

# ALL IN ONE

Semester-I







**ALL  
IN  
ONE**

**Semester-I**

Content Developed by  
A Team of Authors and Subject Consultants

- **English Course Book**
- **English Grammar & Composition**
- **Mathematics**
- **Science**
- **Social Studies**
- **General Knowledge**





**HOLY FAITH INTERNATIONAL**  
an imprint of **MBD** Group

**© All rights reserved**

We are committed to serve students with best of our knowledge and resources. We have taken utmost care and paid much attention while editing and printing this book but we would beg to state that authors and publishers should not be held responsible for unintentional mistakes that might have crept in. However, errors brought to our notice shall be gratefully acknowledged and attended to.

*© All rights reserved. No part of this publication may be reproduced, stored in a retrieval system, or transmitted in any form or by any means, electronic, mechanical, photocopying, recording, or otherwise without the prior written permission of the publisher. Any breach will entail legal action and prosecution without further notice.*

Published by:  
**MANIK JUNEJA**

**HOLY FAITH INTERNATIONAL (P) LTD.**

MBD House, Gulab Bhawan, 6, Bahadur Shah Zafar Marg,  
New Delhi-110 002

Printed at:

**HOLY FAITH INTERNATIONAL (P) LTD.**

B-9 & 10, Site IV, Industrial Area, Sahibabad (U.P.)

**New Delhi:** MBD House, Gulab Bhawan, 6, Bahadur Shah Zafar Marg  
Ph. 61312345, 23318301

**Mumbai:** A-683, T.T.C. Industrial Area, M.I.D.C. Off. Thane-Belapur Road,  
Navi Mumbai Ph. 32996410, 27780821, 8691053365

**Chennai:** No. 26 B/2 SIDCO Estate, North Phase, Pataravakkam Ambattur  
Industrial Estate, Ambattur Ph. 26359376, 26242350

**Chennai:** Plot No. 3018, Old Y Block, 3rd Street, 12th Main Road, Anna Nagar West,  
Chennai Ph. 23741471

**Kolkata:** Satyam Building, 46-D, Rafi Ahmed Kidwai Marg Ph. 22296863, 22161670

**Jalandhar City:** MBD House, Railway Road Ph. 2458388, 2459046, 2455663

**Bengaluru:** 124/31, 1st Main, Industrial Town (Near Chowdeshwari Kalyan Mantap),  
West of Chord Road, Rajajinagar Ph. 23103329, 23104667

**Hyderabad:** Plot No. 41, Road No. 6, IDA, Mallapur, Uppal Mandal,  
Near Bharat Electronics Ltd. Ph. 9985820001

**Ernakulam:** Surabhi Building, South Janatha Road, Palarivattom  
Ph. 2338107, 2347371

**Nagpur:** Plot No. 231, Lendra Park, Behind Krims Hospital Ramdaspath  
Ph. 2447306, 2447330, 7410017938

**Gandhinagar:** B-114/115 Sector 25, GIDC Gandhinagar  
Ph. 079-29655442, 7600024563, 7600024542

**Cuttack:** Badambadi, Link Road Ph. 2367277, 2367279, 2313013

**Guwahati:** Chancellor Commercial, Hem Baruah Road, Paan Bazar Ph. 7637014051

**Lucknow:** 173/15, Dr. B. N. Verma Road, Old 30 Kutchery Road  
Ph. 4010992, 4010993

**Patna:** 1st Floor, Annapurna Complex, Naya Tola Ph. 2678732, 2678994

**Bhopal:** Plot No. 137, 138, 139, Sector-I, Special Industrial Area, Govindpura  
Ph. 2581540, 2601535

**Goa:** MBD Group, H. No. 1644, Plot No. 100, Kranti Nagar, H.B. Colony,  
Nr. Nana Nani Park, Porvorim Ph. 2413982, 7028912261

**Jaipur:** C-66A, In front of Malpani Hospital, Road No. 1, V.K. Industrial Area,  
Sikar Road Ph. 4050309, 4020168

**Raipur:** Behind Aligarh Safe Steel Industries, Vidhan Sabha Road, Avanti Bai Chowk,  
Lodhi Para Pandri Ph. 2445370, 4052529

