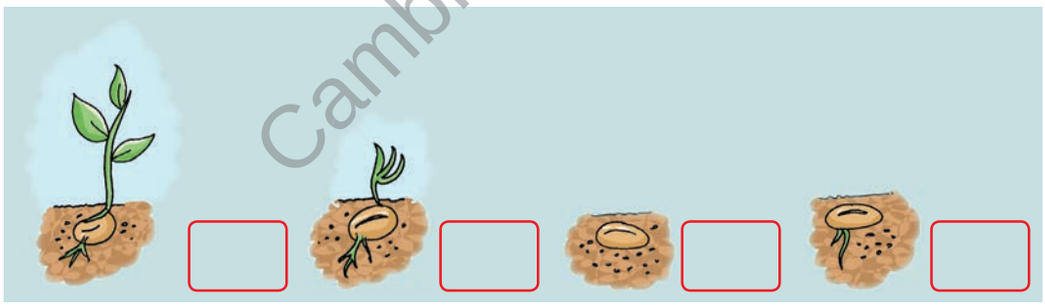
- Recall the parts of a plant, and functions of each part
- Understand the process of transpiration
- Know how plants prepare their food
- Learn the uses of plants

LET'S BEGIN

Saurabh wants to sow a seed. Circle the things that are required for a plant to grow properly.



The seed planted by Saurabh is now growing. Number its stages of growth in the correct order.



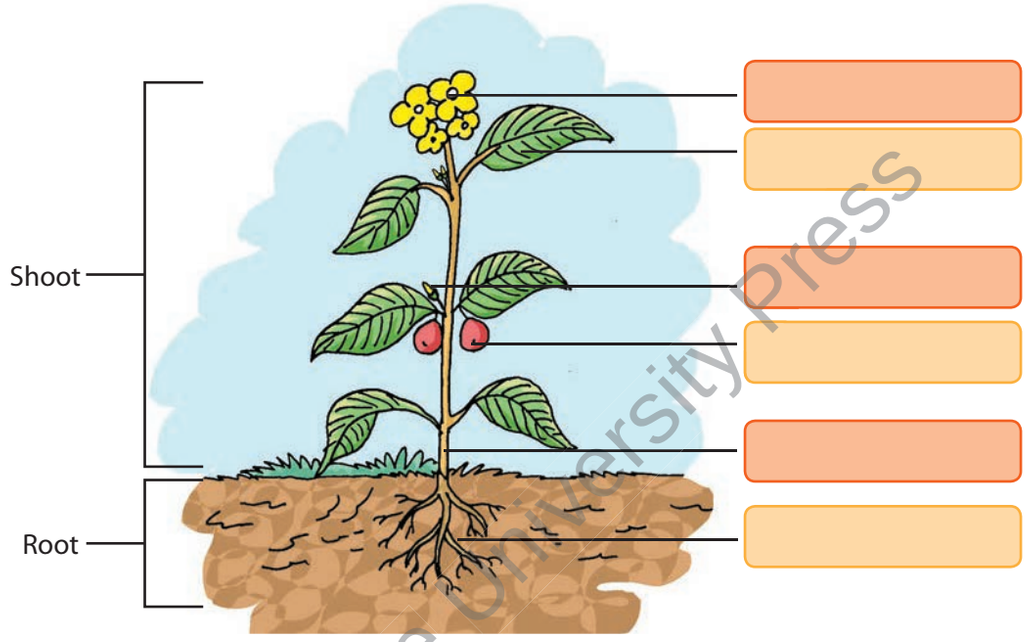
PARTS OF A PLANT

All living things have different parts of the body that perform different functions. We have body parts like eyes, nose, hands and legs. Animals like cows and deer have horns.

Elephants have trunks. Similarly, plants also have different parts which perform different functions, and are of different shapes and sizes. All these parts work together to help the plant live and grow.

A plant has two main parts—Root and Shoot.

Label the parts of the plant.



The Root

The root is a part of the plant that grows under the soil and binds the plant to the soil firmly. There are two major types of roots—**tap root** and **fibrous root**.

Tap root

Tap root: This type of root has a main root from which many smaller side roots grow. Tap root grows deep into the soil. Beans, *peepal* tree, turnip and carrot have tap roots.

Fibrous root: This type of root has a number of roots which arise from the base of the stem and spread within the soil. Rice, wheat, onion and grass have fibrous roots.

Fibrous root

Functions of a root

- Roots fix the plant firmly to the soil or ground, and prevents it from falling over or being pulled out easily.
- Roots absorb water and minerals from the soil. These are then sent to different parts of the plant through the stem.
- Roots of some plants store food which can be used by the plant. For example, carrot, radish and turnip. We can eat such roots.
- Plants also protect the soil. The roots bind the soil and prevent soil erosion. Therefore, we should plant as many trees as possible and prevent cutting of trees.

INFO HUB

A **nursery** is a place where saplings are given suitable conditions so that they can grow into healthy plants.

a. Radish

b. Turnip

Examples of tap roots

a. Onion

b. Grass

Examples of fibrous roots

Differentiate between tap root and fibrous root.

Tap Root	Fibrous Root

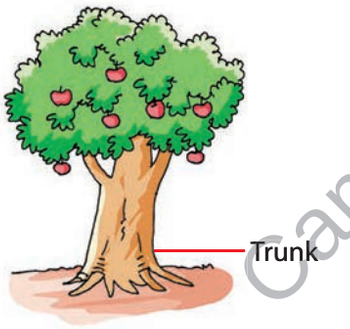
The Shoot

The shoot is the visible part of the plant that lies above the ground. It bears stem, branches, leaves, buds, flowers and fruits. This part grows towards sunlight.

Stem

The stem is the main part of the shoot. Different plants have different types of stems.

- Trees like mango and banyan have thick and strong stems. This type of stem is called **trunk**.
- Some plants like coriander have soft green stems. These plants are called **herbs**.
- Some plants, like money plant, sweet pea and bitter gourd, have weak and thin stems. They need support to stand upright and grow properly. These plants are called **climbers**.
- Some plants like rose and *Bougainvillea* have woody stems that branch near the base. These plants are called **shrubs**.
- Some underground stems store food. We eat these stems. For example, potato, turmeric and ginger.



Apple tree


Coriander plant


Money plant


Bougainvillea

Functions of a stem

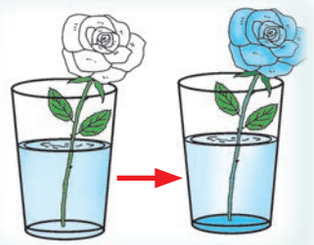
- The stem supports the branches, leaves and other parts of the plant.
- It carries water and nutrients from the roots to various parts of the plant.
- The food made by the leaves is distributed throughout the plant with the help of the stem.


Potato plant

ACTION TIME 1

Aim: To show that the stem carries water to different parts of a plant.

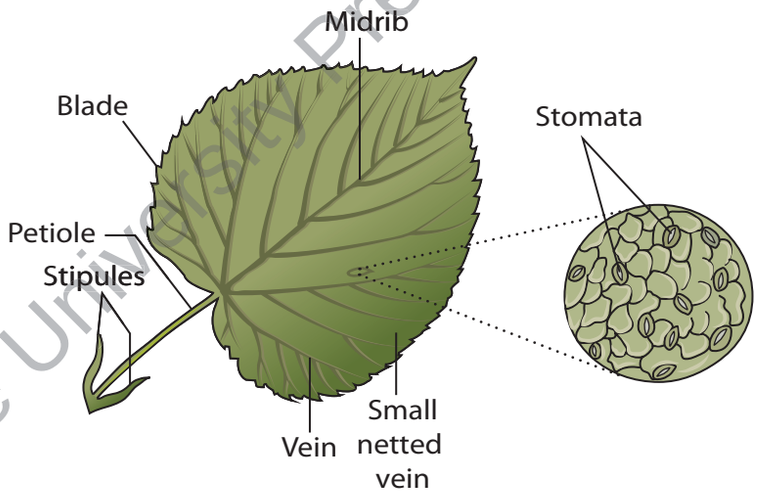
Take a branch with a white rose. Dip this branch in a glass containing coloured water (put 10 to 15 drops of ink in the water). Observe after a few hours. What happens to the colour of the flower?



Result: The flower changes colour as the coloured water is carried up to the flower by the stem.

LEAF

Leaves are called the **kitchen** or **food factory of a plant** because they prepare food for the plant using water, air and sunlight in the presence of a green pigment, called chlorophyll.



Parts of a leaf

Observe a leaf closely. Each leaf has a flat, broad part called **lamina** or **leaf blade**. In the centre, it has a main vein or midrib from which many side veins arise. These veins carry water and food. The leaf stalk or petiole attaches the leaf to a branch or a stem. The underside of leaves contains tiny pores called stomata which help the plant to breathe. Plants show a wide variety in shape, size and type of leaves they bear.

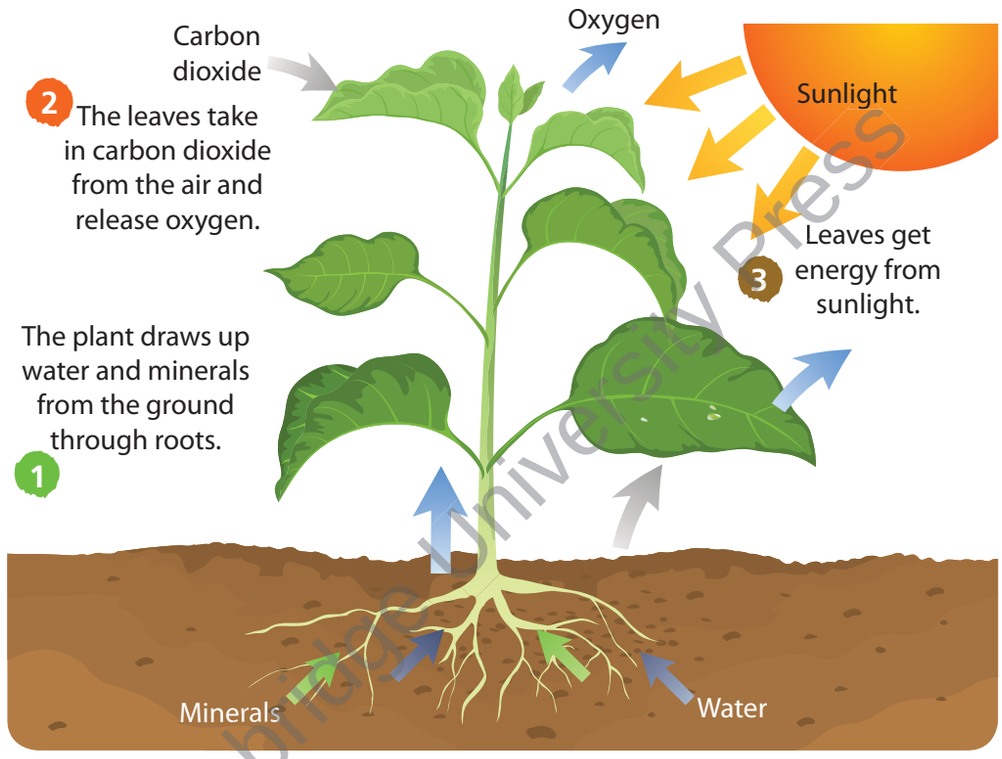
Functions of a Leaf

- The most important function of a leaf is to make food for the plant using water, minerals, carbon dioxide, sunlight and chlorophyll.
- While making food, the leaves give out a gas called oxygen. Oxygen is important for the survival of all living organisms.
- Leaves also give out extra water present in plants.

- In some plants, leaves change into spines to conserve water. They also protect the plants from animals that try to eat them. For example, cactus.

Photosynthesis

The process in which plants use sunlight to convert water, carbon dioxide, and minerals (in the presence of chlorophyll) into food is known as **photosynthesis**.



Process of photosynthesis

Food Prepared by Plants

Plants prepare their food in the form of simple sugar or glucose. Plants use glucose for their growth and development. Extra food is stored in the form of starch. It is stored in plant parts like leaves, stems or roots. We eat the parts of the plants in which food is stored.

Name any two leaves, stems and roots that we eat.

Leaves: .....

Stems: .....

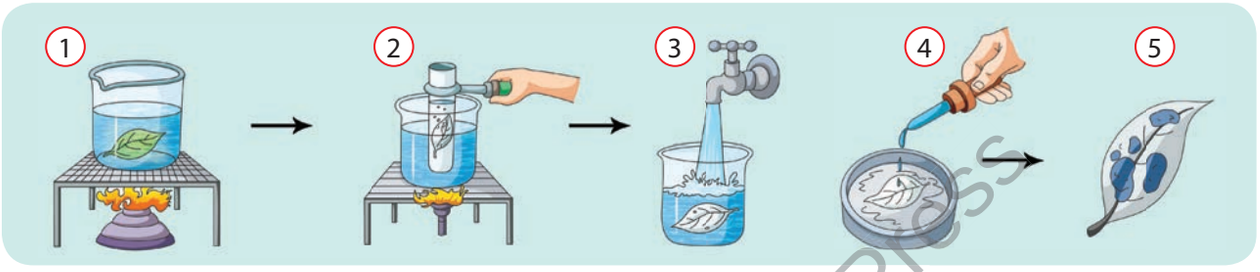
Roots: .....

ACTION TIME 2

Aim: To test the presence of starch in green leaves.

What I need: beaker, stand, test tube, test tube holder, water, a freshly fallen leaf, iodine, alcohol

What to do: **1.** Take a green leaf and boil it in water. **2.** Boil the leaf in alcohol. **3.** Wash the leaf in cold water. **4.** Add a few drops of iodine. **5.** The leaf turns blue-black.



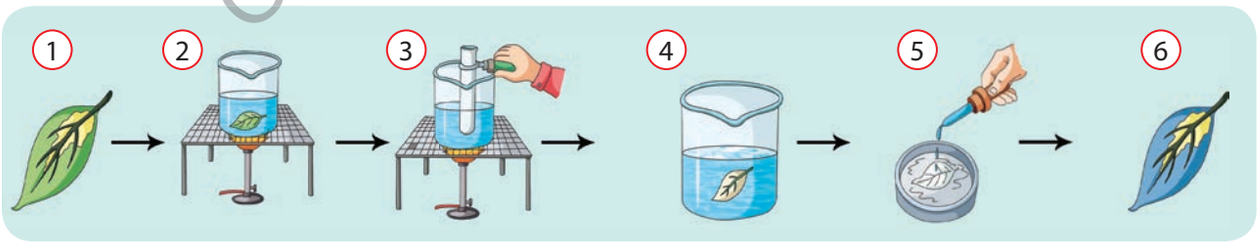
The blue-black colour shows the presence of starch in green leaves.

ACTION TIME 3

Aim: To test that chlorophyll is necessary for photosynthesis.

What I need: *Coleus* or any freshly-fallen leaf, water, alcohol, iodine, dropper, test tube holder, beaker, burner, stand

What to do: **1.** Take a leaf with green and non-green portions. **2.** Boil the leaf in water. **3.** Boil the leaf in alcohol. **4.** Wash the leaf in cold water. **5.** Add a few drops of iodine. **6.** The patches that were green turn blue-black.



Only the green portions show the presence of starch. Therefore, chlorophyll is necessary for photosynthesis.

Teaching Tip: Action Time 3 is an extension activity. It can either be demonstrated by the teacher in the class or a video can be shown.

ACTION TIME 4

Aim: To show that carbon dioxide is necessary for plants to make food.

What I need: potted plant, freshly fallen leaf, Vaseline, iodine

What to do: Take a freshly fallen green leaf of the potted plant. Cover both sides of the leaf with Vaseline. Keep the leaf in the open for 2–3 days. Test the leaf for starch. Also, test another leaf from the same plant for starch. Which leaf shows the presence of starch? Why?

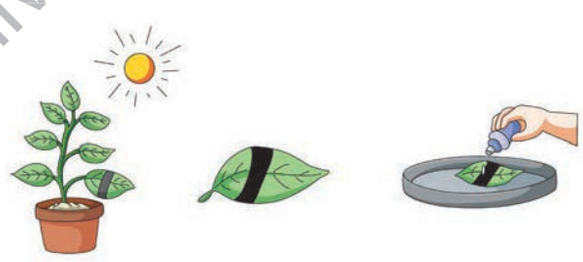
Observation: The leaf that was covered with Vaseline does not turn blue-black on the addition of iodine. This happens because Vaseline blocks the stomata due to which carbon dioxide cannot enter the leaf. This does not let the process of photosynthesis happen.

ACTION TIME 5

Aim: To show that sunlight is necessary for plants to make food.

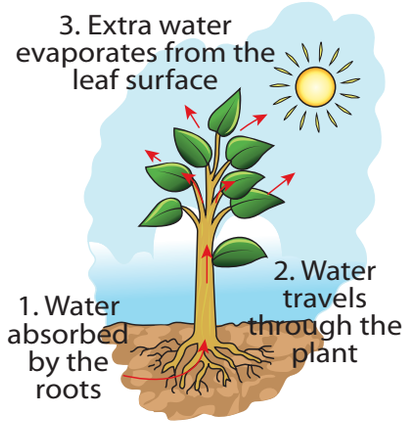
What I need: potted plant, thin strip of chart paper

Procedure: Take a potted plant with green leaves. Select a big leaf from it. Take a thin strip of chart paper. Place the strip in the middle of the leaf and wrap it around the leaf. Now, leave the plant outdoors for 24 hours. After that, remove the strip and pluck the leaf. Test it for starch as done in Action Time 2. Observe the leaf and discuss your findings.



TRANSPIRATION

Transpiration is a continuous process in which there is loss or evaporation of water from the plants, especially the leaves. At the same time, uptake of water takes place from the roots in the soil. Transpiration takes place through special pores called stomata. Transpiration cools plants. It also helps water to travel up the plant against the force of gravity.



Leaves give out extra water

Quick Check 1

State true or false.

1. All plant parts have the same function.
2. Mustard has a tap root.
3. Fibrous root has a number of roots that arise from the base of the stem.
4. Coriander has a soft green stem.
5. Plants release glucose during transpiration.

USES OF PLANTS

Plants are very useful to us. They are our green friends. They give out oxygen gas, without which we cannot live. We also get many other things from them—food, medicinal products, wood, rubber, gum, oils, paper, perfumes, etc. They keep our surroundings beautiful, and the air fresh and clean. Plants play a very important role in our day-to-day life.

Fruits and vegetables

Spices

Soaps, shampoos and perfumes

Tea and coffee

Green peas

Corn

Chickpeas

Wheat

Teaching Tip: A class discussion can be held on 'Plants are our green friends'.

Groundnut oil

Coconut oil


Sunflower oil


Mustard oil

INFO HUB

Extra virgin olive oil (EVOO) is unique among oils because it is essentially the fruit juice.

Some plants give us medicines. These plants are called **medicinal plants**. *Tulsi* leaves are used to cure cough and cold. Cloves (flower buds) are used to treat toothache.

We get wood from plants to make furniture, pencils, etc. **Fibres** like cotton, coir, and jute also come from plants. Fibres are used for making clothes, bags, ropes, and so on.


Cotton plant

Cotton fibres →

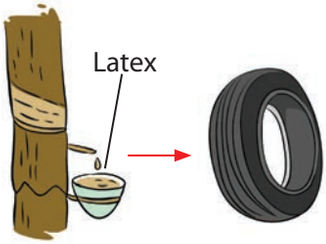

Cotton dress


Coconut tree

Coir fibres →

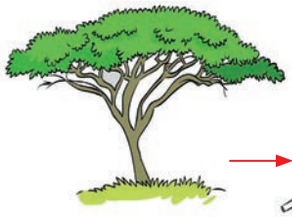

Coir rope

We get rubber from the latex of rubber trees. It is used for making tyres, pipes, etc. We get gum from the juice of *Acacia* or *Keekar* tree. We get paper from the bamboo plant.



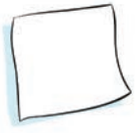
Rubber plant

Tyre


Acacia tree

Gum


Bamboo plant


Paper

Plants give us shade. They make the air fresh and clean. Plants are home to many animals such as birds, monkeys and squirrels. We should not cut trees.

Latex: Milky liquid produced by rubber plants

KEY TERMS

Photosynthesis: The process in which plants use sunlight to convert water, carbon dioxide and minerals, in the presence of chlorophyll, into food.

Transpiration: The continuous process in which there is loss or evaporation of water from the plants, especially the leaves.

QUICK NOTES

- Plants have two main parts—Root and Shoot.
- Root grows under soil and binds the plant firmly to the soil.
- There are two major types of roots—Tap root and Fibrous root.
- Shoot grows above the ground. It bears stem, branches, leaves, buds, flowers and fruits.
- The leaf prepares food for the plant.
- Plants are very useful for us. We get many things from them.