**Karnal:** Plot No. 203, Sector-3, HSIDC, Near Namaste Chowk, Opp. New World  
Ph. 2220006, 2220009

**Shimla (H.P.):** C-89, Sector-I, New Shimla-9 Ph. 2670221, 2670816

**Jammu (J&K):** MBD, Khasra No. 417, Industrial Area, Gangyal,  
Near SICOP Office Ph. 9419104035

**Ranchi (Jharkhand):** Ph. 7260813703 (BM), 7260813710 (ASM), 7260813715 (ASO)

**Sahibabad (U.P.):** B-9 & 10, Site IV, Industrial Area Ph. 3100045, 2896939

**Dehradun (Uttarakhand):** Plot No. 37, Bhagirathipuram, Niranjanpur,  
GMS Road Ph. 2520360, 2107214

**DELHI LOCAL OFFICES:**

**Delhi (Shakarapur):** MB 161, Street No. 4 Ph. 22546557, 22518122  
**Delhi (Daryaganj):** MBD House, 4587/15, Opp. Times of India Ph. 23245676  
**Delhi (Patparganj):** Plot No. 225, Industrial Area Ph. 22149691, 22147073

**H0362A6757**

## English Course book

1	Stop! I Don't Like It	2–15
2	Get Well Soon, Grandpa Just a Child (Poem)	16–29 30–32
3	TVC Drive	33–45
4	Sometimes It's Fine to Feel Bored Betsy, Barny and the Friendly Fly (Poem)	46–53 54–56
5	Brave Little Kaviya	57–67

## English Grammar & Composition

1	Nouns & Pronouns	70–74
2	Articles	75–79
3	Adjectives	80–83
4	Adverbs	84–87
5	Connectors	88–90
6	Prepositions	91–94
7	Verbs	95–100
8	The Use of Verbs in Tenses	101–103
9	Simple & Continuous Tenses	104–112

## Mathematics

1	More on Large Numbers	114–138
2	Operations on Numbers	139–155
3	Factors and Multiples	156–174
4	Fractions	175–200
5	Decimals	201–224
6	Percentages	225–235

## Science

1	Growing New Plants	238–249
2	Adaptation and Survival of Animals	250–259
3	Food and Health	260–271
4	Safety and First Aid	272–281
5	Rocks and Minerals	282–294

# Contents

6	Solutions	295–302
7	Changes Around Us	303–309
8	Processing of Water	310–321

## Social Studies

1	Continents and Oceans	324–334
2	Latitudes and Longitudes	335–345
3	Movements of the Earth	346–355
4	The Heat Zones	356–365
5	The Equatorial Rainforests	366–374
6	The Temperate Grasslands	375–382
7	The Hot Deserts	383–390
8	The Frigid Zones	391–399
9	Our Environment	400–408
10	Pollution and Its Effects	409–415

## General Knowledge

1	Persons and the Associated Places	418
2	Great People of the Past	419–420
3	Events and Dates	421–422
4	Our Parliament	423
5	Great Fighters of India	424
6	Where in India	425
7	National Parks in India	426
8	Orchestra	427
9	World's Superlatives	428
10	Sobriquets	429–430
11	Wonders of the Past	431
12	International Emblems	432
13	Famous Leaders	433–434
14	International Languages	435
15	Countries and Capitals	436

# English

A communicative, integrated-skills course

## Coursebook

CLASS-5 ♦ SEMESTER-I



1.	Stop! I Don't Like It	2
2.	Get Well Soon, Grandpa	16
	Just a Child (Poem)	30
3.	TVC Drive	33
4.	Sometimes It's Fine to Feel Bored	46
	Betsy, Barny and the Friendly Fly (Poem)	54
5.	Brave Little Kaviya	57



1

# Stop! I Don't Like It

What happened, Mike? Why are you upset?

Oh, Mike! Why didn't you tell me before? Don't worry. I will take care of it.

Mom, I don't like our new driver. He keeps hugging and touching me.

Mom, I was scared.