RUN-THROUGH

I. Very Short Answer Questions

A. Strike the odd one out.

1. Mustard, Beans, Onion
2. Sweet pea, Potato, Money plant
3. Vein, Trunk, Bank
4. Rose, Potato, Ginger
5. Sunlight, Carbon dioxide, Milk
6. Eggs, Spices, Oil

B. Tick (✓) the correct answer.

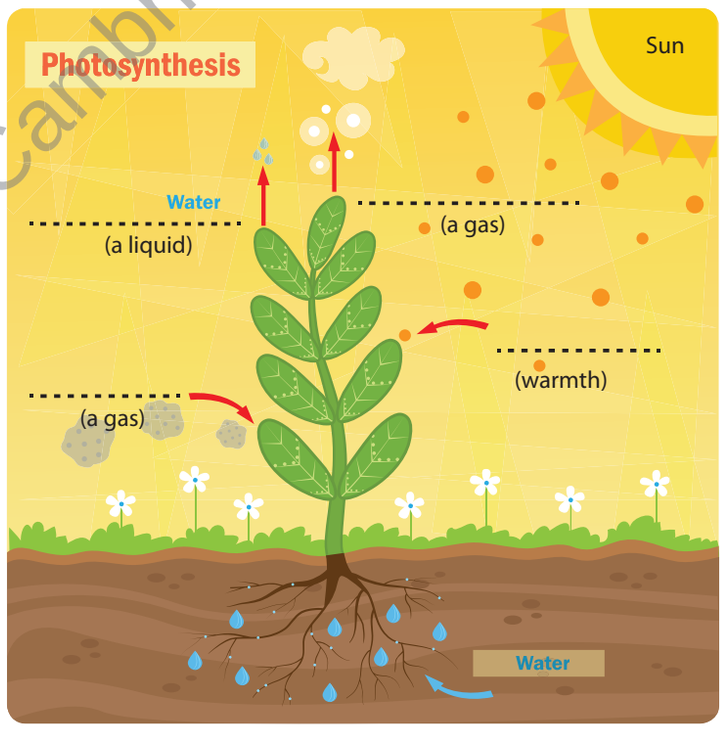
1. The ..... is the green substance in leaves that helps in photosynthesis.
   a. chlorophyll ☐ b. minerals ☐ c. salts ☐ d. fluid ☐
2. Which of the following has a fibrous root?
   a. *peepal* ☐ b. turnip ☐ c. beans ☐ d. rice ☐
3. This plant has a thick and strong stem.
   a. turnip ☐ b. mango ☐ c. sunflower ☐ d. rose ☐
4. Loss of water from the plants, especially the leaves is called ..... .
   a. breathing ☐ b. transpiration ☐ c. respiration ☐ d. photosynthesis ☐
5. Iodine test is done to see the presence of ..... in plants.
   a. starch ☐ b. water ☐ c. minerals ☐ d. sunlight ☐

C. Give one example for each of the following:

1. A plant with fibrous root
2. A storage root
3. A plant that needs support to stand upright
4. A storage stem
5. A leaf that you eat
6. Your favourite fruit
7. A flower bud used to cure toothache
8. An animal that lives on trees

II. Short Answer Questions

1. Distinguish between:
   a. transpiration and photosynthesis b. chlorophyll and iodine
2. What is a trunk?
3. Why is a leaf called the food factory of the plant?
4. What is the role of the stomata in leaves?
5. Explain photosynthesis by labelling the following diagram. (Hints are given below the blanks.)



III. Long Answer Questions

1. How do plants protect the soil?
2. With the help of an activity, show:
   a. the presence of starch in the green leaves
   b. chlorophyll is necessary for photosynthesis
3. How will you prove that sunlight is important for plants?
4. How are plants useful to us?

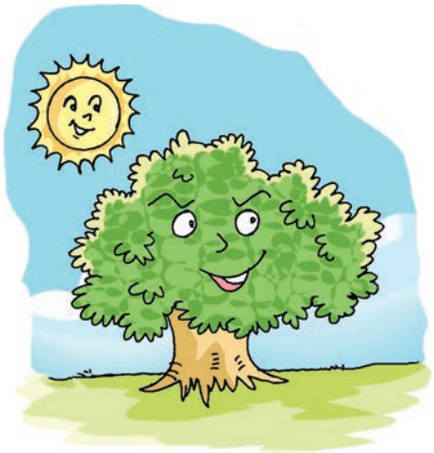
IV. Challenge

1. Name a spice that gives yellow colour to the vegetables while cooking. Does it have any other benefit?
2. What will happen if plants do not photosynthesise?
3. Can a plant have no veins? Why or why not?

V. Enrichment

A. English, Value Education

Read the story of 'Poplu', the tree!



Once upon a time, there lived a strong tree called Poplu. Poplu had a family who always stood beside to support him. His family members included roots, leaves, flowers, fruits and branches. All the leaves worked in unity to cook food for Poplu. When the family members felt thirsty, roots absorbed water and sent it to all the members. People used to come and sit under Poplu's shade and admire its beauty. But this admiration soon made Poplu selfish and arrogant. He always praised himself in front of his family members but never appreciated their efforts to support him. His family still loved him and never minded Poplu's arrogance. Soon, the autumn season came. All the trees in Poplu's surroundings were losing some of their family members like leaves, fruits, flowers, etc. The autumn season did not allow some members to live with Poplu either. They waited for the chilly breeze to tear them off their branches. They had tears in their eyes. Poplu was also very upset and sad. Poplu remembered how ill-mannered he had

Subject Connect

been. He felt gratitude for the things they did for him. Alas! Poplu had to spend the entire winter without his family.

Moral: What we are today is because of a lot of people in our surroundings, such as our family members, teachers, friends and helpers. We should always be thankful and value their importance.

B. Collect some freshly fallen leaves of different shapes and sizes. Dry them between the folds of a newspaper. Stick them in a scrapbook. Label the parts. Do all leaves have all the parts? Discuss in class.

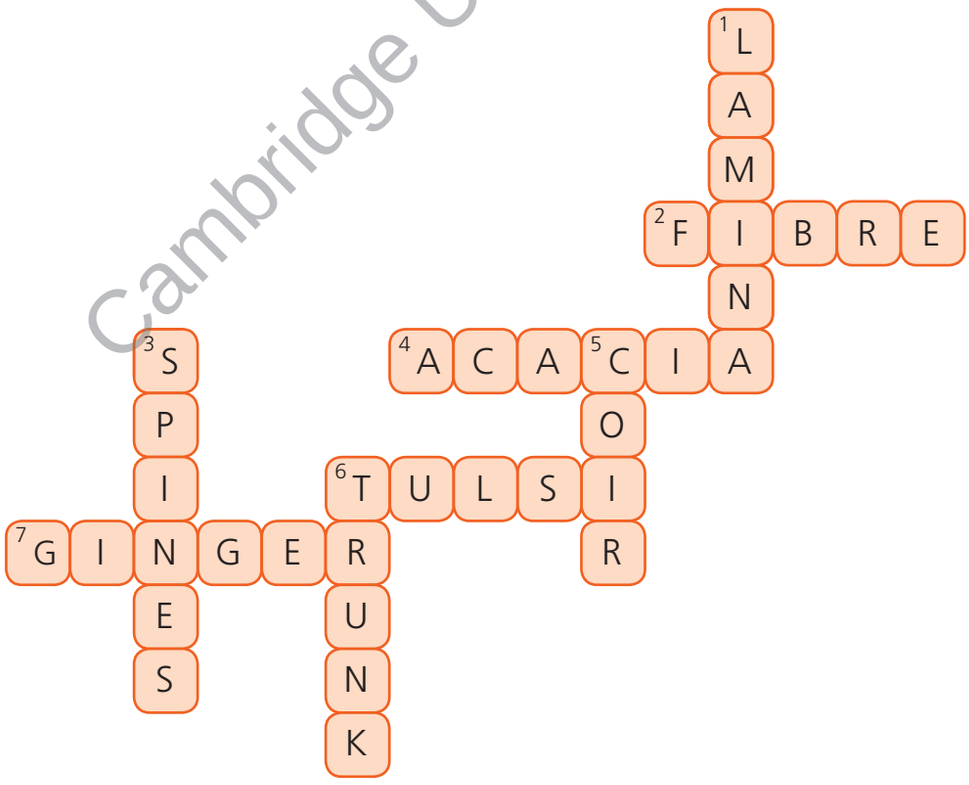
C. A school herbal garden can be created. This can be done section-wise. Each section can grow different types of plants; water and look after them.

SCIENTIFIC QUEST

'Do plants have feelings?' Research the Internet/visit the library/ask your elders, and make a 250 words report. Then discuss your findings in class.

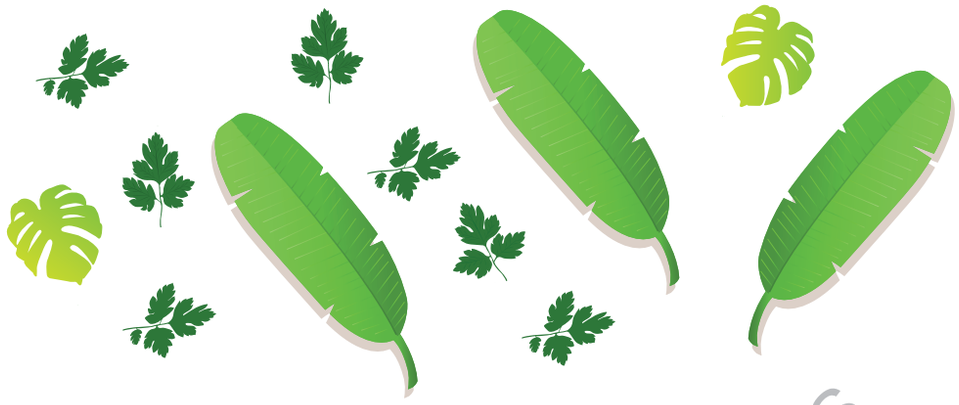
ENJOY SCIENCE

1. Write the clues for the given crossword in your Science notebook.



Gratitude: A feeling of thankfulness

2. Rehman collected a few freshly fallen leaves.



Complete the table given below and answer the questions that follow.

Leaf			
Number			
Plant to which the leaf belongs			

1. How many leaves are there altogether? ……

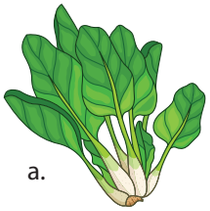
2. Which leaf is the most in number? ……

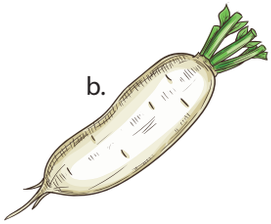
3. Which leaf is the least in number? ……

4. Which leaf can be used as a spice? ……

PICTURE SURVEY

1. Identify the plants and state the parts in which they store extra food.

a. 

b. 

c. 

d. 

…… …… …… ……

…… …… …… ……

Chapter 3

Adaptations in Animals

Chapter Objectives

- Learn the need and reasons for adaptations in animals
- Know about various adaptations in animals
- Understand that it is important to take care and show concern for animals

LET'S BEGIN

Look at the crocodile. If we leave this crocodile in a polar region, will it be able to survive? Think and discuss the challenges it will face in a cold region.

Our Earth has different kinds of places. There are ice-cold regions, green land, deserts and oceans. We can find a variety of living organisms at these places. The natural environment or place where an animal or plant lives is its **habitat**.

But sometimes the outside environment is so harsh that it becomes difficult for an organism to live. In such cases, in order to survive, an organism adapts or changes itself according to its surroundings. This is known as **adaptation**. A penguin's body is well-adapted to survive in extremely cold regions, while a crocodile is adapted to live in swampy areas. The development of adaptive features in an animal might take hundreds or thousands of years to take place.

Environment: The surroundings or conditions in which plants or animals live | **Swampy:** Wet area

ADAPTATIONS TO HABITAT

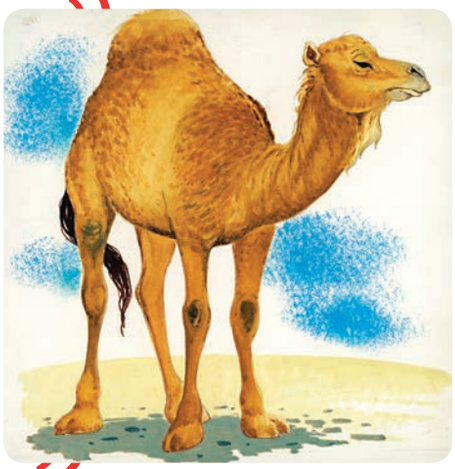
Habitat provides animals with shelter, food and water. Our Earth has a variety of habitats. Different kinds of animals live in different habitats. Based on their habitats, animals can be classified into terrestrial animals, aquatic animals, amphibians, arboreal animals and aerial animals.

Terrestrial Animals

Animals that live on land are known as **terrestrial animals**. For example, elephant, cat, dog, lion and camel. Most of the land animals have legs to move and lungs to breathe. Snake is an exception as it does not have legs. It crawls to move by making loops.

These animals have a well-developed nervous system and sense organs to sense changes in their surroundings. However, climatic conditions are not the same everywhere. In some places, it is very hot, such as desert, while at some places it is very cold like polar regions (such as Arctic). Thus, adaptations in animals also vary according to the climatic conditions of the place.

Animals that live in hot deserts have thick skin and very less hair on their skin to protect them from the heat of the Sun. Animals like camels have a hump on their back that stores fat. Therefore, they can travel for days without having to eat anything. They also have a thick pad under their feet. This prevents them from sinking into the sand.



A camel in a desert

INFO HUB

A thirsty camel can drink about 125 litres of water in 13 minutes.

Polar regions: The regions within the Arctic and Antarctic circles

Polar bear in a polar region

Animals like the polar bear, that lives in cold regions, have a very thick skin covered with fur that keeps them warm. Animals like seal and penguin are well-adapted to live in freezing cold environment. These animals have a very thick layer of fat under their skin called **blubber**. The blubber protects them from cold.

Aquatic Animals

Animals that live in water are known as **aquatic animals**. For example, fish, octopus and dolphin. Unlike land animals, aquatic animals have fins or specialised limbs that help them to swim. Also, many aquatic animals like fish breathe through gills. Whales and dolphins are exceptions as they have lungs to breathe.

Aquatic animals

Amphibians

Newt

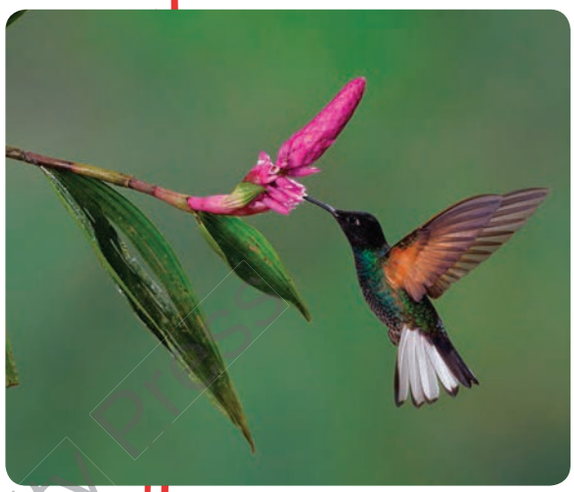
The animals that can live both on land and in water are known as **amphibians**. For example, frog, toad and newt. They have limbs that help them swim in water. Some also have webbed feet to help them in swimming. These animals breathe with their moist skin when in water. They also have lungs to breathe on land.

Teaching Tip: Discuss in class why most aquatic animals have streamlined bodies.

Aerial Animals

The animals that can fly are known as **aerial animals**. For example, birds and insects. These animals have lightweight bodies so that they can fly easily.

Birds have hollow bones and wings that help them fly. The forelimbs of these animals are modified as wings. They also have feathers all over their bodies that keep them warm during flight. Birds have a special body shape—narrow in front and back, and broad in the middle. This body type helps them to cut through air and fly easily. Such a body shape is known as **streamlined body**.



Hummingbird

Arboreal Animals

Koala bear

The land animals that live mostly on trees are known as **arboreal animals**. For example, monkeys, squirrels, koala bear and lizards. They have sharp claws with a strong grip to help them climb up and down the tree or branches.

Their body is very strong with a stout chest, bones and limbs to provide them with enough support while climbing. They have strong ribs and hip girdles to help them move.

ADAPTATIONS FOR FOOD

Animals can be divided into different categories based on their eating habits—herbivores, carnivores, omnivores, scavengers and parasites.

Herbivores

The animals that eat plants only are known as **herbivores**. For example, deer, buffalo, zebra, goat and cow. Herbivores eat plant parts like leaves, roots, fruits, barks and grasses. For this, they have very sharp cutting teeth and strong grinding teeth so as to break plant materials into smaller pieces and chew it properly.

Buffaloes

Zebras

INFO HUB

Every zebra has a unique black and white pattern on its body. No two zebras can have the same pattern on their bodies.

Carnivores

The animals that eat flesh of other animals are known as **carnivores**. For example, lion, tiger, leopard and wolf. They have sharp teeth and claws to grasp and tear the flesh. Flesh-eating birds, such as eagle, have sharp claws to catch their prey and special hooked beaks to tear off the flesh.

Wolf

Raccoon

Omnivores

The animals that eat both plants and flesh of other animals are known as **omnivores**. For example, bear, raccoon and birds like crow and woodpecker.

INFO HUB

- Some organisms feed on dead animal and plant material are called **scavengers**. Many scavengers are carnivores, such as vultures and hyenas. While most carnivores hunt and kill their prey, scavengers usually consume animals that have died of natural causes or killed by another carnivore.
- Some animals, such as lice and tapeworms, derive their nutrition from other living organisms and are called **parasites**.
- Microorganisms that feed on dead and decaying organic matter and convert it into nutrients to replenish the soil are called **decomposers**.

Organic matter: Wide variety of living or dead plant and animal material, includes manure and compost

Quick Check 1

Circle the odd one out.

1. Fish Octopus Frog Dolphin
2. Lizard Koala bear Monkey Toad
3. Seal Penguin Polar bear Lizard
4. Vulture Hyena Cockroach Lice
5. Cow Crow Raccoon Bear

ADAPTATIONS FOR PROTECTION

Animals adapt to stay safe in their environment. They have to protect themselves from predators.

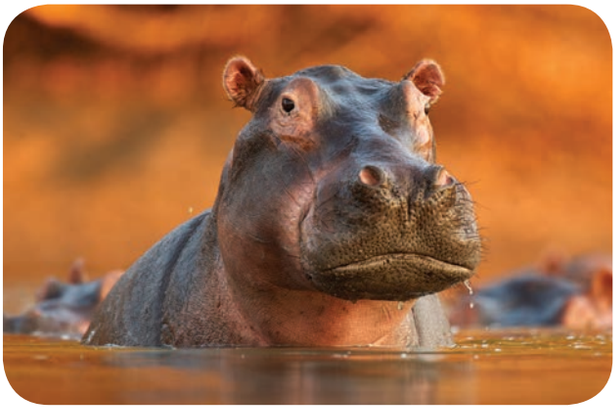
Some animals move very fast to escape from their predators. These animals have very strong legs. For example, frog and deer.

Deers have strong legs.

Some animals like elephants have thick skin to protect themselves from heat.

Animals like whales, elephants, hippopotamus are too big in size; hence, they cannot be eaten easily by predators.

Elephants have a thick skin.



Hippopotamuses are big in size.

Predators: An animal that lives by killing and eating other animals

There are some animals that are difficult to see because their body colour is similar to their environment. This is known as **camouflage**. Animals like grasshoppers, owl and frog blend well with their surroundings, hence can escape their predators. Some animals like chameleon change their body colour to blend with the surroundings and thus remain camouflaged.

Owl camouflaging in the wood

Some animals mimic or imitate other animals for protection. For example, a moth caterpillar mimics a snake in order to defend itself.

ADAPTATIONS TO BEHAVIOUR

Animals can also develop special habits to survive in difficult environmental conditions.

Not all animals can survive the cold. Animals like bear, frogs and lizards sleep for several months to avoid the winter season. They wake up from sleep after the winter season gets over. This is known as **hibernation** or **winter sleep**.

A bear hibernating

During summers, some animals like crocodiles and lungfish rest for long hours in the cool and shady places to protect themselves from very high temperatures. They also slow down their activity. This is known as **aestivation** or **summer sleep**.

Some animals such as birds and fish, find it difficult to survive in the winter season due to shortage of food and changing climate. So, they leave their homes and travel to warmer places, where there is plenty of food. Once the winter season ends, they travel back to their homes. This movement of animals from one region to another, according to the season of the year, is known as **migration**.

Mimic: Copy someone's looks or behaviour or sound

- Think of two more animals that hibernate. .....
- Name the bird that comes to India every year from Siberia in order to escape the severe cold over there. .....

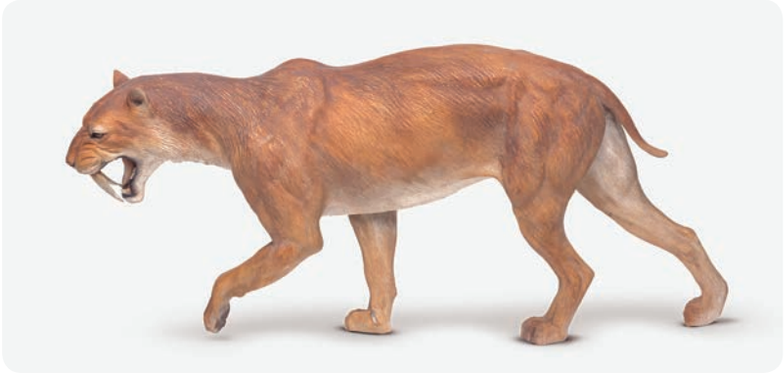
ANIMALS IN DANGER

Millions of years ago, dinosaurs roamed the Earth. Now, they do not exist anymore. Maybe, they could not adapt to the changes in their environment.

Millions of years ago, dinosaurs lived on Earth. They do not exist anymore. One reason could be because the dinosaurs could not adapt to the changing climatic conditions. Today, despite a lot of adaptions, there are several animals whose lives are in danger. They are close to disappearing from Earth. Such animals are said to be **endangered**. The animals that have already disappeared from the Earth are considered to be **extinct**.