You are the owner of your body, Mike. You don't need to be scared. Let's have some ice cream, and I will tell you how a brave girl called Paula acted when she faced a similar situation.



Paula's mother always taught her about good touch and bad touch. 'Paula dear, you are the owner of your body,' she often told her, as she helped her dress for school. 'If someone hugs or touches you in a way you don't like, you have the right to say no. You don't have to be scared of anyone. If you are uncomfortable about how somebody touches you, please tell me. You know I will always believe you.'



Paula and her mother were at the swimming pool one day. Paula was about to get into the pool when her mother said, 'Remember, sweetie, no one should see or touch the area that your swimsuit covers.' Paula nodded and jumped into the pool. This wasn't the first time Paula's mother had talked about that.



Later that afternoon, Paula and her parents went to visit Uncle Percy. When they arrived, Uncle Percy **embraced** Paula so hard that it hurt her. She looked at Uncle Percy. He was smiling at Paula but she did not like his smile. Paula sat in a corner and started playing with some toys.

**embraced** hugged

Later, when everyone else was busy watching television, Uncle Percy came and sat near Paula. She tried to avoid him. ‘What are you playing, Paula?’ he asked. ‘I am playing with my dolls,’ Paula replied. Uncle Percy moved closer.

‘Can I play with you?’ Uncle Percy asked again. Paula hesitated for a moment. ‘Yes,’ she said **reluctantly**. Uncle Percy picked up a toy. Then all of a sudden, he touched Paula’s cheek. Paula felt **disgusted**. ‘Why does Uncle Percy keep touching me?’ she thought. ‘Is it wrong because I don’t like it?’ she asked herself. She felt confused. ‘But it must be okay because cheeks are not covered by a swimsuit,’ she said to herself. Paula started playing with her toys again. A few moments later, Uncle Percy laid his hand on Paula’s thighs. This time Paula froze. She was **petrified**. She felt very uncomfortable. ‘Stop!’ she shouted. ‘I don’t like it!’ She ran from the room.



**reluctantly** with hesitation or doubt

**disgusted** feeling strong disapproval

**petrified** badly scared

On the way back home, Paula was very quiet. She was feeling **awful**. Uncle Percy's actions had really bothered her. Her mother noticed that Paula looked upset.

When they reached home, Paula came to her mother and said, 'Mamma, I want to tell you something.' Paula's mother looked concerned. However, she smiled at Paula and put her hand on her back, as she guided her into the sitting room. They sat down. 'Mamma, when you put your hand on my back just now, I liked it,' Paula said. 'It felt good but I did not like it when Uncle Percy did the same thing.' Paula's mother understood at once why Paula had looked disturbed on their way back home. 'What did you do when Uncle Percy did that?' asked her mother. 'Mamma,' said Paula, 'I did not like it at all. I shouted, "Stop! I don't like it." And I ran out of the room.'





Paula's mother hugged her. 'I am proud of you, Paula,' she said, 'You are a brave girl. You did the right thing by running away from Uncle Percy and telling me everything. It is Mamma and Papa's duty to keep you safe. You don't have to be scared of anyone.'

Paula felt much better after she had spoken to her mother. 'Always remember, Paula,' said her mother, 'you are the owner of your body and no one can touch you against your will. If you feel uncomfortable with someone, you must run away from that person and tell me. Even if I'm not there, you can talk to your Papa or a teacher or any other elder you trust.'

Paula promised she would remember that and hugged her mother. 'I love to hug you, Mamma,' said Paula. 'You are the best!' She smiled as her mother gave her a sweet kiss on her cheek.



### Reading I

- (1) What did Paula's mom teach her about her body?
- (2) Where did Paula go with her parents one day?
- (3) What did Paula do when Uncle Percy put his hand on Paula's thigh?
- (4) What happened when Paula told her mom what had happened?
- (5) How did Paula feel after sharing her problem?
- (6) What did Paula's mother advise her to do if something like that happened again?





## Reading 2

Do you think Paula acted in the right manner when she felt uncomfortable with Uncle Percy? What do you think we should do if we do not feel comfortable with someone? **LS**



## Grammar

### Gerund, Infinitive and Participle

#### GERUND REVISION

A gerund is formed by adding *-ing* to a verb. It functions as a noun.

Examples:

*Swimming* is very good exercise for the body.

My sister's favourite activity is *dancing*.

The words *swimming* and *dancing* are verbs ending with *-ing* but they function as nouns. *Swimming* and *dancing* are names of activities.

#### INFINITIVE

Read the sentences below:

Kelly likes *to run*.

This is the best time *to practise*.



He called *to inform* me about the competition.

The first sentence tells us about the thing that Kelly likes to do. She likes *to run*.

The second sentence tells us what the time is best for and so *to practise* acts as an adjective.

In the third sentence, *to inform* describes the purpose of the verb *called* and so acts as an adverb.



An infinitive is a verb form consisting of the word 'to' and the base form of a verb.

Infinitives can be used as nouns, adjectives and adverbs.

## PARTICIPLE

A *participle* is a verb form that is used as an adjective to modify nouns or pronouns.

There are two types of participles:

Present participles, which end in *-ing*,

Past participles, which end in *-ed*, *-en*, *-d*, *-t*, *-n* or *-ne*.

Examples: Mother gave milk to the *crying* baby.

I like *roasted* peanuts.

The words *crying* and *roasted* describe the words *baby* and *peanuts* respectively. They are participles. Sammy and Mike will help us understand more.





So, a participle is a gerund because a gerund also ends with *ing*.



No, a gerund is used like a noun, while a present participle is used as an adjective to modify nouns or pronouns.



Can you give me some examples?

Sure. *The singing parrot entertained everybody.* The word 'singing' describes the parrot. It's a present participle, functioning as an adjective.



I've got it now! Gerunds act as nouns and participles act as adjectives.

Yes. *The parrot likes singing.* In this sentence, 'singing' acts as a noun. It is a gerund.





**(I) Underline the infinitive (I), the gerund (G), the present participle (Pr.P), or the past participle (P.P.) in each sentence. Identify each one. The first one has been done for you.**

- (a) Kelly wants to learn German.
- (b) My aunt went shopping with me yesterday.
- (c) I am really scared of ghosts!
- (d) He wants to go with me.
- (e) The lecture was boring.
- (f) The wailing baby wanted some milk.
- (g) Writing a diary is a good habit.
- (h) Stay away from the broken glass.
- (i) We hope to visit our grandparents soon.

**(2) Fill in the blanks choosing the correct gerund, present or past participle, or infinitive from the words in brackets.**

- (a) I would like ..... more in order to stay fit. (to exercise/ exercising/ exercised)
- (b) The boy ..... the red T-shirt is my neighbour. (to wear/ wearing/ worn)
- (c) She is incapable of ..... good decisions. (to make/ making/ made)
- (d) I can't wait ..... her again. (to see/ seeing/ seen)
- (e) ..... is good exercise. (swimming/ to swim/ swum)
- (f) Mom asked me to buy some ..... peas. (freezing/ to freeze/ frozen)
- (g) He is too weak ..... a mile. (to run/ run/ running)
- (h) I need ..... water to make tea. (boiling/ boiled/ to boil)
- (i) The beggar felt ashamed of his ..... clothes. (tearing/ torn/ to tear)



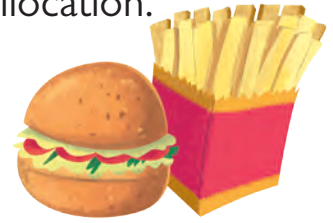
### Adjective-noun Collocations

We know that collocation refers to the way in which some words regularly occur together. They just sound natural together.

Sometimes an adjective combines with a noun to form a collocation.

Example: *fast food*

We cannot use 'quick food' in place of 'fast food'.



*strong smell*

We don't say 'robust smell'.

**Form collocations with the adjectives below.  
Choose nouns from the box.**



- |        |         |         |        |         |         |
|--------|---------|---------|--------|---------|---------|
| person | wind    | culture | smell  | bag     | colours |
| rain   | traffic | snow    | animal | history | coffee  |

Heavy

.....