Humans are directly or indirectly responsible for animals becoming extinct. We are cutting down forests in search of places to live or to fulfil our needs. In this way, we are destroying homes and food of animals. There are many animals that are being hunted for their skin, such as crocodiles and tigers. Animals like black rhinos are being hunted for their horns. Both tigers and black rhinos are endangered animals. These animals are in danger of becoming extinct. Animals such as the dodo bird and the sabre-toothed cat have already become extinct.

Dodo bird



Sabre-toothed cat

Teaching Tip: Have a discussion in class how are food chains affected due to the extinction of any one animal. Narrate the story of the dodo bird and the dodo tree.

Quick Check 2

State true or false.

1. Animals adapt to stay safe in their environment.
2. There are some animals that are hard to be seen because their body colour is similar to their environment. This is known as aestivation.
3. Animals that are close to disappearing from Earth are known as extinct animals.
4. The tiger is an extinct animal.
5. Sabre-toothed cat is an extinct animal.

HOW CAN WE SHOW CARE AND CONCERN FOR ANIMALS?

- Trees are home to many animals. Do not cut trees.
- Reuse, reduce, recycle water. Do not throw garbage into water bodies. Many animals live there.
- Try to help animals that are getting extinct or are ill-treated. Animal abuse is a crime. Spread awareness against animal abuse and raise funds for endangered animals. With your friends, you may start a club or a local animal shelter.
- Adopt or sponsor a stray animal.
- Be in touch with nature. Read books on animal, feed and observe them. Visit a zoo. Learn and know how animals are kept.
- If you have a pet, feed it with healthy food, bathe and clean it regularly. Take your pet for a regular walk. Keep its surroundings and living area clean.

KEY TERMS

Adaptation: The process of change undergone by an organism to be able to survive in different conditions

Terrestrial animals: Animals that live on land

Aquatic animals: Animals that live in water

Amphibians: Animals that can live both on land and in water

Aerial animals: Animals that can fly

Arboreal animals: Land animals that live mostly on trees

Scavengers: Animals that feed on dead and decaying organic matter

Parasites: Animals that derive their nutrition by either living inside or on the body of another living organism

Hibernation: The resting state in which some animals spend the winter

Aestivation: Slowing of activity in some animals during a hot or dry period

Migration: The periodic movement of groups of animals (especially birds or fish) from one region to another for feeding or breeding

Endangered: Animals that are close to disappearing from the Earth

Extinct: Animals that have disappeared from the Earth

QUICK NOTES

- Our Earth has variety of habitats. Different kinds of animals live in different habitats—terrestrial, aquatic, amphibians, arboreal and aerial.
- Based on their eating habits, animals can be divided into five groups—herbivores, carnivores, omnivores, scavengers and parasites.
- Camouflage is an adaptation that allows animals to blend in with certain aspects of environment. For example, there are some animals that are difficult to be seen because their body colour is similar to their surroundings.
- Animals can also develop special habits to survive in difficult environmental conditions—hibernation, aestivation and migration.

RUN-THROUGH

I. Very Short Answer Questions

A. Tick (✓) the correct option.

1. The process in which an animal adapts or changes itself according to its environment is known as:

   a. habitat ☐ b. adaptation ☐ c. hibernation ☐ d. none of these ☐

2. Thick layer of fat under the skin of some polar animals is called:
   a. blubber ☐ b. wings ☐ c. camouflage ☐ d. none of these ☐

3. The land animals that live mostly on trees are known as:
   a. aerial animals ☐ b. amphibians ☐ c. arboreal animals ☐ d. none of these ☐

4. Animals like grasshoppers, tigers and frogs can blend well with their surroundings. This is known as:
   a. hibernation ☐ b. aestivation ☐ c. extinction ☐ d. camouflage ☐

B. Match the animals with the adaptations to their habitat.

Column A	Column B
1. Polar bear	a. Breathes with moist skin in water
2. Monkey	b. Streamlined body
3. Camel	c. Blubber
4. Birds	d. Weak and boneless hindlimbs
5. Fish	e. Sharp claws with strong grip
6. Frog	f. Hump on the back to store fat
	g. Hollow bones and wings to fly

C. Read the hints and unscramble the words to find the animal.

1. Scavenger: **R U U V E T L** .....
2. Herbivore: **T O A G** .....
3. Carnivore: **D P A L R O E** .....
4. Omnivore: **C C O N O R A** .....
5. Parasite: **I C E L** .....
6. A terrestrial animal: **M C A E L** .....
7. An amphibian: **D A T O** .....
8. An aerial animal: **W R C O** .....

D. Guess the name of the animal from the given options.

CHAMELEON | GRASSHOPPER | DEER | BLACK RHINO | DODO BIRD

1. I was once present on this planet, but now it is impossible to find me.
2. I resemble a lizard, but I have the ability to change colours.
3. Sitting on leaves helps me camouflage from enemies.
4. We are killed for our horns. That is why we are endangered animals.
5. I have very strong legs. Therefore, I can save myself from enemies by running very fast.

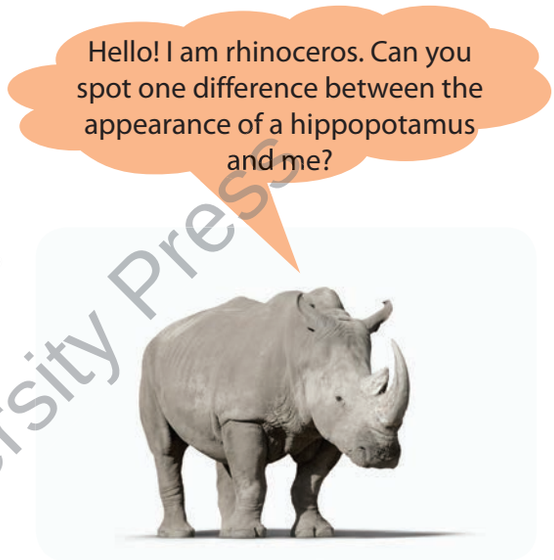
E. Complete the concept map.

II. Short Answer Questions

1. Unjumble and define: a. ADAAPTTOINS b. DEAENDNGER
2. Name two terrestrial animals.
3. What are aerial animals?
4. What is a parasite?
5. Give examples of some animals that camouflage and mimic.

III. Long Answer Questions

1. Describe how animals adapt to their habitat.
2. Describe the eating habits of carnivores and scavengers. What is the similarity between the two?
3. How do animals adapt in terms of behaviour?
4. Give reasons:
   a. Black rhinos are endangered animals.
   b. Terrestrial animals have a well-developed nervous system.
   c. Aquatic animals have specialised limbs.
   d. Arboreal animals have a stout chest.
   e. Flesh-eating birds have sharp claws.



IV. Challenge

1. How do animals like snake adapt to live in a hot desert?

Life Connect

2. What will happen if tigers become extinct?
3. Why is it that the skin of water animals does not get wrinkled despite being in water all the time?
4. A dolphin does not have gills like other fish, but lives in water. How?

V. Enrichment

A. **Role play:** Divide the class into groups of five. Each group should select one habitat. All the students in that group should select one animal each and role play. For this, students need to collect detailed information on their chosen animal. When a student is role playing, other groups should guess the animal he/she is enacting.

Subject Connect

B. **Debate:** Conduct a class debate on 'Human activities is one of the factors for the endangerment of animals'.

Life Connect

SCIENTIFIC QUEST

Subject Connect

Carry out an Internet research on endangered animals. You may also find out about **W**orld **W**ildlife **F**und (**WWF**), its roles and responsibilities.

ENJOY SCIENCE

Riddle Time!

1. I can live in a big ocean, I can live in small water bowls.
   I have tail and fins, Who am I?

2. I can swim and hop, with my webbed feet and four legs.
   I have green, slippery skin, I am an amphibian. What is my name?

3. I am an aerial animal, I have tail and feathers.
   I love to eat fruits. My name starts with the letter 'P'. Who am I?

PICTURE SURVEY

Look at the given picture clues carefully. Answer the following questions.

Subject Connect

1. Classify the animals based on: a. habitat, b. food they eat.
2. Name the:
   a. National Aquatic Animal of India:
      .....
   b. National Bird of India:
      .....
   c. National Animal of India:
      .....

Chapter Objectives

- Recall about matter
- Learn about properties, components and uses of air
- Learn about air pollution and their causes

LET'S BEGIN

Say aloud the poem.

Fly, fly, fly your kite,
High up in the air.

And see it sail, across the sky,
High up in the air.

Let us first recall and learn a few concepts of matter.

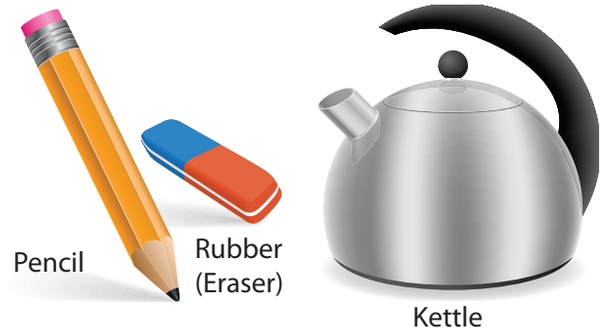
WHAT IS MATTER MADE UP OF?

Matter is composed of tiny particles. It is because of these tiny particles that matter has mass and occupies space. These tiny particles are known as **molecules**. Molecules are made up of even smaller particles called **atoms**. Different types of matter have different types of molecules. Matter exists in three states—solids, liquids and gases. However, molecules in solids, liquids and gases are packed differently. Hence, they have different properties.

States of Matter—Solid, Liquid, Gas

Solids

In **solids**, molecules are arranged very close to one another such that it prevents their movement.



Examples of solids

Here, molecules are arranged in a regular pattern. Solids can be seen and felt.

Properties of solids:

- They have fixed shape.
- They also have fixed volume.
- They cannot be compressed.

Give any two examples of solids. .....

Liquids

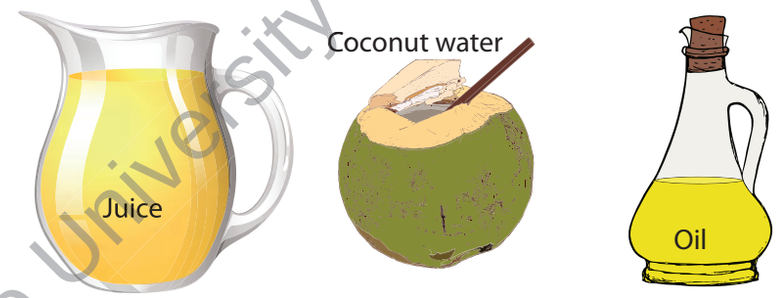
In **liquids**, molecules are loosely packed and thus are not arranged in a regular pattern. Also, molecules can move freely as compared to molecules of solids. Therefore, liquid can be poured from one container to another. That is why a liquid can flow.

Properties of liquids:

- They have no definite shape.
- They have definite volume.
- They are difficult to compress.

Give any two examples of liquids.

.....



Examples of liquids

Gases

Gases do not have a fixed shape and volume. Molecules are very loosely packed. They can occupy all the available space of the container they are present in. Air is a gas. Steam that comes out of hot tea is also a gas. Smoke is also a gas!

Tyre filled with gas Balloon filled with gas

Examples of gases

Properties of gases:

- They have no definite shape.
- They have no definite volume.
- They can be compressed.

Teaching Tip: The teacher may tell about regular and irregular arrangements of atoms/molecules.
Properties: Qualities | **Compressed:** Pressed tightly together

Give any two examples that show that gases are present around us. .....

.....

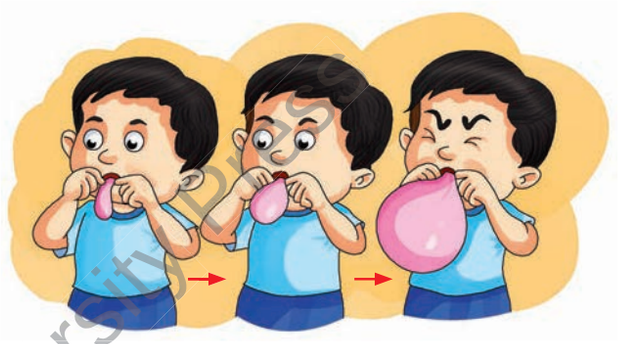
PROPERTIES OF AIR

• Air is Colourless, Tasteless and Odourless

We cannot see air. It has no colour. Pure air is also without any taste or smell.

• Air Fills Space

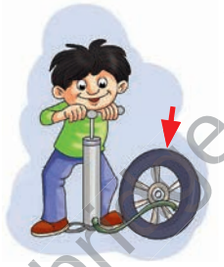
Air can change the shape of objects. When you blow air into a balloon, it increases in size. Air fills space inside the balloon. Air gives the balloon its shape.



Air is used to fill many things.

Name these things with the given clues.

SWIMMING T__B__



T__ R __

H__T AIR B__LL__ __N

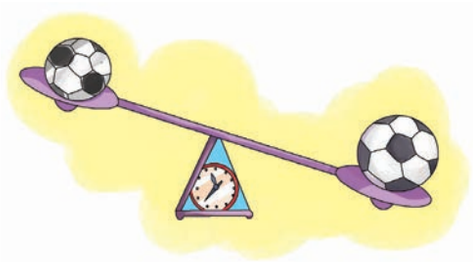
RUBBER R__F__

• Air Has Weight

ACTION TIME 1

Aim: To show that air has weight.

Measure the weight of a deflated football and then the same football filled with air, using a weighing machine.



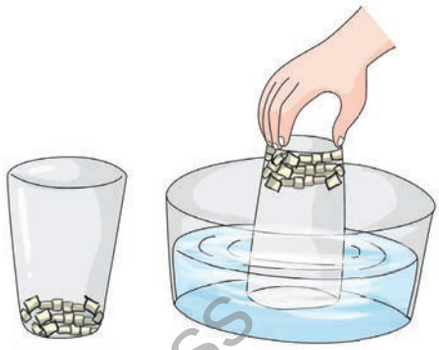
You will notice that the football with air in it, is heavier than the same football without air. This shows that air has **weight**.

• Air Occupies Space

ACTION TIME 2

Aim: To show that air occupies space.

Procedure: Tear a tissue paper into pieces and glue them at the bottom of the glass. Now, immerse the glass upside down into a bowl filled with water. After a few seconds, take the glass out of the bowl without tilting. Feel the paper inside the glass. Is it dry or wet?



Conclusion: When the glass was immersed in water, the air could not escape and remained inside the glass. Therefore, water could not enter the glass and the paper remained dry.

• Hot Air Expands

ACTION TIME 3

Take a bottle and attach a balloon at the neck of the bottle. Place the bottle in a pan containing water. Heat the pan. The balloon will get inflated. Why do you think this happens?

WHAT DOES AIR CONTAIN?

Life Connect

Look at the pictures above. The heat of the Sun changed the water into its gaseous state. This is called **water vapour**. This water vapour mixes with the air.

Immerse: Throw into

In the same way, we hang washed clothes in the Sun to dry. The heat of the Sun changes the water from the wet clothes into water vapour. The Sun also changes the water in the ponds, lakes, rivers and seas into water vapour. All this adds to form clouds and give us rain.

Air also contains smoke, dust and germs.

Air becomes dirty because of dust and harmful gases. **Smoke** of vehicles, factories, crackers, etc., release harmful gases in the air. Breathing in smoke causes harm to our body.

INFO HUB

Cigarette smoking is very bad for health, both for the people who smoke and the people around them.

ACTION TIME 4

Aim: To show that air contains dust.

On a sunny day, close the doors and windows of a room. Pull off the curtains. Allow sunlight to enter through a tiny gap. What do you see? You will see tiny things moving in the light. This is dust.

Air also contains **germs**. Germs are very small living things or microorganisms that make us ill. Germs from a sick person get mixed with the air when he or she sneezes. So, we should always cover our mouth when we cough or sneeze.

Germs are very small. We cannot see them with our eyes. We use an instrument that makes tiny (micro) things appear big so that we can see them easily. What is this instrument called? Clue: It's name starts with 'micro'. ……

INFO HUB

Smoke, dust and germs make the air dirty. Inhaling impure air makes us sick.

Air also contains gases.

USES OF AIR

Air has many uses.

- All animals and plants need air to breathe.
- Air contains gases such as oxygen and carbon dioxide. All animals require oxygen for breathing. Plants need carbon dioxide to make food.
- Air helps the clothes to dry fast.
- Air is needed for the process of burning. If there is no air, we cannot burn anything.
- Air can make things move.
  - ✓ Birds fly with the help of air.
  - ✓ Air makes the kites and parachutes fly.
  - ✓ Air makes the blades of windmill move.

INFO HUB

- Wind can be used to produce electricity using windmills.
- Water can be drawn from wells using windmills.

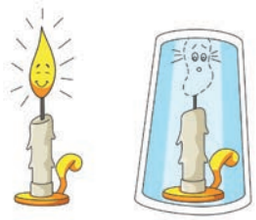
Process of Burning

ACTION TIME 5

Aim: To show that air is needed for the process of burning.

Light a candle and cover it with a glass. After sometime, you will see that the candle stops burning.

The candle burns till there is oxygen in the air inside the glass. When the oxygen is fully burnt off, the fire stops because the air supply is cut off by the glass.



Process of Breathing

All livings things need air to breathe. If there is no air, living things will die. Living things have special organs for **breathing**.

Humans breathe through their nose. The air goes into the **lungs** through the **nose**. Land animals like cats, dogs, horses and zebras also have lungs for breathing.

Teaching Tip: Teacher can show a video on wind energy and also ask the students to make a model of windmill. Also, discuss how plants use oxygen to convert food into energy.

Insects like grasshoppers breathe through the tiny pores (known as **spiracles**) spread all over their body.

Aquatic animals like fish have **gills**. These gills help them to take in oxygen dissolved in water. Plants breathe through tiny pores present on the underside of leaves called **stomata**.

Quick Check 1

Correct these statements.

1. **All things are non-matter.**

   .....

2. **Steam from hot tea flows downwards.**

   .....

3. **Air is used to fill balloons only.**

   .....

4. **Air does not occupy any space.**

   .....

5. **Air stops the moving blades of a windmill.**

   .....

AIR POLLUTION

We are all aware that we need food, water and air to survive. We must breathe clean and fresh air.

Let us understand what air pollution is and what causes it.

Air pollution occurs when gases, dust particles, fumes or odour are introduced into the atmosphere in a way that makes it harmful for humans, animals and plants.

INFO HUB

Atmosphere is the mass of air surrounding the Earth.

Odour: Smell

Causes of Air Pollution

- Factories and industries release smoke and other harmful gases.
- Smoke is released from burning of garbage and bursting of crackers.
- Fumes from car exhausts contain dangerous gases.

Effects of Air Pollution

- Air pollution can make people sick.
- Air pollution can make it difficult for us to breathe and can cause diseases such as lung cancer, respiratory infections and heart disease.
- Air pollution can also cause harm to the ozone layer in the atmosphere which results in the rise of average temperature and affect the climate.

Discuss in class and write any three preventive measures for air pollution. (For example, use of CNG or Compressed Natural Gas.)

.....

.....

.....

KEY TERMS

Matter: Anything that occupies space and has mass

Atom: The smallest particle into which all matter can be broken into

Solids: Things that have a definite shape and volume but cannot be compressed

Liquids: Things that do not have a definite shape but have a definite volume and can be compressed

Gases: Things that have no definite shape or volume but can be compressed

Germs: Small living organisms or microorganisms that can make us ill

Breathing: The process of taking in and giving out air from our body

Air Pollution: When gases, dust particles, smoke or odour are introduced into the atmosphere, thus becoming harmful to humans, plants and animals

Exhausts: Gases given out from an engine as waste products

QUICK NOTES

* In solids, the molecules are tightly packed. In liquids, the molecules are loosely packed. In gases, the molecules are very loosely packed.
* Air is colourless, tasteless and odourless. It fills space, has weight and occupies space. Air expands on heating.
* Air contains water vapour, dust, smoke and germs.
* All livings things need air to breathe. If there is no air, living things will die. Living things have special organs for breathing.