.....

.....

.....



Strong

.....

.....

.....

.....





Rich

.....

.....

.....

.....



**Listening**

**SL**



**Listen to the passage carefully and write down the collocations used in the passage.**

.....

.....

.....

.....

.....

.....

.....



## Autobiography

We know that a biography is a story written to inform readers about a person's life. Similarly, an autobiography is a story written by the author about his/her own life. It is a work of reflection expressing one's life experiences and the events in one's life.

When we write an autobiography, we focus on the following points:

- *Introduction*
- *Meet My Family*
- *My Interests*
- *Memories*
- *My Best Friends*
- *My Pets*
- *Future Goals*

**You can create an 'All About Me' book. Use the ideas below to help you.**

Autobiography of .....	Date of birth:  PHOTO  Place of birth:
------------------------------	--



<i>Meet My Family</i>	<i>Introduction</i>	<i>My Best Friends</i>
.....	.....	.....
.....	.....	.....
<i>My Interests</i>	.....	.....
.....	.....	.....
.....	<i>Memories</i>	<i>Future Goals</i>
<i>My pets</i>	.....	.....
.....	.....	.....
.....	.....	.....



**Speaking**

**SL**

**Now that you have worked so hard to write your autobiography, present it to your class with pride.**



# 2

## Get Well Soon, Grandpa

Hi, Mike.  
How are you?  
I have brought  
a card for  
you.



Thank you,  
Sammy. I am feeling  
better now. My  
grandma took great  
care of me. I love  
her a lot.

Your grandma  
is very sweet,  
just like Meera's  
grandparents.



Really?  
I'd love to hear  
more about  
Meera and her  
grandparents.

As usual, as soon as Meera woke up, she ran to her grandpa's room. 'Good morning, Grandpa,' she said. Grandpa always woke up at four o'clock in the morning, went to the park for a walk and practised yoga with his friends. He would return at six o'clock and bring coconut water for Meera.



However, this morning it was seven o'clock and Grandpa was still sleeping. Meera went straight over to him. She touched his forehead. 'Oh! Grandpa has a fever,' she said. 'I must tell Ma.'

She went to find her mother. Her mother was in the kitchen. She was talking to the cook. 'Maharaj ji, could you please make **khichdi** for Grandpa's lunch,' she said. 'I would like you to make vegetable soup for him to have now, please. He can have the soup first.' Maharaj ji **nodded** and started to prepare soup. Just then Meera's grandma came in. She looked **anxious**. 'Beta, Grandpa said he does not feel like eating anything,' she said. 'He should eat something. Otherwise he will not get better.'

'Grandma,' said Meera, clinging to her grandma's waist. 'Is Grandpa not feeling well? I think he has a fever. Is he going to be all right?' 'Yes, dear,' replied her grandmother. 'Your grandpa has a fever. He has caught a cold but he will be fine soon,' Grandma assured her. 'Don't worry.'

<b>khichdi</b>	a light dish prepared with pulses and rice
<b>nodded</b>	moved the head up and down to agree with something
<b>anxious</b>	worried



'Ma, I will **tend to** Grandpa's needs. Let me take the soup to him,' Meera said. Ma agreed and when the soup was ready, Meera took it to her grandfather's room. By this time, Grandpa had woken up. 'Grandpa, you will feel better soon,' Meera said. 'I will take care of you. You need to have this soup so that you can get your strength back.' She dipped the spoon into the soup and served a spoonful to Grandpa. Grandpa smiled. Soon he finished his soup and sank back again. Meera asked Grandma about Grandpa's medicines. Grandma arranged the jars on the bedside locker and explained to Meera when she needed to give Grandpa each one. As Grandpa slept, Meera sang him a sweet lullaby.



Meera **recollected** how Grandpa had looked after her when she had caught a cold. He had been by her side until she got better. Meera and her grandpa

**tend to** to take care of  
**recollected** remembered

shared a very special bond. He was her best friend. Meera loved spending time with her grandfather. She usually joined him every morning for breakfast during her summer vacation. Today she felt sad to see Grandpa ill.

At lunchtime, Meera took *khichdi* and curd into Grandpa's room. She touched Grandpa's forehead. He still had a fever. She served him *khichdi*, feeding him herself with a spoon. She encouraged

him to finish all the *khichdi* and curd. Then she gave him his medicine and read the newspaper to him. Grandpa slept again. 'Since Grandpa is sleeping,' Meera thought, 'I should make a "get well soon" card for him.' She ran to her room, grabbed a drawing sheet and her colours and came back to Grandpa's room. She sat on the floor



and started to make the card for him. She sketched a picture of herself and her grandfather sitting on a bench in the park. She wrote a message inside with her special gold marker and left it on a table near Grandpa's bed.

By evening, Grandpa was feeling a little better. His temperature had come down. Meera brought tea and toast for him. She saw that Grandpa was reading the card she had made for him. He had tears in his eyes. She put the tray on the table and hugged him. Just then Grandma came in. She asked him why he was crying. Grandpa handed her the card and she read the message: 'Dear Grandpa, you are the best grandpa anyone could have. You are my best friend. I feel sad to see you

unwell. It has just been one day and I already miss playing with my best friend and sitting in your lap as you tell me stories. I pray you get well soon! I will always be there to take care of you and I hope you never get sick again. I love you.’ As Grandma read the message, she too had tears in her eyes. She hugged Meera. ‘You are the best granddaughter in the world,’ she said.



It was a full week before Grandpa got well. During that entire week, Meera did not leave her grandfather's side. When Grandpa was perfectly fine, he took Meera to the ice cream parlour. They both had huge ice cream sundaes, and this time Meera didn't need to encourage her grandfather to finish his!





## Reading I

- (1) What was wrong with Meera's grandfather?
- (2) Read the story carefully and fill in the blanks.
- (a) Grandpa always woke up at .....
  - (b) He practised ..... every day.
  - (c) He joined his friends in the ..... every morning.
  - (d) Meera joined her grandpa every morning for breakfast during her .....
- (3) What did Meera do when Grandpa refused to have breakfast?
- (4) How did Meera take care of her Grandpa?
- (5) Who was Meera's best friend? Tick the correct option.
- (a) Her father
  - (b) Her grandfather
  - (c) Her grandmother
- (6) What did Meera promise her Grandfather?
- (a) She would always take care of him.
  - (b) She would give him ice cream.
  - (c) She would always bring breakfast for him.
- (7) Why did Grandpa have tears in his eyes after reading the card?



## Reading 2

Do you take care of your parents, grandparents or siblings when they are sick?  
What do you do to make them feel better? **LS**



## Grammar

### Coordinating and Subordinating Conjunctions

We know that conjunctions are words that are used to join two words or sentences. Let us study different types of conjunctions.

#### COORDINATING CONJUNCTIONS

Read the sentences below.



Ann wanted an ice cream.



Ann wanted a cookie.

We can join these sentences using the conjunction *and*.

Ann wanted an ice cream *and* a cookie.

Simple conjunctions like *and*, *or*, *but* and *so* are called coordinating conjunctions.

Coordinating conjunctions connect two words or groups of words that are equally important and complete in terms of grammar.

There are only seven coordinating conjunctions. They can be remembered using the acronym **FANBOYS**.

<b>F</b>	<b><i>For</i></b>
<b>A</b>	<b><i>And</i></b>
<b>N</b>	<b><i>Nor</i></b>
<b>B</b>	<b><i>But</i></b>
<b>O</b>	<b><i>Or</i></b>
<b>Y</b>	<b><i>Yet</i></b>
<b>S</b>	<b><i>So</i></b>

Examples:

Ann wanted an ice cream. Ann went to the ice cream parlour.

Ann wanted an ice cream, *so* she went to the ice cream parlour.

Ann wanted an ice cream. Ann did not want a cookie.

Ann wanted an ice cream *but* she did not want a cookie.