RUN-THROUGH

I. Very Short Answer Questions

A. Tick (✓) the correct answer.

1. Molecules are made up of tiny particles called …….. .
   a. marbles ☐ b. atoms ☐ c. matter ☐ d. balls ☐

2. These substances have a fixed shape.
   a. matter ☐ b. liquid ☐ c. solids ☐ d. gases ☐

3. Which of the following is not a use of air?
   a. for mopping floor ☐ b. fill tyre ☐
   c. breathing ☐ d. drying clothes ☐

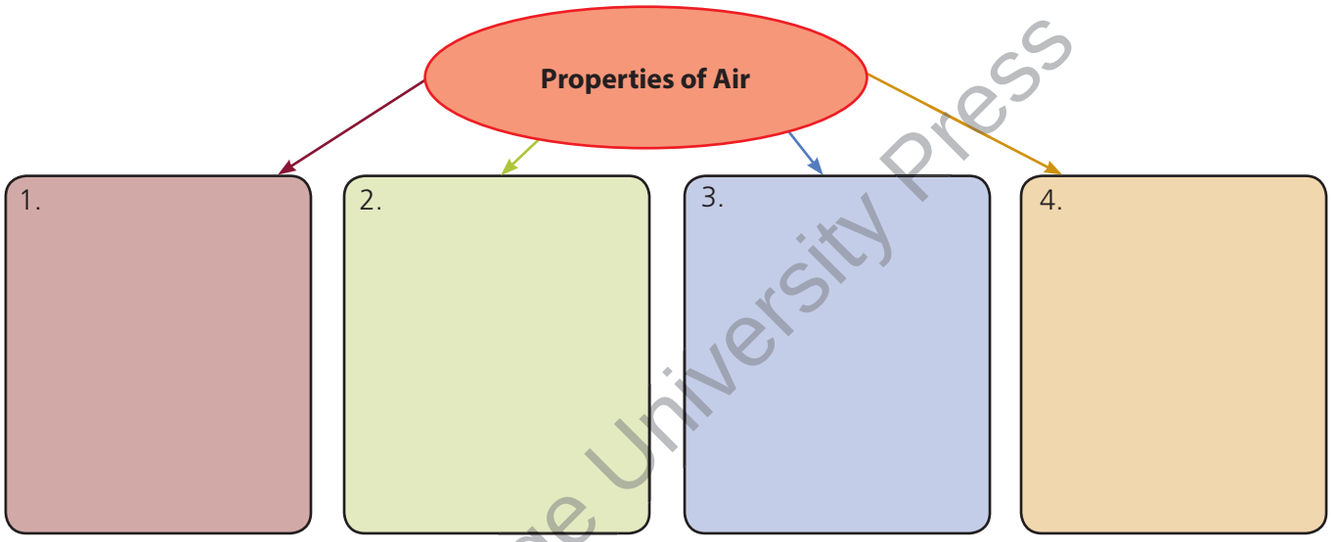
4. Fish breathe through:
   a. spiracles ☐ b. gills ☐ c. nose ☐ d. lungs ☐

5. Which of the following is not a property of air?
   a. fills space ☐ b. has weight ☐
   c. Hot air expands. ☐ d. Air is very tasty. ☐

B. Fill in the blanks.

1. In ..... (**solids**/**gases**), molecules are loosely packed and have no definite volume.
2. Air is colourless, tasteless and ..... (**senseless**/**odourless**).
3. Hot air ..... (**dances**/**expands**).
4. When the heat of the Sun changes water into gaseous state, it is called ..... (**water vapour**/**smoke**).
5. Breathing in ..... (**polluted air**/**fresh air**) causes harm to our body.

C. Complete the concept map.



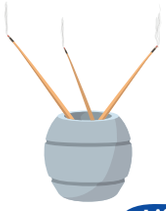
II. Short Answer Questions

1. Unjumble and define: a. TEASM b. LLMOECUES
2. Give two examples each of: a. Solid b. Liquid c. Gas
3. How will you show that hot air expands?
4. What is air pollution? Is it harmful or useful for us?

III. Long Answer Questions

1. Distinguish between: Solid, Liquid and Gas.
2. With the help of an activity, show that air has weight.
3. With the help of an activity, show that air occupies space.
4. Write a note on 'What does air contain?'. Write a short note on the composition of air.
5. Write the causes, effects and preventive measures of air pollution.

IV. Challenge



Life Connect

1. Raghav lit incense sticks in his room. His father was sitting in the dining room. He told him very loudly, "What a nice fragrance!". How could his father smell the fragrance though he was sitting in the other room?
2. Arjun sneezed with a loud noise. His mother could feel the droplets from his sneeze on her arm. She told Arjun, "You should cover your mouth and nose with a handkerchief while sneezing". Why do you think she said so?

3. Give an example of a solid that can be compressed.

V. Enrichment

A. Connect to Life: A mosquito coil and incense are used to repel insects and spread fragrance. These are in a solid state. When they burn, they change to gas.

Life Connect

Useful: The coil is usually burnt in one corner of the room. Then, how do the mosquitoes from the whole room vanish away? This is because when the coil is burnt, it releases a gas. Since gas particles are loosely packed, they spread across the room. This way the mosquitoes in the whole room are repelled.

Harmful: The smoke released from the burning of a coil is not good for health. We should not inhale it. Inhaling it can cause watery eyes, throat infection, coughing, nausea and skin irritation.

.....

B. Different forms of air:

Moving air is called **wind**.

When wind moves gently, it is called **breeze**.

When wind moves fast and strongly, it is called **storm**. It usually comes with thunder, lightning and rain.

Wind

Breeze

Storm

Fragrance: A pleasing odour

SCIENTIFIC QUEST

Subject Connect

Air pollution (pronounced as po-loo-shun) refers to the dirty air. It can also affect the ozone layer present in the atmosphere. Find out more about this layer. How is it useful for us? Write in your Science notebook in about 200 words.

ENJOY SCIENCE

Subject Connect

Write an acrostic poem using the following words:

a. AIR POLLUTION

b. DUST

c. AIR

d. BREATHING

Have fun!

Life Connect

PICTURE SURVEY

The picture here shows five things that show the presence of air around us. Circle them.

- Air is a gas.
- You must have felt air while cycling. **Yes/No**
- Have you ever seen the air while cycling? **Yes/No**

  We cannot see air. We can feel it.
- Do the objects in the picture show any properties of air? List them in your Science notebook.

Chapters 1 and 2

Worksheet 1

A. Give one word for the following.

1. These are also called energy-giving food.

_____

2. These make food for the plants.

_____

3. The smallest particle of which matter is made.

_____

4. The process by which plants make their own food.

_____

5. The diet which contains all the nutrients in appropriate amount.

_____

6. These bind the plants to the soil.

_____

7. The plants breathe through these present in their leaves.

_____

8. The part of the plant that grows under the soil.

_____

9. The kitchen or food factory of a plant.

_____

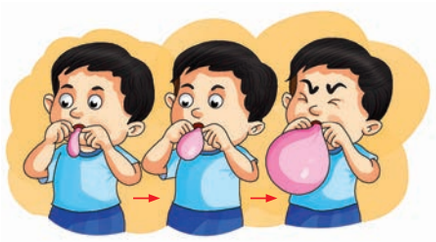
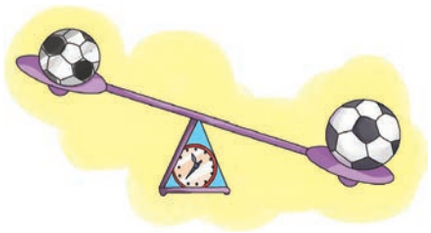
10. Plants that give us medicines.

_____

Chapters 3 and 4

Worksheet 2

A. What does the following pictures tell about air?

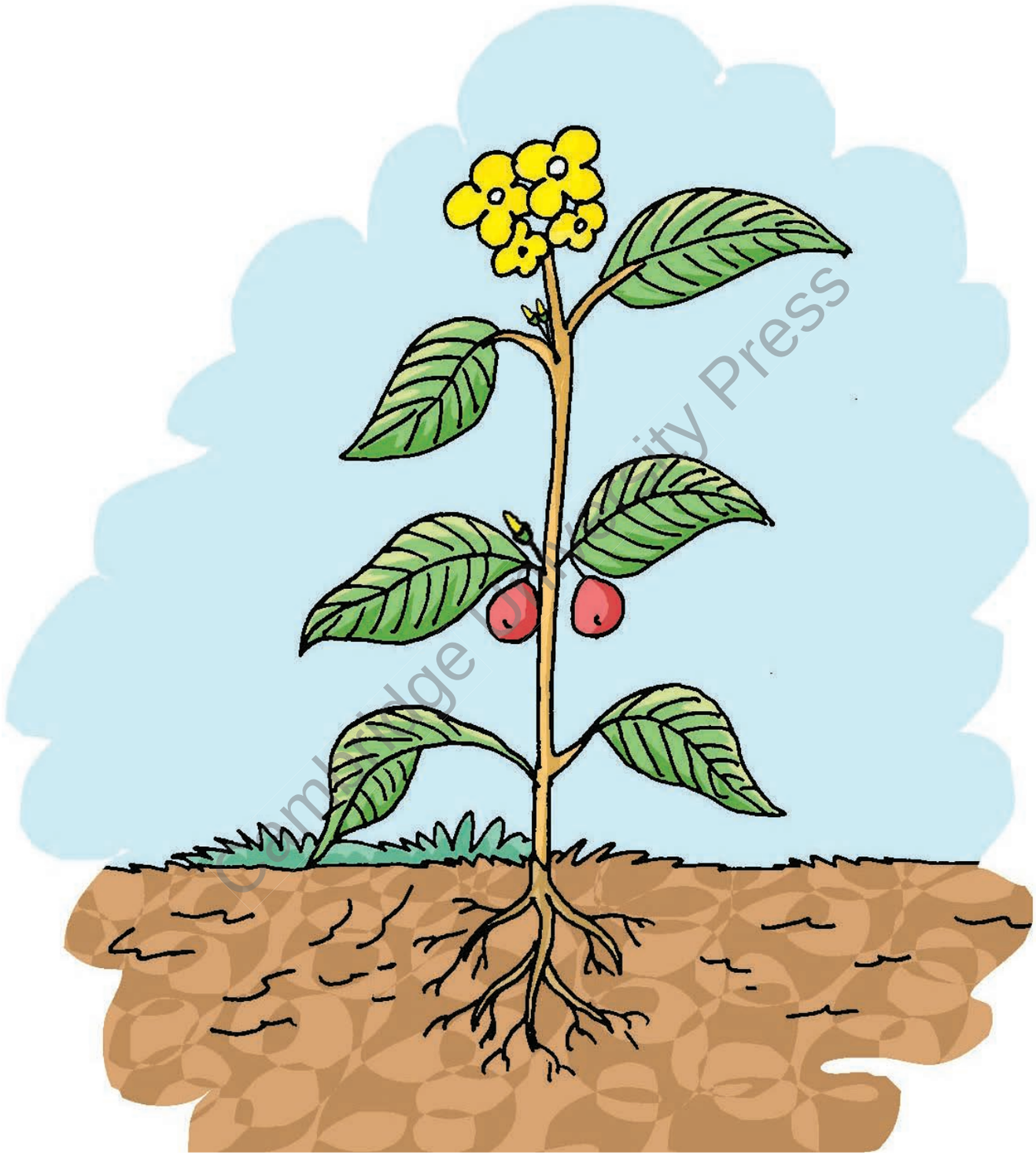
1. 	2. 
_____ _____	_____ _____
3. 	4. 
_____ _____	_____ _____

B. State true or false.

1. The animals that eat plants only are known as herbivores. _____
2. Organisms that feed on dead animal and plant material are called insects. _____
3. The movement of animals from one region to another, according to the season of the year, is known as migration. _____
4. The animals that have already disappeared from the Earth are considered to be endangered. _____
5. Land animals that live mostly on trees are called aerial animal. _____

Sample Test Paper

A. Label the parts of the plant which form the root and the shoot.



B. Fill in the blanks with the words from the help box.

aestivation	camouflage	Vitamins
Proteins	hibernation	Roughage

1. During winters, animals go into _____.
2. Slowing down of the activity of animals in summer season is called _____.
3. The blending of animals with their surroundings is called _____.
4. _____ are called body-building food.
5. _____ helps our body fight against diseases.
6. _____ in food helps in removing waste materials from the body.

C. Give one word for the following.

1. The moving air.
2. Humans breathe through these.
3. This state of matter has a fixed shape and size.
4. Molecules are made of these tiny particles.
5. The animals that have disappeared from the Earth.
6. It is also called summer sleep.
7. The animals that eat both plants and other animals.
8. The animals that spend most of their time on trees.
9. The animals that can live on both land and in water.
10. The process by which plants make their own food.

D. State true or false.

1. The flat part of leaf is called lamina.
2. The stems of herbs are called trunk.
3. Proteins help in the removal of waste material from our body.
4. Food is stored as starch in the leaves.
5. Plants lose water through transpiration.

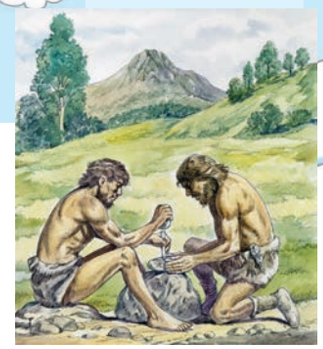
E. Answer the following question.

1. What is a balanced diet?
2. List three functions of stems.
3. Draw a diagram to explain photosynthesis.
4. List the properties of air.
5. What is transpiration?

Social Studies

1

Story of the Past – History



On Your Marks...

Think about an event or incident from your life that left an impact on you. Now, answer the following questions.

- When did this event or incident happen?
- Did it affect you and the people around you in a positive or a negative way?
- How did it change you as a person?

I Shall Learn

- ☑ Understanding history
- ☑ Importance of studying history
- ☑ Periods of history

A time that has gone by is referred to as the **past**. When you read or remember something that happened at an earlier point of time, it means that you are talking about the past.

Understanding History

The word 'history' has been derived from the Greek word *historia*. It means studying about the events of past and the reason they took place. So, history is defined as the study of past events in a systematic manner.

Importance of Studying History

History can be understood as the window into our past. It helps us understand everything around us. The study of history is not limited to just objects but includes people also. There are many reasons why studying history is important for us. Let us study some of them.

A sound knowledge of our past allows us to relate our past to our present. We also understand why

Think about it!

We see different things around us. How do you think they came into existence? Do you think everything around us has a history?

things and people are the way they are today. For example, long ago humans lived in caves. With time, they learnt to make huts using materials like wood and leaves. Gradually, they learned to make bricks and built stronger houses.

Buildings of historical importance are called **monuments**. These structures tell us about our glorious past. They tell us about the lives, beliefs and knowledge of the people who lived during that time. For example, the Red Fort in Delhi was the official residence of Mughal rulers hundreds of years ago.

People like teachers, scholars, **politicians** and leaders influence the lives of people around them. History tells us how the viewpoint and decisions of these powerful personalities affected our **society**. For example, Mahatma Gandhi played an important role in India's independence from the British. His ideas not only guided the people who lived during that time but are studied and followed by people even today.

Can you name some people who lived in the past and have affected our lives in some way? .....

Some events in the past brought about significant changes in the society. These important days are celebrated even today. For example, we celebrate Republic Day on 26 January and Independence Day on 15 August every year.

India Gate on the eve of Republic Day

We study history to understand our **customs** and **traditions**. The stories of our past are not only interesting but also tell us how things came into existence. For example, the rituals and customs related to our festivals.

Activity 1

We all celebrate festivals with our family and friends. Make a list of five festivals celebrated at your home. Discuss with your elders the reason for celebrating these festivals and the customs associated with them.

Periods of History

Our history is quite vast and thousands of years old. People who study history are called **historians**. For making the study of history easy, historians have divided it into three parts or phases called as **periods**. The three periods of history are as follows.

Ancient: The word 'ancient' refers to something very old.

↓

Medieval: The word 'medieval' refers to the middle phase.

↓

Modern: It means something that is more recent.

Activity 2

Plan a trip to visit the historical monuments in your city with your family. These can be buildings, places of worship, etc. Collect information to complete the given table.

Name of monument	When was it constructed?	Who built it?	Reason for construction/special features

I Learnt

- History is defined as the study of past events in a systematic manner.
- History helps us understand why things and people are the way they are today.
- Historical monuments tell us about the lives, beliefs and knowledge of people who lived during that time.
- Through history, we learn about people whose ideas influenced the society.
- For the sake of making the study of this subject easy, historians have classified history into three periods – ancient, medieval and modern.

Words I Learnt

Custom: a way of behaving or a belief that has been established for a long time

Tradition: a belief or way of acting that people in a society have continued to follow for a long time

Politician: a member of government or law-making body

Society: a large group of people who live together in an organised way making decisions on how to do things and share work and responsibilities

Get Set, Go!

A. Fill in the blanks.

1. _____ is the time that has gone by.
2. _____ is a window into our past.
3. Buildings of historical importance are called _____.
4. We celebrate _____ on 15 August every year.
5. The word _____ refers to something very old.

B. State true or false.

1. Historical events can be studied in any order.
2. The word 'medieval' means middle phase.
3. Politicians and leaders do not influence the views and opinions of people.
4. Every family has a history.
5. History does not have any effect on the society.

C. Give one or two words for the following.

1. The date on which Republic Day is celebrated
2. An important leader of the Indian freedom struggle
3. Phases or parts of history
4. Meaning of the word 'medieval'
5. A place where early humans lived

D. Answer the following questions.

1. What is history?
2. What do you understand by the word 'tradition'?
3. Give three reasons why it is important to study history.
4. Write briefly about the periods of history.
5. Write briefly on how actions of people had an impact on our history.

E. Identify the monument using the given clue. Collect pictures of these monuments and paste them in your scrapbook.

1. Tomb of Mughal Emperor Humayun built in Delhi
2. A Bahai House of Worship located in Delhi
3. A temple dedicated to the Sun God in Odisha
4. A structure built in the memory of Mumtaz Mahal
5. Official residence of the President of India
6. A monument made by Mughals where Independence Day celebrations take place

Life Skills

Our monuments are a symbol of our rich past. They represent the feelings and knowledge of our ancestors. They form a connection between our past and present. It is our responsibility to ensure their maintenance and well-being.

Prepare a list of 10 rules that should be followed by visitors to ensure good maintenance of monuments. Some suggestions have been listed below.

a. Do not write on the walls of the monument or damage them in any way.

b. Do not litter.

c. Do not speak too loudly or play loud music at heritage sites.

d. Foreign tourists from across the world come to see the rich heritage of India. Do not misbehave or misguide them.

Connect

Language

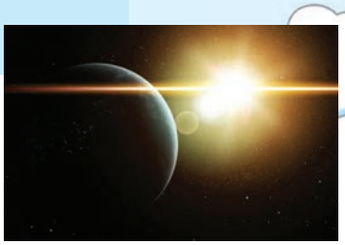
Many important events took place during different periods of history. These events helped in shaping our today. Collect information about the three periods of history. What kind of people lived during that time? What were the different things available and known to them. How did they live their lives? Write a journal on the period of history you would want to be a part of and give reasons for it.

Project

We use the postal system to send letters, documents and things to people both within the country and outside. Every post needs stamp(s) of a certain value. Visit the post office in your area with an elder and collect different types of stamps available. Paste them in your scrapbook. Collect information about the people and monuments given in these stamps.

2

Movements of the Earth



On Your Marks...

Look at the images given below. Can you explain how the ride and top move?

I Shall Learn

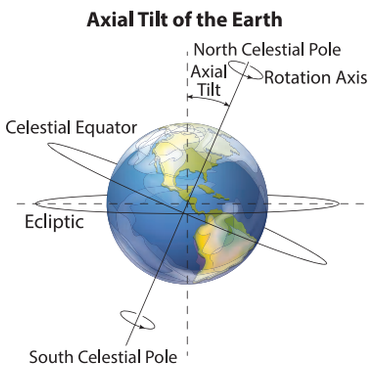
- ☑ Axis of the Earth
- ☑ Rotation
- ☑ Revolution

Planet Earth is our home. It is the only known planet in the solar system that supports life on it. The phenomena on Earth affect the living and non-living things in one way or the other.

Axis of the Earth

Try spinning a basketball on your finger. Notice how it spins about an imaginary axis. This axis coincides with the finger at the bottom. In the same way, the Earth too has its own axis on which it rotates.

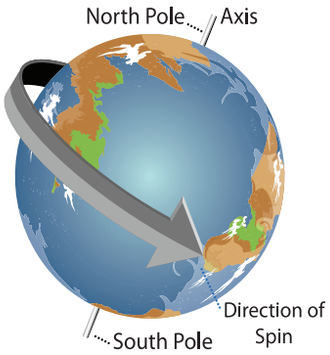
The axis of the Earth is an imaginary line that passes straight from the North Pole to the South Pole through the centre of the Earth. The axis is not vertical but is **tilted** at an angle of 23½° from the plane of its orbit around the Sun.



The axial tilt of the Earth

Rotation

The spinning movement of the Earth on its axis is called **rotation**. The Earth spins from the west to east direction. It takes 24 hours for the Earth to complete one single rotation around its axis.



Rotation of the Earth

Day and Night

Earth's rotation causes day and night.

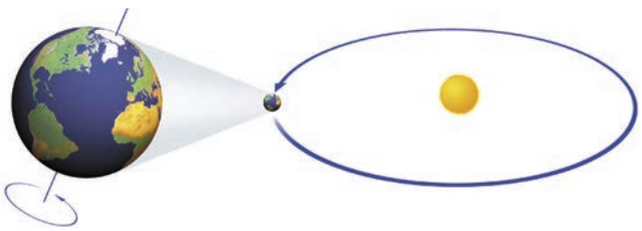
As the Earth rotates, the part facing the Sun experiences day, while the part away from the Sun experiences night. So in the 24 hours of a day, each part of the Earth experiences day and night.


Occurrence of day and night on the Earth

Earth's rotation also has an effect on dates. The eastern part of the Earth is ahead of the western part by a day. This is because of the rotation of the Earth from west to east. It implies that in 24 hours, places located in the eastern part of the Earth face the Sun and turn away from it before places located in the western part face it. This is the reason why when it is 1 January in India, it is the night of 31 December in the USA.

Revolution

The Earth experiences two kinds of movement. Along with spinning on its own axis, the Earth also moves around the Sun. The Earth moves around the Sun in a fixed path called its **orbit**. This path is **elliptical** in shape. Both these movements take place simultaneously. The movement of the Earth around the Sun is called **revolution**.



It takes 365 days and 6 hours or 365¼ days to complete one revolution. However, a normal calendar constitutes only of 365 days.

Leap Year

We know that in a calendar year only 365 days are counted. Then, where do those ¼ days or 6 hours go?

This part of the day or hours is accumulated for four years till it totals 24 hours. This extra day is added to the February month, usually of every fourth year. As a result,

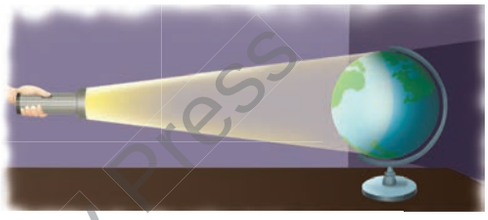
February has 29 days in that year. Such a year is known as a **leap year**. Thus, a leap year comprises 366 days.

Find out the mathematical rules for calculating leap years.

.....

Activity 1

Show your family how days and nights occur on the Earth.



Step 1: Take a globe and place it on one end of a table in your room. Switch off all the lights in the room.

Step 2: Now, focus a lit torch on the globe from the other end of the table.

Step 3: Notice that only one half of the globe is in light. The other half is in darkness. Rotate the globe from west to east. Notice how the part receiving light earlier is now in darkness due to rotation.

Relate this activity to the rotation of Earth and the phenomena of day and night.

Seasons

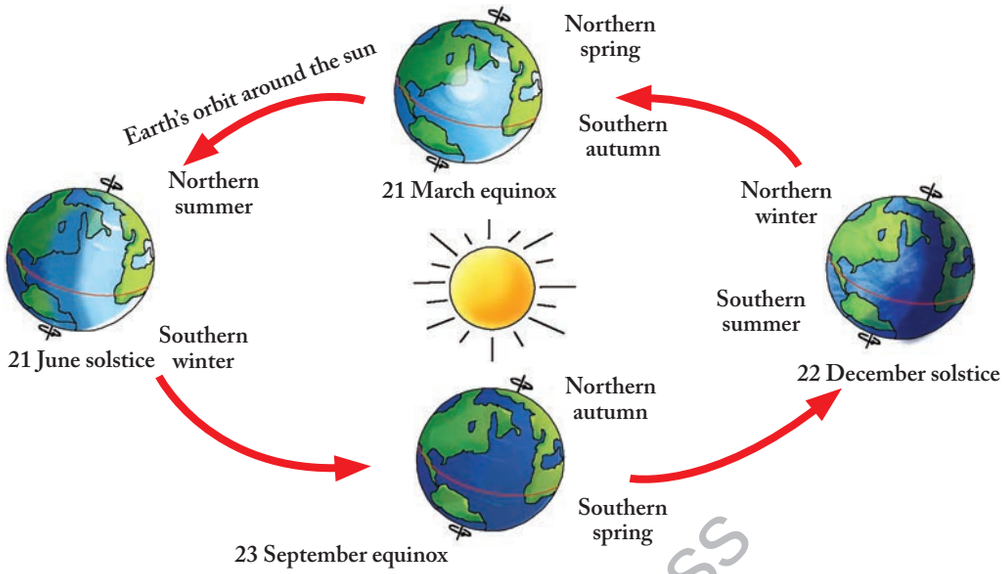
Seasons are caused due to revolution of the Earth and the tilt of its axis. Summer, winter, spring and autumn are the four distinct seasons we experience on Earth. Let us look at how seasons are caused.

An imaginary line, called the equator, runs around the middle of the Earth. In the diagram given on the next page, the equator is the red line on the Earth. It divides the Earth into two parts – the northern hemisphere and the southern hemisphere.

When the northern hemisphere leans towards the Sun, the southern hemisphere leans away from the Sun. The northern hemisphere receives more sunrays and experiences summer season. Meanwhile, southern hemisphere receives less sunrays and experiences winter season. The longest day in the northern hemisphere is 21 June. This day marks the **summer solstice**.

Similarly, when the northern hemisphere leans away from the Sun, the southern hemisphere leans towards it. Thus, the northern hemisphere receives less sunrays and

experiences winter season. Meanwhile, the southern hemisphere experiences summer season. The shortest day in northern hemisphere is 22 December. This day marks the **winter solstice**. Solstices occur when the Sun is directly overhead the **tropics**.



Occurrence of seasons on Earth

During the entire course of a revolution, the Sun shines twice directly over the equator. This is called **equinox**. During equinox, the length of day and night is equal. The equinoxes occur on 21 March and 23 September.

An exception to the above cases is the North Pole and the South Pole. This is because the rays of the Sun do not fall straight in these regions and they receive sunrays for six months alternately. Thus, these regions have a six-month duration of day and a six-month duration of night. This also means that half a year is summer and the other half is winter.

The movements of the Earth, rotation and revolution, are rhythmic in nature. It means that they happen in a continuous cycle and in the same order. Due to this reason, day is always followed by night and the order of seasons also remains the same year after year.

Think about it!

Movements of the Earth are better understood using the imaginary axis of the Earth. Imagine what would have happened if the axis was not tilted? How would it have affected the seasons on Earth?

Activity 2

Life in the polar regions of the planet is not easy. The living beings there have to face harsh conditions in their everyday life. Nature has provided them with special abilities to ensure their survival. Find out the names of at least five animals living in that region and how they cope with the conditions there.

I Learnt

- Rotation and revolution are the two movements of the Earth.
- The Earth rotates on its own axis and completes one rotation in 24 hours.
- Rotation causes day and night.
- Revolution involves the movement of the Earth around the Sun.
- The Earth completes one revolution around the Sun in one year or 365¼ days or 365 days and 6 hours.
- Revolution causes seasons.

Words I Learnt

Tilted: sloping position

Elliptical: oval or egg-shaped

Hemisphere: hemi = half, one of the two halves of the Earth

Tropic: one of the two imaginary lines around the Earth at a distance of about 23½° north and 23½° south of the equator

Get Set, Go!

A. Fill in the blanks.

1. _____ and _____ are two movements of the Earth.
2. The movement of the Earth around the Sun takes a time of _____.
3. Earth revolves around the Sun and _____ on its axis.
4. A _____ year usually comes every four years.
5. The Earth moves around the Sun in its _____.

B. Mark 'T' for true sentences and 'F' for false sentences.

1. Rotation and revolution take place alternately.
2. Revolution is responsible for the phenomena of day and night.
3. During winter season, the northern hemisphere leans towards the Sun.
4. If it is night in India, it would be night in USA.
5. A day is added to the month of March in a leap year.

C. Underline the error in the statement and write the correct statement.

1. The axis of the Earth is tilted at an angle of 23¾°.
2. Southern hemisphere experiences summer when it leans away from the Sun.
3. The Earth completes one revolution in 24 hours.
4. The polar regions on Earth experience four-month duration of day and night each.
5. Revolution of the Earth brings about the phenomena of night and day.

D. Answer the following questions.

1. How are days and nights caused?
2. The year 2020 would be a leap year. Justify.
3. Why does South Africa experience winter in June?
4. Explain how revolution of the Earth brings about change of seasons.
5. Why do equinoxes take place during the spring and the autumn seasons?

E. Draw a circle that represents your globe. Mark the following on it.

1. Axis of the Earth
2. Hemisphere where you live in
3. Direction of rotation of the Earth
4. Equator

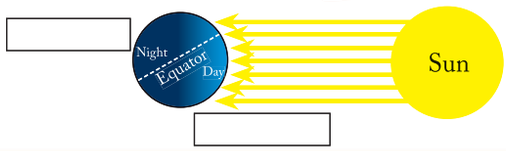
Life Skills

Christmas in Australia falls towards the beginning of the summer holidays! Children have their summer holidays from mid-December to early February. How is this so? Why does Australia have summer season in December?

Connect

Look at the image and write the correct seasons in the box given.

Science



Project

Form groups of five. Write a short play to demonstrate the phenomena of revolution and change of seasons on Earth. One member can represent the Sun and the others can represent the different positions of Earth in the orbit during different seasons. The members can describe their position and the effect of the season on the planet.

3

Four Domains of the Earth

On Your Marks...

Look at the images given below. Write their names in the correct boxes based upon where they spend most of their time.

I Shall Learn

- ☑ Lithosphere
- ☑ Hydrosphere
- ☑ Atmosphere
- ☑ Biosphere

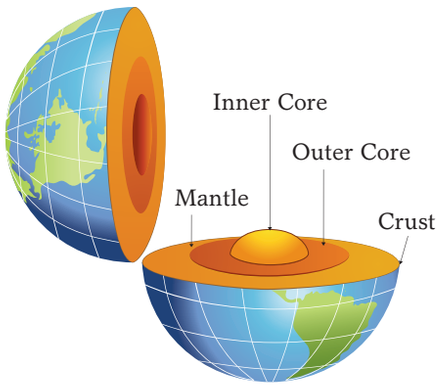
Land	Water	Air

Our Earth includes land, water, air, plants, animals and us. It is made up of both living and non-living things. All these things are **interdependent**. For example, we need air to breathe, water to drink, land to build our home and plants and animals to feed on.

The components of the Earth are called **domains** or **spheres**. These include lithosphere or land, hydrosphere or water and atmosphere or air. Parts of these three spheres make up the biosphere or the zone where life exists on Earth.

Lithosphere

Lithosphere is the domain of land. It consists of three layers. These are the **crust**, the **mantle** and the **core**. Of these, the core is further divided into the **inner core** and the **outer core**. The natural resources of Earth are found in this layer.



Structure of the Earth

- Crust forms the uppermost layer. It is the thinnest layer made up of rocks and soil. This layer is thicker under the continents and thinner under the oceans.
- Mantle is the layer between the crust and the core. It is thicker than the crust but thinner than the core.
- The deeper we go inside the Earth, the hotter it becomes and the pressure increases. As a result, the layers change from a solid to a semi-solid state gradually. Only the inner core remains solid due to the immense force exerted on it by the upper layers.

You know what

The temperature of inner core of the Earth is expected to be around 6000 degrees Celsius!

Hydrosphere

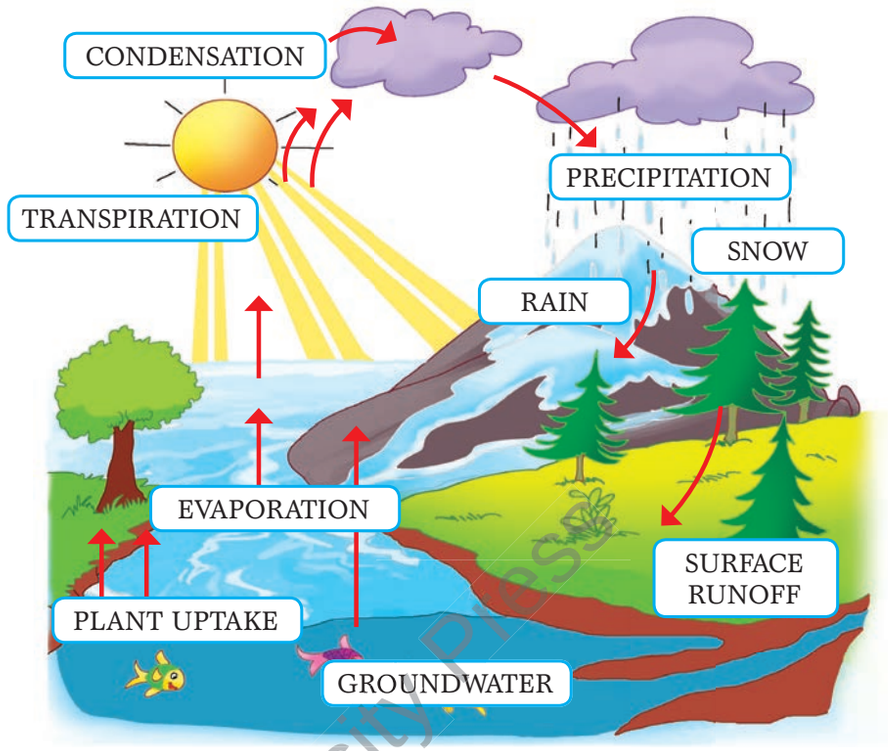
Hydrosphere is the sphere of water. It covers nearly 71 per cent of the Earth's surface. So, the Earth is known as the Blue Planet. It is essential for the existence of life on the planet. Hydrosphere includes all water bodies on Earth like oceans, rivers and lakes. It also includes **aquifers** under the ground, clouds in the air and snow and glaciers on mountain peaks. Water on Earth is classified as sea water and freshwater. Sea water is salty and found in oceans. Freshwater is found in rivers, lakes and ponds.

Water in all its forms is constantly moving. This happens due to **evaporation** and **condensation**. Water from water bodies evaporates during the day as water vapour and enters the atmosphere. The water vapour there changes into water droplets on cooling. It then comes down on Earth in the form of rain. This continuous movement of water is known as the **water cycle**.

The **currents** here affect the climate of islands and coastal areas. This sphere is home to many plants and animals. They provide us with food and other important things.

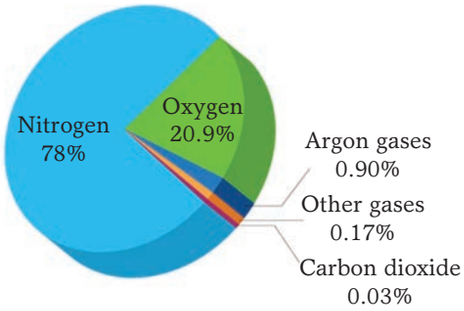
Atmosphere

Atmosphere is the domain of air. It is basically a colourless and odourless mixture of gases that surrounds the Earth. It includes nitrogen, oxygen, carbon dioxide, water vapour and various other gases in different proportions. Atmosphere envelops the Earth like a blanket and acts as a gigantic filter, keeping out harmful rays of the Sun.



Water cycle on Earth

Atmosphere supports life on Earth. We breathe oxygen in the atmosphere. Carbon dioxide enables plants to prepare their food. Nitrogen, which comprises nearly 78 per cent of the atmosphere, makes our soil fertile. Water vapour helps in formation of rainfall and controlling the temperature of an area. Air is essential for survival and we should not pollute it.



Atmospheric composition of Earth

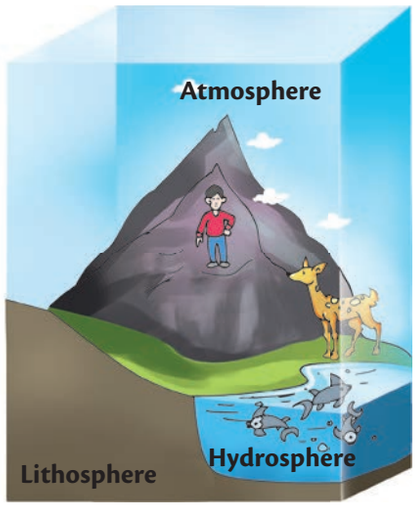
What do you think lies beyond the atmosphere?

.....

.....

Biosphere

Biosphere is the sphere where life exists on Earth. Life exists everywhere, on land, in air and water. Biosphere comprises the world of all the plants and animals, including ourselves. It also comprises the natural surroundings in which all of us interact and influence each other. Thus, biosphere includes both the living and non-living components. Here, **organisms** exist within their specific



environment called as their **habitat**. All living organisms functioning together with their environment as a unit make an **ecosystem**.

Any adverse impact on any of the living or non-living components disrupts the functioning of the biosphere. For example, deforestation destroys the habitat of animals living in the forests. It removes the food and fodder supply of the people dependent on those trees. Lack of trees gives rise to rampant floods and mudflows. Therefore, we must protect the biosphere from all harm. This will save us and our Earth too.

Think about it!

What would life be like if there was no sunlight and the Earth was covered with ice?

Activity 1

Look at the image and answer the questions given below.

- What is shown in this image?
- How does it impact the Earth's biosphere?
- What can you do to prevent this?

I Learnt

- Earth is composed of spheres or domains – lithosphere, hydrosphere, atmosphere and biosphere.
- Lithosphere is the domain of land. It is composed of the crust, mantle and core.
- Hydrosphere is the domain of water and includes water in all forms.
- Atmosphere is the domain of air. It envelopes the Earth and comprises various layers.
- Biosphere is the zone of life on Earth. It overlaps all the other three spheres.

Words I Learnt

Interdependent:	depending on each other
Aquifer:	a layer of rock, sand or earth that contains water or allows water to pass through it
Evaporation:	process of water changing into water vapour on heating
Condensation:	process of water vapour changing into water on cooling
Current:	air or water that flows
Organism:	an individual living thing

Get Set, Go!

A. Choose the correct answer.

1. Nearly 78 per cent of the Earth's atmosphere consists of _____. (nitrogen/oxygen)
2. Continuous movement of water in the environment is known as _____. (water cycle/bio-cycle)
3. _____ is the domain of land. (Lithosphere/Biosphere)
4. The innermost layer of the Earth is _____. (crust/core)
5. _____ is the zone of life on Earth. (Hydrosphere/Biosphere)

B. Mark 'T' for true sentences and 'F' for false sentences.

1. Habitat is the specific environment in which the organism exists.
2. The inner core is liquid due to high temperature.
3. Rivers and ponds are sources of freshwater.
4. Living beings cannot exist without land, water and air.
5. Nitrogen gas is used by plants to prepare their food.

C. Answer the following in one or two words.

1. Living organisms functioning as a unit with their environment
2. The gas humans breathe in
3. The middle layer of the Earth
4. Flowing air or water
5. Process of heating water and changing it to water vapour

D. Answer the following questions.

1. List the domains of the Earth and what they represent.
2. Why is the inner core of the Earth solid?
3. Life on Earth would not be possible without atmosphere. Justify this statement.
4. Represent the water cycle in a diagrammatic form.
5. Name the domain of the Earth where all life exists. Describe its importance.

E. Prepare a poster showing the need for protection of the biosphere.

Life Skills

Prepare a web-chart explaining the interdependence of living and non-living components of the biosphere. Begin by placing yourself in the centre and working outwards.

Connect

Science

Prepare a model of the layers of the Earth.

Project

Go to the school ground or garden and observe it. Make a drawing to show how the living and non-living components are interacting with each other there. Also, write the names of these components under the categories – living and non-living. For example, soil (non-living) is home to earthworms (living).

4

Major Landforms

On Your Marks...

Look at the picture of our Earth. It is taken from space.

- Which is the most predominant colour? What does it represent?
- What are those brown patches?

Earth as seen from space

I Shall Learn

- ☑ Continents and landforms
- ☑ Water bodies
- ☑ Some other landforms

You know what

The world map was not always like what it is today. 250 million years ago, all the continents formed a super continent known as 'Pangaea'.

Land covers 29 per cent and water covers 71 per cent of the surface of the Earth. Continents and oceans are the big **landmasses** and large expanse of water respectively caused by movements of the earth.

Continents and Landforms

Continents are huge masses of land. There are seven continents on Earth. In the order of largest to smallest, these are Asia, Africa, North America, South America, Antarctica, Europe and Australia. The surface of the Earth is not the same everywhere so each continent has a variety of **landforms**. Also, every continent on Earth is surrounded by oceans.

Activity 1

In an atlas, look at the world map to see different continents and oceans on the Earth. Now, label these on a blank world map.

Mountains, Hills and Valleys

Mountains are the highest areas of land on Earth. They differ in their height and shape. The highest point or tip of the mountain is called its **peak**. They have steep slopes. Several mountains when joined together form a **chain** or **range**. The Himalayas is the highest mountain range in the world. Mountains have a thin soil cover and it is difficult to grow crops there. The climate is not favourable and transportation is a challenge. For these reasons, mountains are thinly populated. However, they are important as they act as a **barrier** against cold and hot winds. Many rivers originate in the mountains. The forests on the slopes provide us with many useful products. Rich **deposits** of **minerals** are found in some mountains.

Mount Everest

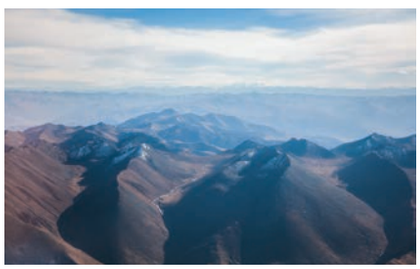
Anamalai hills in southern India

Areas of land that are not as tall as mountains are called **hills**. They also form ranges or chains.

A low-lying area between two hills or mountains is called a **valley**. Many a times, rivers and streams flow through the valleys. These places are inhabited by humans. The city of Dehra Dun is a famous valley in the northern part of India.

Plateaus

A highland with a flat top is called a plateau. The top of a plateau is flat like a table so it is also called a **tableland**. They have steep slopes. The Deccan Plateau in India is an example of a large plateau that extends over hundreds of kilometres. The Tibetan Plateau is the largest and highest plateau in the world.



Tibetan Plateau

Most plateaus are in dry regions. The growing season is short as the climate is cold. Cattle and sheep are reared in the **grasslands** on plateaus. Some of them are even rich in mineral deposits.

Plains

Northern Plains in Punjab

Large stretches of flat and low-lying areas of land are called **plains** or **lowlands**. They are flat or almost flat. Plains are formed in two ways – by deposition of mud and soil brought down by rivers from mountains and by breaking down of mountains by wind and rain. Both these are slow processes and take long periods of time. The Great Northern Plains are plains that lie in the northern part of India. Plains formed along the coasts are coastal plains. The eastern and western coasts of the country have coastal plains and are sandy.

Plains have fertile soil suitable for agriculture. Construction of roads and railways can be done extensively thus making them well-connected. For this reason, plains are well-populated.

Deserts

Sand dunes in Thar Desert

Dry areas of land that receive little or no rainfall year after year are called deserts. Few plants and trees grow in these areas. Areas of land where nothing grows is called **barren** land. Deserts are of two types – hot and cold.