## Fill in the blanks using correct coordinating conjunctions.

- (1) My uncle has visited many countries ..... he has never visited Italy.
- (2) Meera made a card for her grandpa ..... left it on the table.
- (3) I like playing chess, ..... it is an interesting game.
- (4) Grandpa wasn't feeling well, ..... Meera took care of him.
- (5) You can wait for Ajay ..... you can come back later.

## SUBORDINATING CONJUNCTIONS

Read the following sentence:

We started running towards our house because it was getting dark.

We can break this sentence into two parts.

We started running towards our house.

It was getting dark.

We have used *because* to join the two sentences. *Because* gives the reason for the action.

Words like *because*, *as*, *although* and *when* are called subordinating conjunctions.

Subordinating conjunctions are used to join sentences in which a part of a sentence depends on the other parts to express its meaning.

Some other subordinating conjunctions are as follows:

after	although	as	because
before	even if	if	provided
since	so that	that	though
unless	until	when	while



## Examples

Meera did not leave Grandpa's side *until* he started feeling better.

*If* I leave early, I will not miss my bus.

You will not pass the exam, *unless* you start working hard.

## Join the sentences in each pair choosing the correct subordinating conjunction from the words in brackets.

- (1) Meera did not eat the cake. It was delicious. (although/because)
- (2) Ma prepared soup. Grandma made chapattis. (in case/while)
- (3) You cannot stay healthy. You stop eating junk food. (unless/as)
- (4) I will give you a gift. You come first in the race. (as/if)
- (5) He had left. I could inform him. (when/before)



## Question Tags





In the above conversation, Sammy and Mike are not exactly asking each other questions. These are not just questions but a way of seeking confirmation or asking the other person to make a comment and help keep the conversation open. They are called question tags.

**Rule 1:** To form a question tag, we use the first auxiliary.

*I can paint a picture, can't I?*

*He is coming, isn't he?*

*They have painted the room, haven't they?*

**Rule 2:** If there is no auxiliary, we use *do*, *does* or *did*.

*You like mangoes, don't you?*

*She played well, didn't she?*

**Rule 3:** Question tags may have the following forms:

Positive statement + negative question tag.

*I can do it, can't I?*

Or

Negative statement + positive question tag.

*I can't do it, can I?*

**Complete the following sentences using question tags:**

- (1) You cannot finish this lesson in a day, .....
- (2) Meera looked after her Grandpa very well, .....
- (3) Grandpa has already left for the park, .....
- (4) Ma and Grandma are not going out for shopping, .....
- (5) You should study for two hours a day, .....
- (6) We love mangoes, .....



**Listening**

**SL**



**Listen to the poem and answer the following questions:**

- (1) What is the title of the poem?
- (2) Name the poet.
- (3) What do you think the word 'woods' refers to?
- (4) Where do the squirrels hide their nuts?
- (5) How do you think our life will become if we have no leisure?
- (6) What message do you think the poet wishes to convey?



## Essay

An essay allows you to express your thoughts and feelings or give information about something.

An essay mainly consists of three parts:

**Introduction:** *It states the main idea of the essay. It tells the reader what the writer is going to talk about.*

**Body:** *It supports our main idea with the help of examples and reasons.*

**Conclusion:** *It summarises our main idea to make sure that it is understood.*



Organise your thoughts and write an essay on why sport is as important as study.

**(Introduction:)**

**(Body:)**

**(Conclusion:)**



**Speaking**

**SL**

Work in groups of five and enact the story as a play in your class. Make sure to be creative and add plenty of dialogue.



# Just a Child



Once I saw a little boy, here he ran and there he ran,  
 Taking orders with a tray in hand.  
 Torn clothes and **sunken** eyes,  
 Serves the food his master fries.



Once I saw the little boy, here he stares and  
 there he stares,  
 Newspaper in hand and eyes filled with tears.  
 He tries to read but knows no word,  
 Never saw a book, not even a board.

Once I saw the little boy, now he screams and  
 then he screams,  
 When master scolds, he is scared to **extremes**.  
 Oh, poor little boy! He screams and cries,  
 To escape, to **skip** the little boy tries.