Hot deserts have a hot, dry, sandy and windy climate. Strong winds in these areas break down the rocks into sand over long periods of time. The sand formed is blown into huge hills by the strong winds called as **sand dunes**. The shape of these sand dunes changes every time the wind blows. The Sahara Desert in North Africa is the largest hot and sandy desert in the world. The Thar Desert in western part of India is an extension of the hot and sandy Arabian Desert in Asia.

Cold deserts are areas that are frozen. Temperatures are low and there is hardly any vegetation. Antarctica is the coldest and driest desert (and continent) in the world. Areas in and around the polar regions are frozen. Gobi Desert is another example of a cold desert.

Water Bodies

Oceans and Seas

A beach

An **ocean** is one large continuous body of water. It is very large, deep and surrounds the continents. There are five oceans in the world. They are the Pacific Ocean, Atlantic Ocean, Indian Ocean, Arctic Ocean and Southern Ocean. The Pacific Ocean is the largest and the deepest

ocean and covers about one-third of the Earth's surface. The Arctic Ocean is the smallest ocean and lies mostly in the Arctic Circle.

Areas of water smaller than the oceans are called **seas**. Red Sea, Mediterranean Sea, Caribbean Sea and Arabic Sea are some examples of seas found on Earth.

The area close to or next to the sea is called a **coast**. A low and flat coast next to the ocean or sea is called a **beach**. Coasts can also be high and rocky.

Wind pushes ocean and sea water. This results in waves moving towards and away from the beach. Strong winds during storms result in high waves in the water which is dangerous for people, boats and ships in water. Sometimes, earthquake in the sea leads to very big and strong waves. This is called a **tsunami**. It can cause a lot of damage and loss of life and property.

Rivers and Lakes

A **river** is formed when water flows down the slopes of mountains and hills. Rivers can be formed due to melting of snow in the mountains during summer or due to heavy rains in the mountains and hills. **Streams** are small rivers with less water. Rains form streams which join to form rivers.

River Ganga flowing through Gaumukh

Ganga and Indus are examples of snow-fed rivers of India.

Rivers Tapti, Narmada and Mahanadi are fed by rain.

A large water body surrounded by land on all sides is called a **lake**. The Caspian Sea in Asia is the world's largest lake but is called sea due to its large size. The Wular Lake in Jammu and Kashmir is the largest lake in India.

Pangong Tso, a lake in Ladakh, India

Some Other Landforms

Peninsula

A piece of land surrounded by water on three sides is called a **peninsula**. It is joined to a larger piece of land on the fourth side. The southern part of India is a peninsula.

A peninsula

Activity 2

Use an atlas to find names of water bodies surrounding the southern part of India making it a peninsula. Mark them on a map.

Island

A piece of land surrounded by water on all sides is called an **island**. Some islands in the sea are tops of tall underwater mountains.

An island

A bay

Bay

A **bay** is formed when a part of the sea fills up a wide curve in the land. The Bay of Bengal is a water body on the eastern side of the Indian mainland.

Isthmus

An **isthmus** is a narrow strip of land with sea on either side thus forming a link between two larger areas of land. The Isthmus of Panama connects the continents of North America and South America.

An isthmus

A strait

Strait

A **strait** is narrow stretch of sea that flows between two large areas of land thus connecting them.

Think about it!

The water bodies form a connecting link between the different continents of the world. Suggest different ways in which these water bodies help us connect better.

Activity 2

On a piece of paper, represent the different landforms studied diagrammatically. Represent land using brown colour and water using the colour blue.

Name the islands that are a part of our nation, India.

.....

I Learnt

- Continents are huge masses of land. There are seven continents on Earth.
- Mountains, hills, plateaus, plains and deserts are the different types of landforms found on Earth.
- Oceans, seas, rivers, streams and lakes are the different water bodies found on the planet.
- Peninsula, island, bay, isthmus and strait are other types of landforms found on Earth.

Words I Learnt

Landmass: a large piece of land
Landform: a natural feature on the surface of the Earth
Barrier: something that stops something from coming in or going out
Deposit: a layer formed under the ground, especially over a long period
Grassland: a large area of land covered with grass
Mineral: a chemical substance that is formed naturally in the ground

Get Set, Go!

A. Fill in the blanks.

1. Asia is the largest _____ in the world.
2. A _____ is a landform with a flat top.
3. The _____ is an example of a cold desert.
4. _____ is a narrow strip of land with water on either side of it.
5. An _____ is surrounded by water on all sides.

B. State true or false.

1. 71 per cent of the Earth's surface is land.
2. Oceans are the biggest water bodies on Earth.
3. Plains are more populated than deserts.
4. Two large areas of land are connected by a bay.
5. Rivers are either snow-fed or rain-fed.

C. Give a word that describes the clue best. For example, Yamuna – River

1. Himalayas – _____
2. Tapti – _____
3. Pacific – _____
4. Deccan – _____
5. Gobi – _____

D. Answer the following questions.

1. List the different types of landforms found on Earth.
2. Life in the mountains is difficult. Justify this statement.
3. How are rivers formed?
4. How does the movement of air affect oceans and seas?
5. Differentiate between a strait and a bay. Give an example of each.

E. Make a picture showing your ideal holiday spot. Try to include the landforms and water bodies found in that place.

Life Skills

Water bodies are home to aquatic life. They are often classified on the basis of the salt content in their water. This factor also affects the organisms living in them. Find out names of some plants and animals living in the different water bodies found in India.

Connect

Science

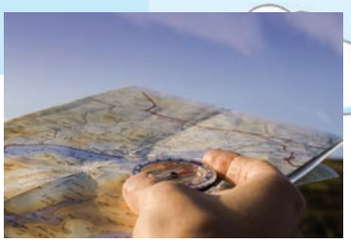
Collect information on the factors affecting water and air currents and their influence on the climate on land.

Project

In a table, list all types of landforms and water bodies studied in the chapter. Use the atlas to find two examples of each including the name of the continent where they are found /close to. Give examples other than those given in the chapter.

5

Understanding Maps



On Your Marks...

On an A4 sheet of paper, draw the route from your school to your home using a pencil and a ruler. Mark names of roads, buildings and landmarks that will help in understanding the route better.

I Shall Learn

- ☑ Types of maps
- ☑ Signs and symbols
- ☑ Colours on a map
- ☑ Directions
- ☑ Scale

Directions guide our movements better and reduce the time and effort required to reach our destination. They also prevent us from getting lost. **Maps** give directions and show specific details of areas.

The word 'map' is derived from the Latin word *mappa* which means sheet or napkin. A map represents the whole of the surface of the Earth or a part of it. It is a drawing on a flat surface such as paper. A map is a flattened globe. However, maps give us more information about areas on Earth compared to globes. They are also very convenient to carry. Gerardus Mercator was the first person to publish a collection of maps in the form of a book in the sixteenth century. A book of maps is called an **atlas**.

You know what ?

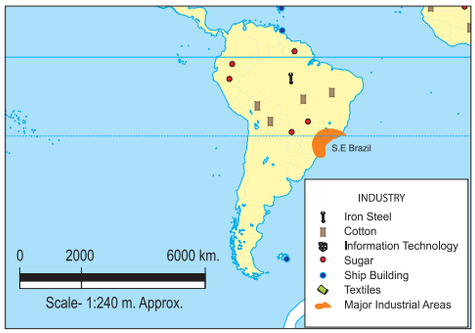
The science and art of making maps is called cartography.

Activity 1

Flip through the pages of an atlas. Compare and suggest how it is easier to study features of Earth's surface on paper than on the globe.

Types of Maps

Different types of maps are used to study different features. A **political map** of a country shows political features, capital cities, major towns and other important places. A **physical map** shows physical features like mountains, plains, plateaus, forests, valleys, rivers, seas and oceans. Apart from political and physical maps, there are **thematic maps** which show special features of an area. Thematic maps include maps showing rainfall, vegetation, deposits of minerals, location of industries, etc.



Thematic map of South America

Signs and Symbols

Maps use various signs and symbols to depict different features. If you see a map closely, you would find signs and symbols depicting rivers, roadways, railways, temples, schools, etc. These signs and symbols are also known as the **conventional signs and symbols**. For example, a city is marked by a small circle. The capital city is marked by a dot surrounded by a circle.

Colours on a Map

A map uses different colours to depict different landforms and water bodies. Every colour used on the map has a meaning and helps us understand it better. Generally, green colour on a map represents plain areas, while yellow represents deserts. Mountains and highlands are represented by brown, while oceans and other water bodies are represented in shades of blue.

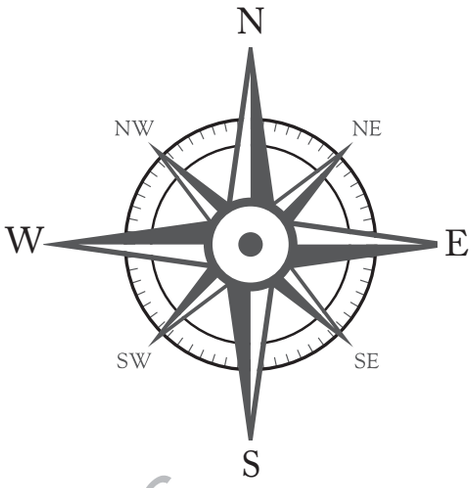
Each map contains a **key** or a **legend**, which helps us understand the colour schemes and symbols used in the map. For example, in the given key, different colours show landforms above the sea level. The brown colour shows highlands; the green colour shows plains which are closer to sea level compared to the mountains. Different shades of colour can also be used to show the height above sea level or depth below sea level.

Directions

Directions are very important to study maps. They are used to correctly locate a place on a map.

There are four main directions on a map. They are north (N), south (S), east (E) and west (W). There are also four sub-directions on a map. They are:

- North-east (NE) – between north and east
- South-east (SE) – between south and east
- South-west (SW) – between south and west
- North-west (NW) – between north and west



A star in the night sky gets its name from the direction it is found in. Name the star.

.....

Scale

A small ruler-like symbol given on a map is called the scale of the map. A scale is used because it is not possible to show the actual size of a place or distances between places on a map due to their large size. Let us look at the example.

The distance between Delhi and Chandigarh is 250 km. This distance is too large to be shown on the map. On a map, it is represented using 5 cm.

250 km is represented by 5 cm

So, 1 cm = 250 ÷ 5

= 50 km

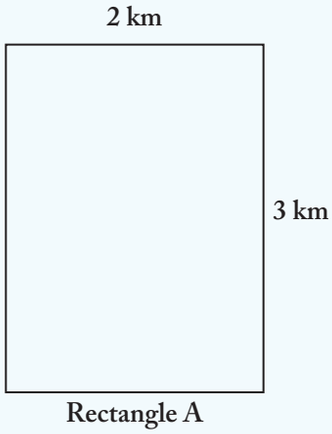
This means, 1 cm represents 50 km which is the scale of the map.

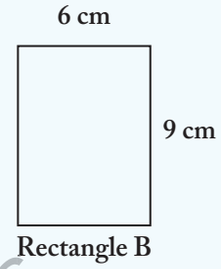
Therefore, **scale** of the map is the ratio between the distance on the map and the real distance on the ground. Maps are always drawn to scale. This information should be exact and **accurate** so that it helps us understand the actual size and shape of land when looking at the map.

Think about it!

Do you find maps useful? List some instances when you think maps are needed.

Two rectangles of different sizes can be drawn using a mathematical relation. Look at the following example.





Rectangle A

Length = 3 km

Breadth = 2 km

Rectangle B

Length = 9 cm

Breadth = 6 cm

So, 1 km = 3 cm

It means Rectangle B is an accurate representation of Rectangle A using a scale. This is called **scaling down**.

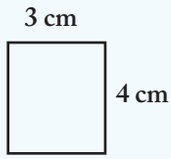
The scale when used to calculate the actual size of a place is called **scaling up**. Let us look at the following example.

Find the exact dimensions of the rectangle drawn using the scale.

1 cm = 3 km

Length = $4 \times 3 = 12$ km

Breadth = $3 \times 3 = 9$ km



Activity 2

Find out how big ships sailing in seas and oceans find their way through water. Also, find the units of distance used by them.

I Learnt

- A map is a drawing of the whole Earth or a part of it on a flat surface.
- A book of maps is called an atlas.
- Signs and symbols and colours are used in maps to represent specific features understood using a key.
- Maps are drawn to scale.

Words I Learnt

Conventional signs and symbols:	icons and symbols used on a map to represent certain features
Legend:	the words written next to a map that explains what the symbols mean
Accurate:	correct without any mistakes

Get Set, Go!

A. Fill in the blanks.

1. A book of maps is called an _____.
2. A _____ map shows states, capital cities and other important places.
3. Maps are always _____ to scale.
4. There are _____ main directions on a map.
5. Cities and towns are generally seen on a _____ map.

B. Choose the correct answer.

1. A ruler-like symbol on a map is called _____.

   a. key b. legend c. theme d. scale

2. _____ was the first to publish a collection of maps in the form of a book.

   a. Crates b. Columbus c. Mercator d. Nicolas

3. Which of the following is a sub-direction?

   a. North b. South c. North-west d. West

4. A water body on a map is generally represented using the colour_____.

   a. yellow b. blue c. white d. green

5. Which of the following would not be seen on a thematic map?

   a. industry b. rainfall c. lakes d. minerals

C. Match the columns.

Column A	Column B
1. Drawing of the Earth	a. Green colour
2. Key	b. Globe
3. Desert	c. Colour schemes and symbols
4. Small model of the Earth	d. Map
5. Forest	e. Yellow colour

D. Answer the following questions.

1. Classify maps on the basis of types of details given by them.
2. What is the importance of using colours in a map?
3. Give three examples of conventional signs and symbols used on a map.
4. What is a scale? Give examples to explain the concepts of scaling up and scaling down.
5. Why is it important to draw maps accurately?

E. Study the maps of India given at the end of the chapter. Observe how the different states in the political map have been classified on the basis of their landforms (physical features) in the physical map.

Analyse how physical features can help us understand the people, culture and food of a place.

Life Skills

Maps help us understand the area under study better. Take a physical map of the state where you live. Study the kind of landform(s) and water bodies in the state. Does it help you understand the climate of your area? If yes, how?

Connect

Mathematics

The scale used on a map is 1 cm = 100 km. Find out the actual distance between the following places with the help of their distance given on the map.

Places	Distance on map	Actual distance
Delhi – Jaipur	2.5 cm	
Delhi – Shimla	3.7 cm	
Lucknow – Amritsar	10 cm	

Project

Prepare a map of your school using an appropriate scale. Try to use signs, symbols and colours to depict the different parts of the school. Compare your map with that of your classmates'.

North America - Physical Map

North America - Political Map

6

Being Responsible

On Your Marks...

Tick the image that represents appropriate behaviour.

I Shall Learn

- ☑ Civics
- ☑ Being responsible
- ☑ Elections

☐

☐

Why do you think people in the other image were not behaving appropriately?

We live with our parents and relatives in the comfort of our homes. However, there are other people who live around us. People who live close by are called our **neighbours**.

We interact with our neighbours, our schoolmates, teachers, friends, relatives and other people. Together we are members of the same society and country.

Civics

We live together and help each other in different ways. Citizens of a country work together to ensure smooth functioning of the **nation**.

In India, the citizens elect people who form the **government**. The government works for the welfare of people and helps in running the country efficiently.

The Constitution of India gives certain rights to the people of India and expects them to perform certain duties towards the country. It also tells the government the rules to be followed while governing.

You know what

The Constitution of India is the longest written constitution of any **sovereign** country in the world.

The study of interactions between citizens, their rights and duties and the formation and functioning of the government is called **civics**. Here we study about the roles and function of the government, the problems in the country and how the citizens can help in solving those problems.

Being Responsible

As studied earlier, citizens of a country enjoy certain rights but are expected to perform some duties also. These duties are towards both the people and public property. We also need to care for the things around us. This is called being **civic-minded**.

Being a Good Neighbour

As members of a society, we should know our neighbours and other people with whom we interact. We should be caring and helpful towards them. We should also be kind and compassionate.

We should be good to our neighbours. We should be polite to them and offer help when they need it. As good neighbours, we should not to do anything that would upset or cause harm to other people. It is also our duty to think about the well-being of everyone around us.

Name the association that works for the welfare of people in your society.

.....

Activity 1

Take a walk around your society. Make a list of the things you feel need attention. For example, maintenance of the park, water drainage system, condition of roads, etc. With the help of elders, bring the attention of your society members to these matters.

Being a Good Citizen

The things at home like books, clothes, television, refrigerator, etc. belong to you and your family. They are your **private property**. It is your responsibility to look after your things.

Things in our surroundings like parks, roads, buses, trains, schools and hospitals are there to benefit us all. They all are **public property**. They belong to everyone. Monuments are an evidence of our past. It is our duty to preserve these monuments. We need to ensure that no harm is caused to them. We should maintain them and not destroy them.

Air, water, light and other gifts of nature are available to all of us. We should use them wisely and not waste or pollute them.

It is every citizen's right to enjoy these facilities but at the same time as responsible citizens of the country, we should be civic-minded. There are certain government bodies which help in maintaining public property; however, the primary responsibility lies with us, the citizens.

Elections

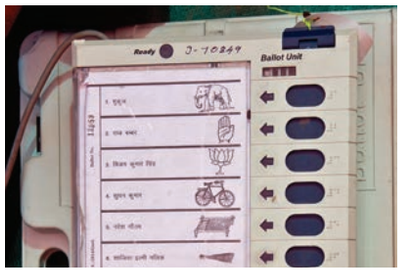
India is the world's largest democracy. In a democracy, the citizens choose their leaders who form the government and run the country. The process of electing the leaders is called **elections**.

In India, elections take place for the entire country as well as for every state. All Indian citizens who are 18 years old or above cast their vote to choose the leaders. This process is known as **voting**. People who cast their vote are called **voters**.

Elections need to be planned and organised properly. The **Election Commission** is an organisation that plans and conducts elections in India. It decides the dates and venue, holds the elections, calculates the results and announces them.

A polling booth

The Election Commission issues every voter an identity card that has details like the name, address, date of birth and photograph of the voter. Each voter carries their identity card to the place allotted to them for casting their vote. This place is called a **polling booth**. These days, voting is done through Electronic Voting Machines (EVMs) where the voters can cast their vote by pressing just a button. Voting is done by secret **ballot**. The Election Commission ensures that the elections take place in a fair and an impartial manner.



An electronic voting machine

Dos

- ☑ Citizens who are 18 years and above must exercise their right to vote and should not let it go waste. They should vote only once in the election.

- ☑ Voters vote and carefully choose a candidate who they think will work towards the betterment of the people. In case a candidate is unable to work properly, he or she may not be elected the next time.
- ☑ We should ensure that the elections are fair and impartial.

Don'ts

- ☒ Voters should not get influenced by anyone and cast their vote to that person.
- ☒ Voters should not share the name of the person they voted for as it is secret ballot.

Think about it!

An ink mark is applied on one of the fingers of every person who has cast their vote in the election. Why do you think this practice is followed?

Activity 2

The Government of India issues different types of identity proofs to its citizens. These prove that a person is an Indian citizen and has rights and duties towards the nation. Consult your elders and make a list of at least four official documents that serve as identity proofs.

I Learnt

- The study of interactions between citizens, their rights and duties and the formation and functioning of the government is called civics.
- We should be good to our neighbours and be responsible towards public property.
- All citizens of India who are 18 years and above have the right to vote to elect leaders who form the government.

Words I Learnt

Nation:	a country or people living in a country
Sovereign:	a state having an independent government
Government:	a group of people that has the power to make laws and take important decisions for a state or nation
Ballot:	a system of secret voting

Get Set, Go!

A. Fill in the blanks.

1. Refrigerator and television at home are _____ property.
2. People who live close to our home are our _____.
3. Citizens who are _____ years and above can vote in India.
4. As citizens of India, we enjoy certain _____.
5. The _____ conducts elections in India.

B. State true or false.

1. You should always share the name of the person you voted for.
2. Voter's ID card is issued by the government to Indian citizens.
3. India is world's largest democracy.
4. Voting is done by secret ballot.
5. The gifts of nature should be used wisely and not be destroyed.

C. Suggest if the following is a right or a duty.

1. Getting clean water from taps
2. Standing in attention during the national anthem
3. Not destroying public property
4. Going to school
5. Practicing the religion of our choice

D. Answer the following questions.

1. Differentiate between public and private property.
2. Briefly describe how and why should you be a good neighbour.
3. What do you understand by the term civic-minded? Why is it important?
4. List four ways in which the Election Commission helps in conducting elections in India.
5. As a responsible Indian voter write two do's and two don'ts related to voting.

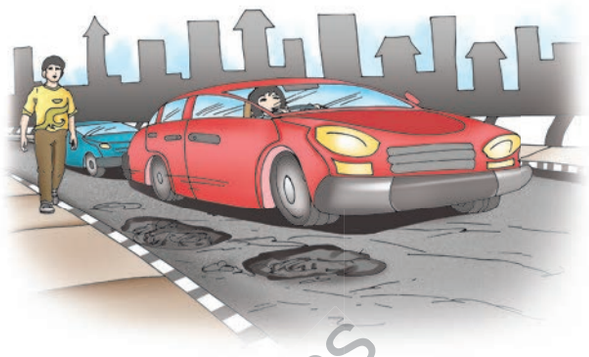
E. Suggest how the given problems can be solved.

Hint: Problems related to private property can be dealt independently and problems related

to public property can be solved by the local government or with the joint efforts of the people and government.

a.

b.



c.

Life Skills

Citizens enjoy the right to vote and choose their own leaders. It is their duty to make the leaders aware of the problems prevailing in the area so that they can work towards solving them. However, the duty of a citizen does not just end here. One must be aware of one's responsibilities towards the society also. We all should work towards being civic-minded. With the efforts of responsible citizens the country not only functions properly but also becomes stronger with time. Ask your elders about what they feel are their rights and duties as Indian citizens. Share your understanding of the same with them.

Connect

Arts Education

Make a poster on the civic habits that children of your age can adopt or develop in order to contribute towards the development of a better society.

Project

Imagine that you are contesting for the post of president in class elections. Before the students cast their votes, candidates need to tell them why they should be elected. Make an attractive poster listing the things you would do for the welfare of your classmates.

Remember, do not make promises that you would not be able to fulfill later on because in a democracy leaders are answerable to the people!

Worksheet 1

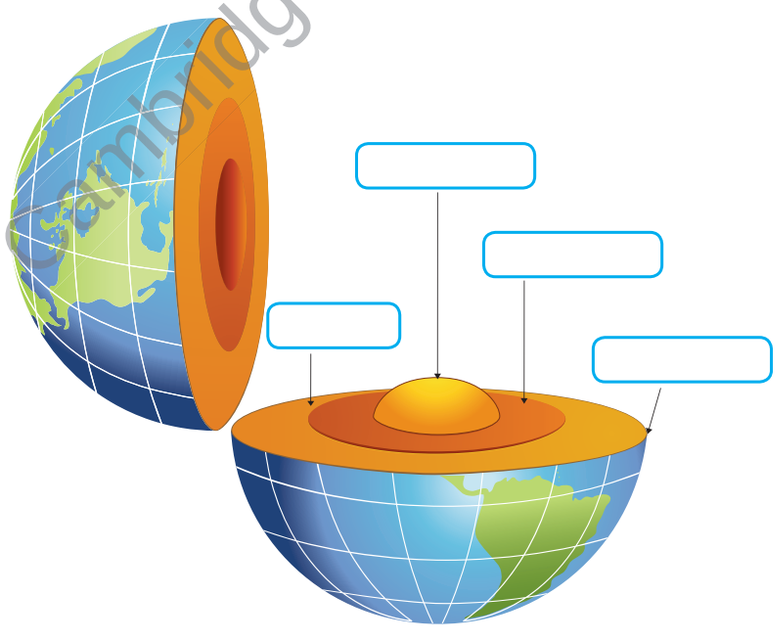
A. Fill in the blanks.

1. _____ is the time that has gone by.
2. We celebrate _____ on 15 August every year.
3. Earth revolves around the Sun and _____ on its axis.
4. Continuous movement of water in the environment is known as _____.
5. The innermost layer of the Earth is _____.

B. Mark 'T' for true sentences and 'F' for false sentences.

1. Politicians and leaders do not influence the views and opinions of people. _____
2. During winter season, the northern hemisphere leans towards the Sun._____
3. If it is night in India, it would be night in USA._____
4. Rivers and ponds are sources of freshwater. _____
5. Living beings cannot exist without land, water and air. ____

C. Observe the diagram. Label the parts in the space provided.



Worksheet 2

A. Fill in the blanks.

1. The _____ is an example of a cold desert.
2. _____ is a narrow strip of land with water on either side of it.
3. Maps are always _____ to scale.
4. There are _____ main directions on a map.
5. The _____ conducts elections in India.

B. Mark 'T' for true sentences and 'F' for false sentences.

1. Oceans are the smallest water bodies on Earth. _____
2. Plains are more populated than deserts. _____
3. Two large areas of land are connected by a bay. _____
4. Voter's ID card is issued by the government to Indian citizens. _____
5. India is world's longest democracy. _____

C. Match the following.

Column A	Column B
1. Ballot	a. River
2. Buses and parks	b. Plateau
3. Key	c. Voting
4. Model of Earth	d. Desert
5. Ganga	e. Ocean
6. Gobi	f. Map
7. Pacific	g. Public property
8. Deccan	h. Globe

Sample Test Paper

A. State true or false.

1. The process of electing our leaders is called voting.
2. The study of our rights and duties and government is called history.
3. Being civic-minded means taking care of things around us.
4. Legend help us to understand a map.
5. The land next to a sea is called beach.
6. Aquifers are present on the ground as water source.
7. Politicians are part of our law-making body.
8. The Earth rotates on its orbit.

B. Match the following.

Column A	Column B
1. Hydrosphere	a. Revolution
2. Politicians	b. Rotation
3. Lithosphere	c. Water
4. Day and night	d. Elections
5. Seasons	e. Land

C. Answer the following questions.

1. How does day and night occur?
2. Draw a diagram to represent the occurrence of seasons on Earth.
3. Describe the structure of the Earth.
4. Define the following:
   a. Island
   b. Bay

c. Isthmus

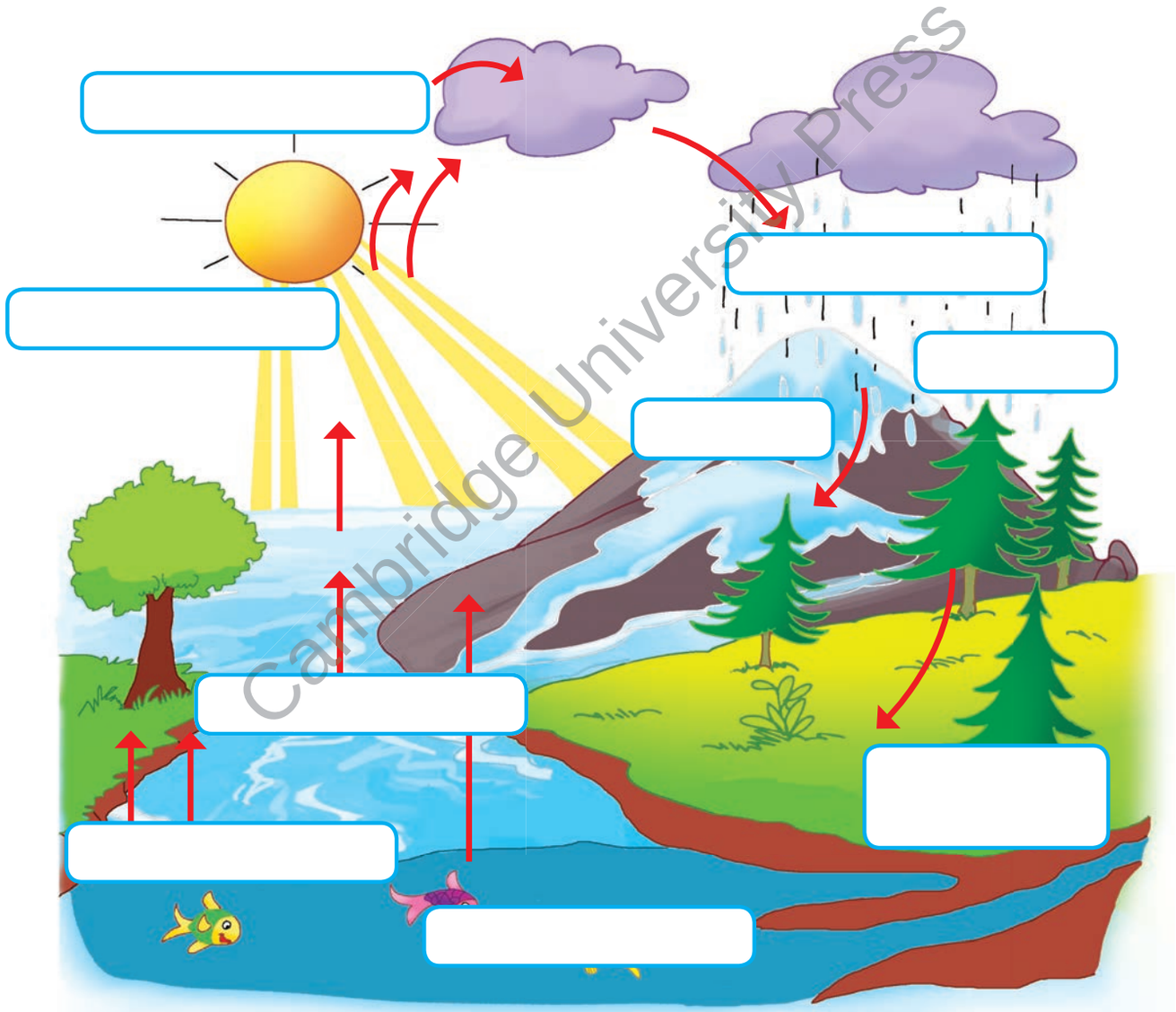
d. Strait

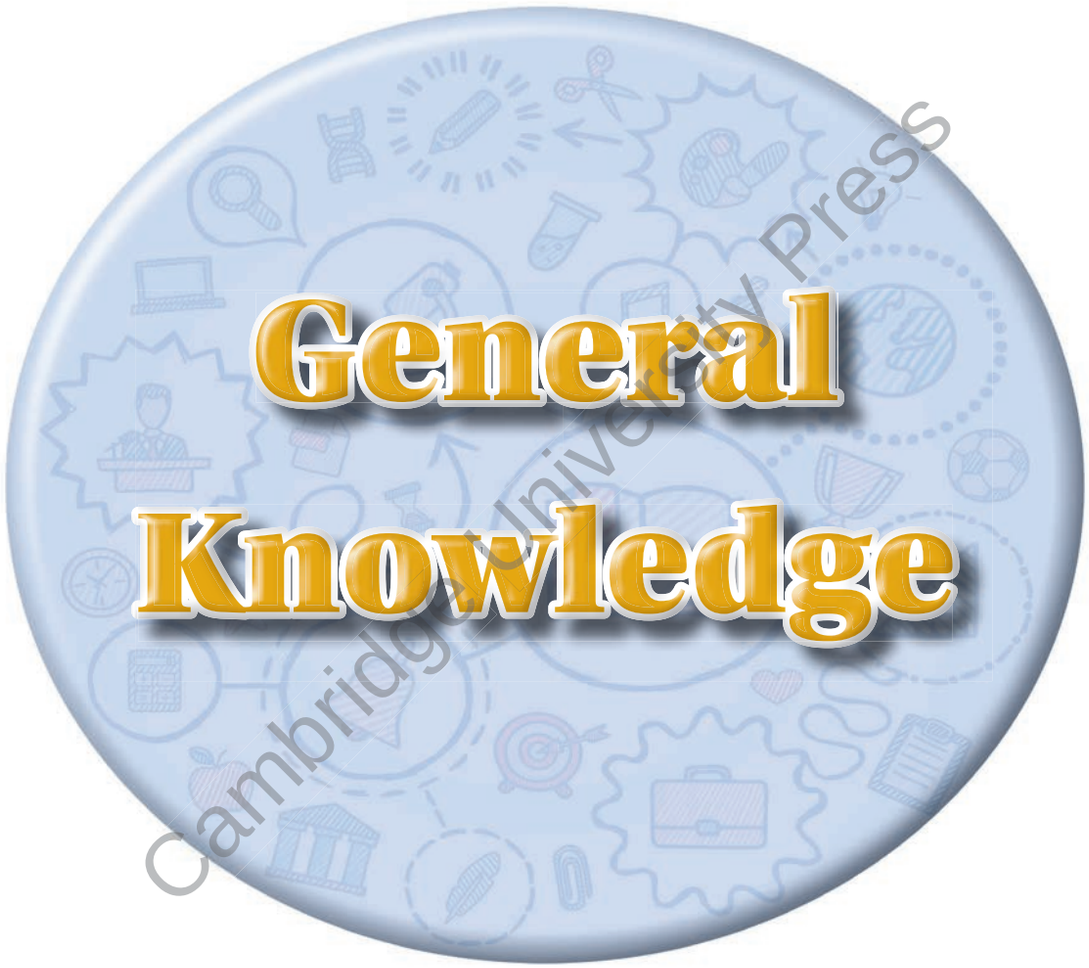
e. Peninsula

f. Biosphere

g. Equinox

5. Label the picture given here. What does it represent?

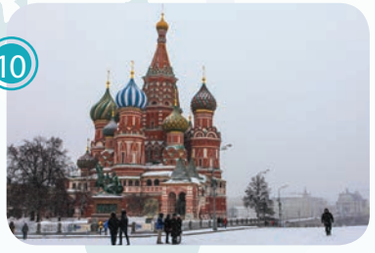




1 AROUND THE WORLD

Write the capitals of the following countries by filling in the correct letters.

1. Netherlands — A _ _ T _ _ _ A _
2. Thailand — _ A _ G _ _ K
3. China — _ _ I _ _ N _
4. Switzerland — B _ _ N
5. Germany — _ E _ _ _ N
6. Denmark — _ O _ _ _ H _ _ E _
7. Bangladesh — _ _ _ K _
8. Qatar — _ O _ _
9. Nepal — _ _ T _ _ _ N _ _
10. Russia — _ O _ _ _ W



Do You Know?

Russia is the largest and India is the seventh largest country in the world.

Let Us Apply

Prepare a fact file by finding out the total number of countries in the world, the number of countries in each of the seven continents and the most and the least populous countries of the world.

2 STATE FACTS

Complete the names of these Indian states based on the clues given.

1. The state with the largest area and known for its handicrafts –

R		J		S		H		N

2. The state with the longest coastline and also the birth state of Father of the Nation –

G		J		R		T

3. The state with the biggest freshwater lake of northeast India, the Loktak Lake –

M		N		P		R

4. The state with the name that means 'land of five rivers' –

P		N			B

5. The state where the maximum percentage of raw silk is produced in the country –

K		R	N		T		K	

6. The state in the country with Sanskrit as its second official language –

U		T		R		K	H		N	

7. The state that has given the country the maximum number of prime ministers (eight so far) –

U		T		R		P	R		D		S	

8. The region that is the largest producer of saffron in the country –

J		M			AND	K		S		M		R

Do You Know?

The Chail Cricket Ground in Chail, Himachal Pradesh is the highest cricket ground in the world. It is located at an altitude of over 7000 feet above sea level.

Let Us Apply

Have you visited some states in the country other than yours? Did you find them different from each other? How? Do you share common views with others who have also visited those places?

3

INDIAN MAESTROS

Identify and write the name of the instrument in Column B and the famous musician associated with it in Column C using the Help box.

Help box

Tabla	Sarod	Sitar
Flute	Santoor	Shehnai
Zakir Hussain	Pt Ravi Shankar	Pt Shiv Kumar Sharma
Ustad Bismillah Khan	Pt Hari Prasad Chaurasia	Amjad Ali Khan

A	B	C
1 		
2 		
3 		
4 		
5 		
6 		

Do You Know?

Jaltarang (*Jal* = water, *tarang* = waves in water) is an ancient Indian percussion instrument. It consists of china bowls filled with water arranged in a semicircle.

Let Us Apply

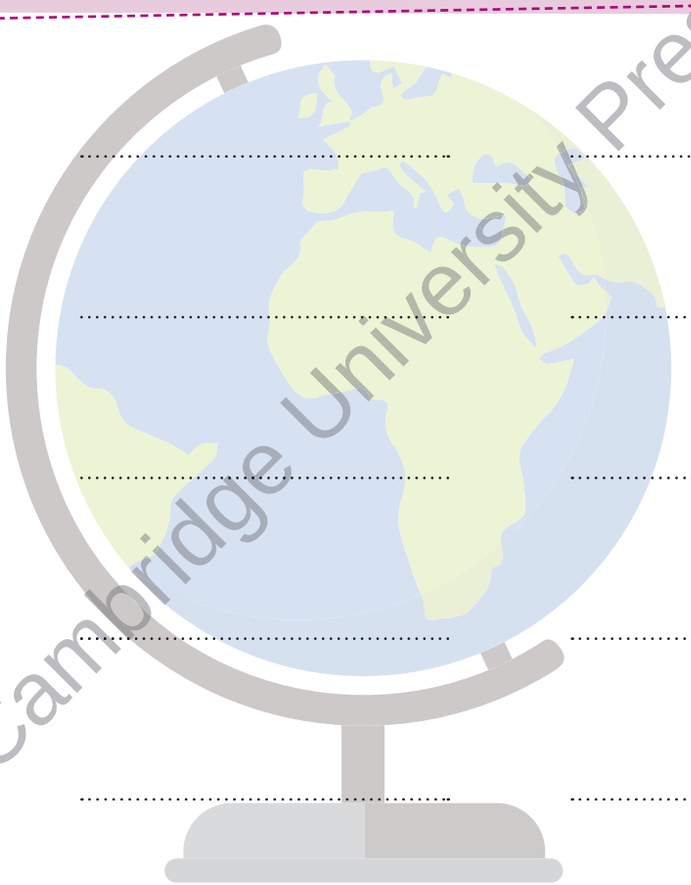
'Ghatam', which means 'a pot' in Sanskrit, is a musical instrument of Indian origin. Find out about some other instruments that originated in India.

4 CONTINENTS AND COUNTRIES

Look at the world map and identify two countries from the Help box that are located in these continents of the world.

Help box

Cuba	Austria	Myanmar	Peru	Mexico
Singapore	Zambia	Italy	Kenya	Argentina



1. Asia ....
2. Africa ....
3. North America ....
4. South America ....
5. Europe ....

Do You Know?

There are 54 countries in the continent of Africa, the most in any continent.

Let Us Apply

Five out of the seven continents of the world have been mentioned in the above exercise. Find the names of the other two continents and the reason they have not been listed here.

5

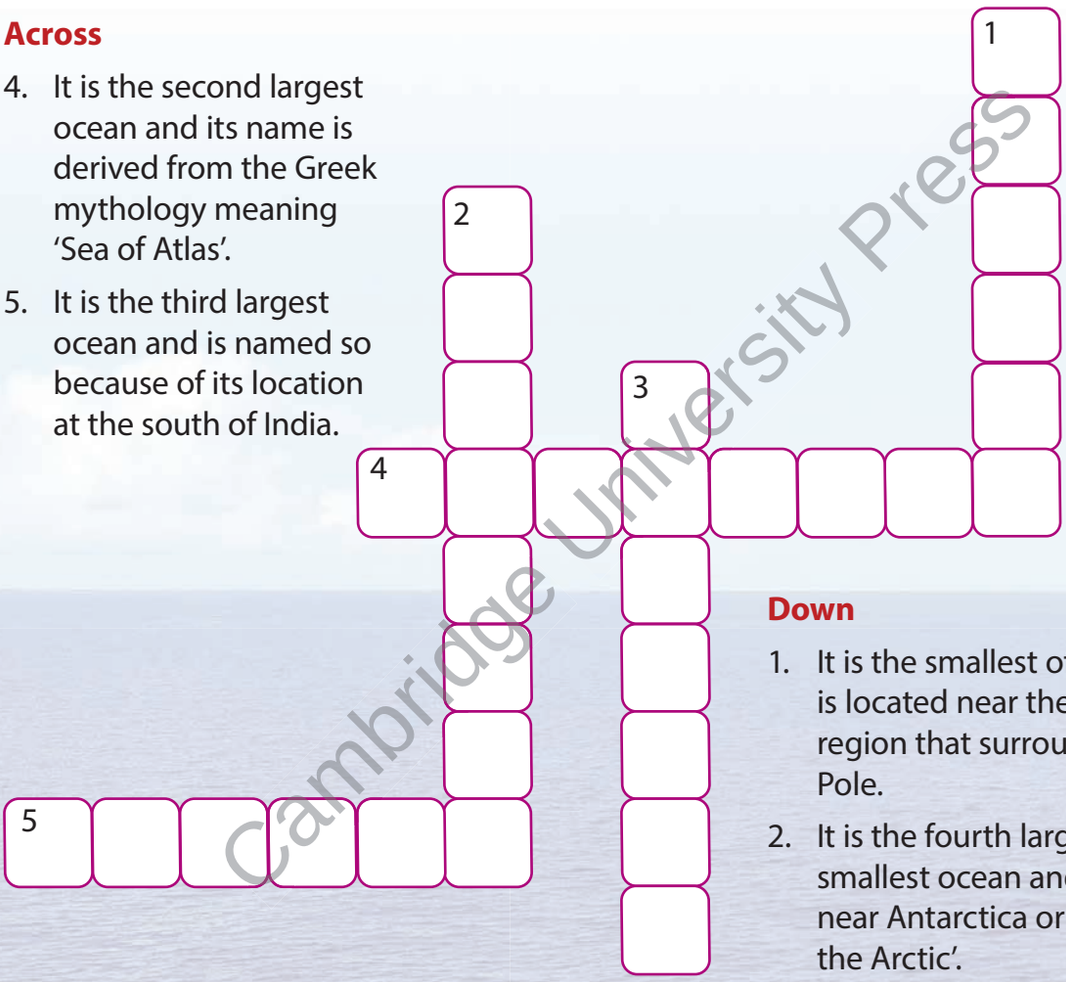
WATER ON EARTH

The five oceans in the world are – Atlantic Ocean, Arctic Ocean, Pacific Ocean, Indian Ocean and Southern Ocean (or Antarctic Ocean).

Read the clues below and name the oceans of the world to solve the crossword.

Across

4. It is the second largest ocean and its name is derived from the Greek mythology meaning 'Sea of Atlas'.
5. It is the third largest ocean and is named so because of its location at the south of India.



Down

1. It is the smallest of all oceans and is located near the Arctic, the region that surrounds the North Pole.
2. It is the fourth largest or second smallest ocean and is located near Antarctica or 'opposite to the Arctic'.
3. It is the largest ocean on Earth and derives its name from the Latin word, *Tepre Pacificum* meaning 'peaceful sea'.

Do You Know?

Mariana Trench is the deepest known area on Earth. Its deepest point measures about 11 km.

Let Us Apply

Find the name of the longest mountain range in the world on land.

6 ALL ABOUT ECLIPSES

A solar eclipse occurs when the moon appears between the earth and the sun and partially blocks the sunlight.

A lunar eclipse occurs when the earth appears between the sun and the moon and restricts the sunlight from reaching the moon.

Name the eclipse using the given clues and the Help box.

Help box

Total solar eclipse | Total lunar eclipse | Partial lunar eclipse | Partial solar eclipse | Annular solar eclipse

1. In this type of eclipse, the sun and the moon appear on exactly opposite sides of the earth; and the moon appears red in colour.

.....

2. It occurs when the sun, moon and earth are not exactly in a straight line and as a result, only a small part of the sun is covered by the moon's shadow.

.....

3. In this type of eclipse, the earth's shadow covers only a part of the moon.

.....

4. In this type of eclipse, the moon completely blocks the sun.

.....

5. In this type of eclipse, the moon covers the sun's centre, with only its outer edges being visible forming a ring of fire around the moon.

.....

Do You Know?

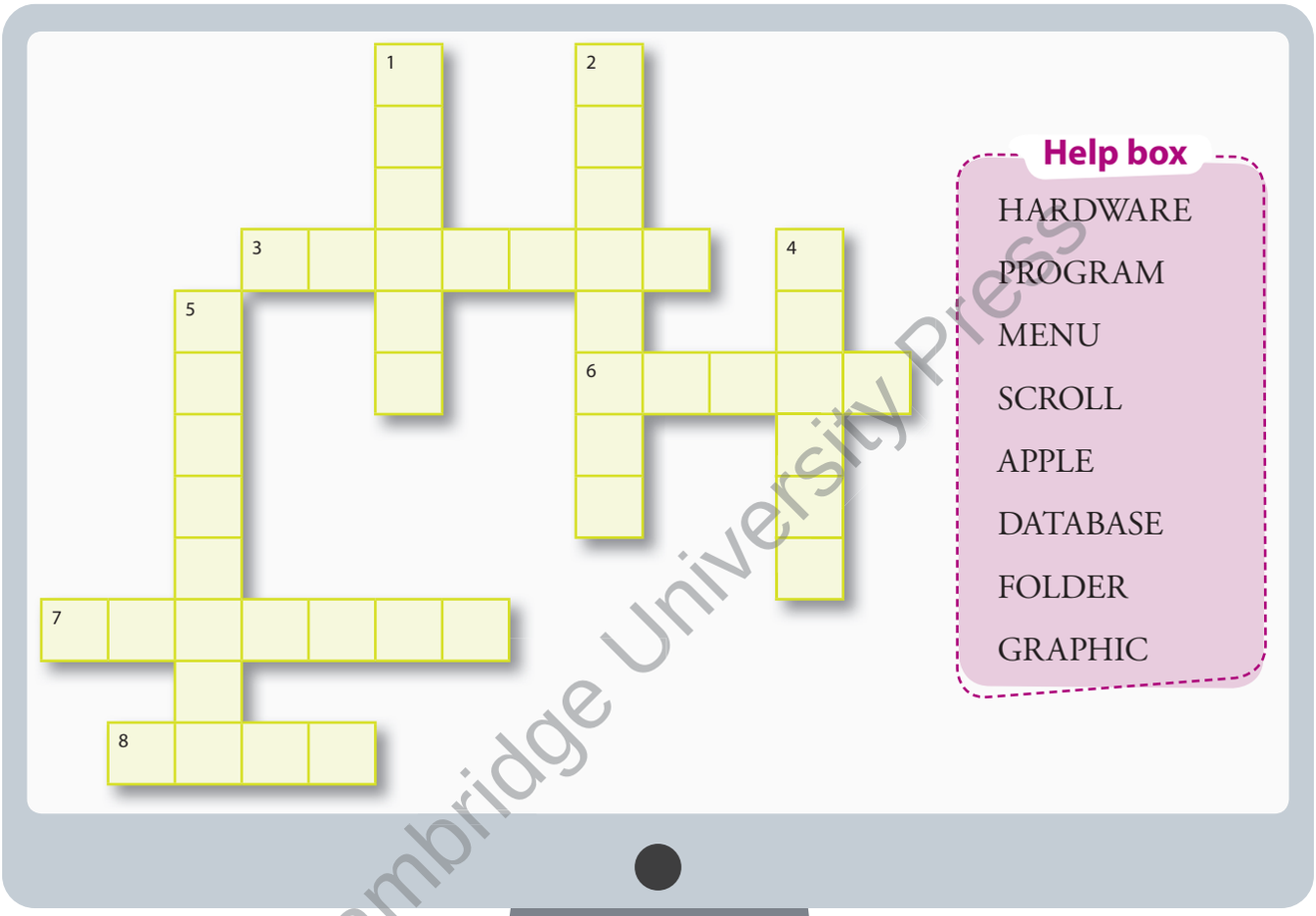
A lunar eclipse can occur only on the night of the full moon.

Let Us Apply

Umbra is the darkest or the completely dark central portion of a shadow cast by the Earth or moon during an eclipse. What does the term 'penumbra' mean?

7 COMPUTER TRIVIA

Solve the computer crossword using the given clues and the Help box.



Help box

HARDWARE
PROGRAM
MENU
SCROLL
APPLE
DATABASE
FOLDER
GRAPHIC

Across

3. To interpret a computer instruction and carry out the operations specified in the instruction
6. A multinational company that makes computer hardware, software and mobile devices
7. A computer-generated picture produced on the screen
8. A displayed list of options from which a choice can be made

Down

1. To move the complete or a part of the display image vertically or horizontally
2. A system for storing and taking care of data
4. A place where many files can be placed to organise the computer
5. The physical parts that make up a computer

Do You Know?

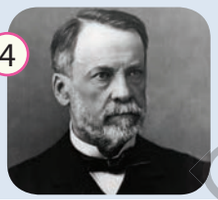
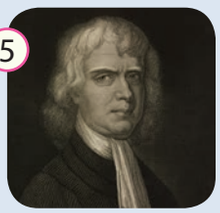
Antivirus is a software that protects a computer from viruses.

Let Us Apply

We type 'www' before the name of a website to access it while browsing the Internet. Find out what 'www' stands for.

8 SCIENTISTS AND THEIR CONTRIBUTIONS

Match the pictures of scientists with their names and scientific contributions.

Column A	Column B	Column C
1 	i Michael Faraday	a Discovered two new chemical elements
2 	ii Louis Pasteur	b Invented the electric motor
3 	iii Galileo Galilei	c Proposed the theory of gravity
4 	iv Isaac Newton	d Invented pasteurisation and the vaccines for rabies and anthrax
5 	v Marie Curie	e Invented the telescope

Do You Know?

Albert Einstein is known as the Father of Modern Physics.

Let Us Apply

List the famous works of Isaac Newton.

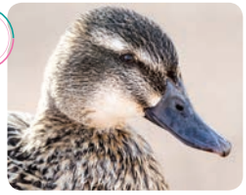
9

BEAK TALES

Draw a line to match these birds with the features of their beaks.

1 
Hawk

2 
Dove

3 
Duck

4 
Cardinal

5 
Woodpecker

a This bird possesses a slim and short beak that helps it to feed on seeds, fruits, and plants.

b This bird has a short and thick conical beak that helps in cracking open the seeds.

c This bird has a peculiarly long beak with chisel-like features. This helps it to bore into barks and consume insects and tree sap by extending its barbed tongue.

d The curved beak with razor sharp tip of this carnivorous bird helps it to tear its prey into smaller pieces, making it easy to swallow.

e The flat beak of this bird helps it to strain the water from the sides when it consumes its food that includes aquatic plants and animals.

Do You Know?

The average weight of a bee hummingbird varies from 1.6 to 2 grams.

Let Us Apply

Storks are mute birds. They clatter their bills to communicate. The beak also helps them to catch their prey. Make a list of the food items that storks eat.

10 MYTHICAL CREATURES

Identify these mythical creatures and write their names using the Help box.

Help box

Unicorn	Werewolf	Phoenix
Yeti	Dragon	Vampire

1 

.....

2 

.....

3 

.....

4 

.....

5 

.....

6 

.....

Do You Know?

Mythical creatures are the ones that are made famous in folklore and myths. Conclusive evidence of their existence is yet to be found.

Let Us Apply

According to legend, phoenix is a bird that is reborn from its ashes. Find out about the special qualities of the creatures mentioned above. Which one do you find the most impressive and why?

11

LEAD THE WAY

Identify these characters from popular children's movies and write under the correct movie name.

Help box

Buzz Lightyear	EVE	Dory	Rex	BURN-E
Crush	Auto	Woody	Bubbles	

Toy Story	Finding Nemo	Wall-E
.....	.....	.....
.....	.....	.....
.....	.....	.....
.....	.....	.....
.....	.....	.....

Do You Know?

Frozen is the first animated Disney film directed by a woman.

Let Us Connect

The movie *Kung Fu Panda* is not just a story but it also teaches some valuable lessons about realising one's potential and appreciating it. Watch this movie and prepare a list of some other lessons that you have learnt. Share and discuss in your group.

12 COINING NEW WORDS

Match the word in Column A with the two words in Column B using which it has been formed. Then, match the word with its meaning in Column C. The first one has been done for you.

A		B		C	
A1	Baggravation 	B1	Breakfast + Dinner	C1	Printed collection of blog posts
A2	Blook 	B2	Bag + Aggravation	C2	A news article presented in the form of charts, images or graphics
A3	Charticle 	B3	Hungry + Angry	C3	Usual breakfast dishes in evening
A4	Brinner 	B4	Sheep + People	C4	Annoyance at airport when your bag arrives last on the luggage belt
A5	Hangry 	B5	Chart + Article	C5	Unquestioning followers
A6	Sheeple 	B6	Blog + Book	C6	Anger because of extreme hunger

Do You Know?

Like all other areas of study, language is also constantly evolving. As a result, each year new words that are coined and popularly used are added to the dictionary.

Let Us Apply

Words created by blending the sounds and meanings of two words are called portmanteau words.

Combine the following words to create portmanteau words:

- Chill + Relax
- Breakfast + Lunch
- Information + Entertainment

13 RHYTHM OF REPETITION

Read about the two figures of speech and classify the following sentences under the right category by writing the sentence numbers.

1. O Captain! my Captain! our fearful trip is done
2. The fair breeze blew, the white foam flew
3. His soul swooned slowly as he heard the snow falling faintly
4. *Rage, rage against the dying of the light…*
5. Sick soul to happy sleep
6. I felt happy because I saw the others were happy and because I knew I should feel happy, but I wasn't really happy.
7. But good morning! Good morning to ye and thou!
8. One short sleep past, we wake eternally
9. Even if they are djinns, I will get djinns that can outdjinn them
10. She left the Heaven of Heroes and came down

Alliteration	Repetition
Repetition of the same consonant sound close together in a series	Repetition of same words and phrases to emphasise an idea

Do You Know?

Alliteration and repetition are just two of the many literary devices available to writers and poets for making their writing interesting.

How many more do you know about?

Let Us Apply

Now, you know what the repetition of consonant sounds is called. Is there a literary term for the repetition of vowel sounds as well? Find out.

14 INSPIRING SPORTS STARS

Given below are short biographies of some incredible sports persons who conquered disability to rule the sportsfield. Identify them using the Help box and write their names in the given boxes.

Help box

Baxter Humby Bethany Hamilton Girish Sharma Kyle Maynard H. Boniface Prabhu

1. He lost a leg in a train accident when he was a child. However, this did not stop him from playing with other children. He became a badminton player and is so strong that he easily covers the entire court. .....

2. At the age of four, a faulty operation made him wheelchair bound. In spite of this, he continued with his education and focussed on his goals. He became a leading Indian quadriplegic wheelchair tennis player. He was awarded the Padma Shri in 2014. .....

3. This boy started practicing martial arts at the age of 17. He won the Canadian Kickboxing Championship despite having lost a hand at birth. He is the only one to have achieved this feat. He also acted as Tobey Maguire's stunt double in Spider-Man 3. .....

4. Despite being born as a congenital amputee, that is, without arms or legs, he is the member of the National Wrestling Hall of Fame. He also has the distinction of climbing Mount Kilimanjaro without any assistance and became the first quadruple amputee to do so. .....

5. This professional surfer was attacked by a shark at the age of 13 and she lost her left arm. Despite losing 60% of her blood on the way to the hospital, not only did she survive, but returned to surfing within a month. Her story has been shown in the movie *Soul Surfer*. .....

Do You Know?

Arunima Sinha became the first Indian amputee to scale Mount Everest in 2013 at the age of 25.

Let Us Connect

These stories display courage, conviction and dedication even in tough conditions. Do you personally admire anyone for having succeeded despite their limitations? Share your opinions in the class.

15

I PLAY...

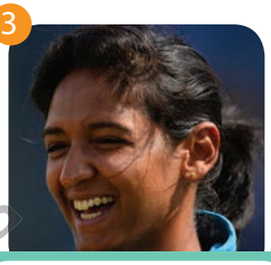
Draw a line to match these players with the sport they are associated with.

1 

Dwight Howard

2 

Diego Maradona

3 

Harmanpreet Kaur

4 

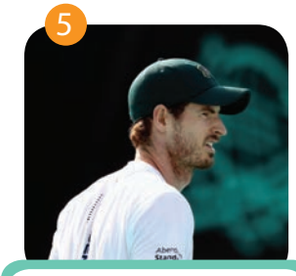
Steffi Graf

FOOTBALL

CRICKET

LAWN TENNIS

BASKETBALL

5 

Andy Murray

6 

Maya Moore

7 

Rahul Dravid

8 

Cristiano Ronaldo

Do You Know?

Usain Bolt is the first man to win eight Olympic gold medals in sprinting.

Let Us Apply

It is never too late to pick up a new hobby. There are many examples of sports personalities who excelled at more than one sport. Find out some such examples.

16

BRAIN TEASERS

Rack your brains and solve the following puzzles.

1. I start with an E, end with an E and I only have one letter, what am I? .....

2. What does the person mean when he says the following? NOON GOOD .....

3. What can you feed but if you give it water it will die? .....

4. What runs but never walks, has a mouth that never talks? .....

5. Two men play five complete games of checkers. Each man wins the same number of games. There are no ties. How? .....

6. You can feel it, but you cannot touch it. You can hear it, but you cannot see it. What is it? .....

7. One man shows another the portrait of a gentleman and says, "I have neither brothers nor sisters, but this man's father is the son of my father." Who is the man in the painting? .....

8. What can you keep but cannot share and once you share it, you cannot keep it anymore? .....

Do You Know?

A human brain has 100,000 miles of blood vessels, enough to circle the earth four times.

Let Us Apply

Add the digits in the number 5264, that is, 5 + 2 + 6 + 4. The result is 17. Now, add the digits in 17. The result is 8. Add 9 to 8. The result is 17, which again when reduced to a single digit gives 8. Thus, when you add 9 to the sum of the digits of a number or to different numbers reduced to a single digit, the result does not change. Try this trick with other sets of numbers.

Activity

17

BRAIN POWER

1 Which of the following is the mirror image of the given image?

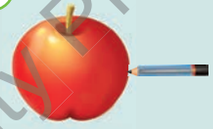
a 

b 

c 

d 

2 In which image has the pencil rotated clockwise by 90°?

a 

b 

c 

d 

3 If,

- Mango represents 20
- Guava represents 50
- Kiwi represents 15
- Apple represents 30
- Blueberry represents 10

then, solve the following:

1  + 2  – 3  + 5  – 1  = ...

4 The data below represents different sports opted by students in a class. One image represents 5 students. Read the table and answer the questions that follow.

Cricket	Football	Badminton	Swimming
			

i. Which sport is played by maximum number of students?

ii. Which sport is least preferred by the students?

iii. What is the difference between the number of students playing cricket and those opting for badminton?

iv. If each student chose only one sport, then what is the total number of students in the class?

5 Test your brain by speaking aloud the colours of the text boxes. You do not have to speak the colour **WRITTEN** but have to say the background colour of the box. Keep a count of how many you get right!

GREEN	BLUE	RED	ORANGE	YELLOW

18

ACRONYMS

Acronyms are words formed from the initial letters of other words and pronounced as they are spelled, not as separate letters. For example, North Atlantic Treaty Organisation is abbreviated as NATO.

Write the full forms of the following acronyms.

1. UNESCO .....
2. SCUBA .....
3. AIDS .....
4. NASA .....
5. UNICEF .....
6. NOIDA .....
7. SUV .....
8. LCD .....

Do You Know?

Acronym comes from two words *acro* meaning 'beginning' and *onym* meaning 'word name'.

Let Us Apply

Make a list of five more acronyms in addition to those learnt here.

Worksheet 1

A. Tick (✓) the correct statement and cross out (✗) the incorrect statement.

1. The state with the name that means 'land of five rivers' is Punjab. _____
2. The state with the biggest freshwater lake of northeast India, the Loktak Lake is Mizoram. _____
3. The country Peru is located in the continent of Asia. _____
4. In the partial lunar eclipse, the earth's shadow covers only a part of the moon. _____
5. A system for storing and taking care of data is called Database. _____

B. Fill in the blanks using the help box.

Atlantic Ocean	Ustad Bismillah Khan	Isaac Newton	Marie Curie	Indian Ocean

1. _____ was the one who proposed the theory of gravity.
2. _____ is an Indian musician famous for playing shehnai.
3. The third largest ocean and is named so because of its location at the south of India it is known as _____.
4. _____ discovered two new chemical elements.
5. _____ is the second largest ocean and its name is derived from the Greek mythology meaning 'Sea of Atlas'.

C. Write true or false.

1. Famous Indian musician Pandit Ravi Shankar is famous for playing santoor.
2. The region of Jammu and Kashmir is the largest producer of saffron in the country.
3. Dove possesses a slim and short beak that helps it to feed on seeds, fruits, and plants.
4. Pacific Ocean is the fourth largest or second smallest ocean and is located near Antarctica or 'opposite to the Arctic'.
5. In Annual solar eclipse, the moon covers the sun's centre, with only its outer edges being visible forming a ring of fire around the moon.

D. Match the following.

Diego Maradona	Steffi Graf	Bethany Hamilton	Kyle Maynard	Rahul Dravid
Surfing	Football	Cricket	Lawn Tennis	Wrestling

Worksheet 2

A. Tick (✓) the correct statement and cross out (✗) the incorrect statement.

1. The character of Woody is from the famous children's movie Toy Story. _____
2. Hangry is angry because of extreme hunger. _____
3. Harmanpreet Kaur is an Indian sportsperson who plays kabaddi. _____
4. The full form of NASA is National Aeronautics and Speed Administration. _____
5. The fair breeze blew, the white foam flew is an example of alliteration. _____

B. Fill in the blanks using help box.

Baxter Humby	Buzz Lightyear	Girish Sharma	Andy Murray	Dwight Howard

1. _____lost a leg in a train accident when he was a child. However, this did not stop him from playing with other children. He became a badminton player and is so strong that he easily covers the entire court.
2. _____ is a famous sportsperson associated with the sport of Lawn Tennis.
3. The character of _____ is associated with the film Toy Story.
4. This boy started practicing martial arts at the age of 17. _____ won the Canadian Kickboxing Championship despite having lost a hand at birth.
5. _____ is a famous basketball player.

C. Write true or false.

1. The acronym for United Nations Educational, Scientific and Cultural Organisations is UNESACO.
2. 'But good morning! Good morning to ye and thou!' is an example of repetition.
3. Usual breakfast dishes in evening is Dreakfast.
4. The character Elsa belongs to the film Frozen.
5. Maya Moore is a famous baseball player.

Sample Test Paper

A. Write 'Y' for Yes and 'N' for No.

1. The state with the largest area and known for its handicrafts is Gujarat.
2. Pt. Hari Prasad Chaurasia is an Indian music famous for playing flute.
3. Southern Ocean is the smallest of all oceans and is located near the Arctic, the region that surrounds the North Pole.
4. A folder is displayed list of options from which a choice can be made.
5. Cardinal has a short and thick conical beak that helps in cracking open the seeds.

B. Give one word for the following.

1. The flat beak of this bird helps it to strain the water from the sides when it consumes its food that includes aquatic plants and animals.

   _____

2. A character which associated with the children's film Finding Nemo. _____
3. Printed collection of blog posts _____
4. Famous Sprinter from Jamaica _____
5. I start with an E, end with an E and I only have one letter, what am I? _____

C. Match the following.

1. A computer-generated picture produced on the screen.	a. Graphic
2. He invented the telescope.	b. Folder
3. A place where many files can be placed to organise the computer.	c. Michael Faraday
4. This scientist invented the electric motor.	d. Zakir Hussain
5. Indian musician famous for playing table.	e. Galileo Galilei

D. Unscramble and write the correct sentences.

1. The full form of ASID is Acquired Immune Deficiency Syndrome.
2. A RETSEC is one that you keep but cannot share and once you share it, you cannot keep it anymore.

3. Harmanpreet Kaur is associated with the sports of CIRKECT.
4. The state with the name that means 'land of five rivers' is UNJPAB.
5. TRIAUSA is a country located in the continent Europe.

E. Correct the following sentences.

1. Arctic Ocean is the largest ocean on Earth and derives its name from the Latin word, Tepre Pacificum meaning 'peaceful sea'.
2. In a total lunar eclipse, the moon completely blocks the Sun.
3. Maya Moore is a famous baseball player.
4. The full form of NOIDA is New Okra Industrial Development Area.
5. Isaac Newton was the one who proposed the theory of eclipse.

Notes

Notes