**sunken** curving inward because of weakness or illness  
**extremes** very serious or severe  
**skip** to miss out to save oneself



Oh! I feel sorry, I feel bad  
Why does he cry? Why is he sad?  
Giving money is no solution.  
Each one teach one will bring **revolution**.

Let's come together, be one voice,  
To bring happiness and rejoice.  
They are our brothers, let's all admit.

**Flames** of knowledge should now be lit.

**revolution** a sudden or complete change in the way people work or live

**flames** brightness; the state of burning brightly



## Reading

- (1) Describe what you think is happening in the poem.
- (2) Why is the boy not able to read the newspaper?
  - (a) He does not want to.
  - (b) He does not know how to read.
  - (c) He can't see properly.
- (3) Do you think anybody came to help him read the newspaper?

- (4) How does the plight of the little boy make you feel?
- (5) What does the poet mean by 'Each one teach one will bring revolution'? Do you agree with him? Give reasons for your answer.



Imagine the maid who comes to work at your house has a little daughter, who should go to school. Instead the maid brings her to your house so that she can help with the work. Discuss with a partner how you would convince your maid to send the little girl to school.

The reasons might include the following:

- She will be educated and understand more.
- She will get a better job when she grows up.
- She has the right to education.
- She is a child and every child deserves to have a childhood, to play and have fun instead of working.

**Write your thoughts in the box below and share them with your class.**

A large rectangular box with a light orange background and a black border. Inside the box, there are ten horizontal dotted lines for writing.





# 3

# TVC Drive

Sammy, I'm going to buy that chocolate. They say in the advertisement that it is healthy.

You can't believe everything you hear in advertisements! Think about how you are being influenced.

Umm, I guess you're right. But these advertisements are really interesting.

Yes, they are. Let me tell you how one of my friends had fun while making an advertisement.



Mrs Paul was very excited about today's class. Her son, Manan, was gazing at her as she put a packet of noodles, a tube of toothpaste, a toothbrush, a box of energy drinks for children and five different chocolate bars in her bag. Mrs Paul was a teacher and her son, Manan, was one of her students. They left the house and walked together towards the bus stop.

As they walked, Manan wondered why his mother had put all those things in her bag. He was excited about the chocolates, though. 'Maybe she will give the chocolates

to the best students,' he thought. 'I hope I get a bar.' Then he started to wonder about the toothpaste and toothbrush. 'Maybe she will check our teeth and if somebody has bad breath, she will give the toothpaste and toothbrush to them,' he said. 'I'm glad that I brush my teeth twice a day,' he thought. They boarded the bus. Everyone wished Mrs Paul a good morning. Thoughts were racing through Manan's head. 'What about the energy drink and noodles?' he wondered. 'Who would get those, and why?' Manan was lost in thought when the bus arrived at the school.



'Come on! We're here.' shouted Ranbir. Manan got off the bus and walked towards his classroom. It was a little drizzly that day, so they had their morning prayer in the classroom. Everyone was wondering why Mrs Paul had brought such a big bag. They finally settled down and Mrs Paul addressed the class.

Mrs Paul: I am curious to know what toothpaste you use. Can you tell me, Anusha?

Anusha: (*stands up*) Mrs Paul, I use Mr White toothpaste.

Mrs Paul: Why Mr White toothpaste? Why not any other brand?

Anusha: (*confidently*) Because Mr White toothpaste makes teeth stronger and whiter.

Mrs Paul: How do you know that?

Anusha: (*after thinking for a few moments*) They say that in the advertisement.



Mrs Paul: Thank you, Anusha. Sit down, please. Sam, can you tell me what toothpaste you use, and why?

Sam: (*stands up*) Mrs Paul, I use Pearly Fresh toothpaste because it makes my teeth stronger and keeps my mouth fresh.

Mrs Paul: That's what the advertisement for Pearly Fresh says. Isn't that right?

Sam: (*confused*) Yes, Mrs Paul.

Mrs Paul turned towards the board and wrote 'Advertisement' and then continued.

Mrs Paul: Today we are going to talk about advertising. Producers advertise their products to attract more customers. Can anyone name the different media on which they advertise?

Manan raised his hand to answer.

Manan: Mrs Paul, they advertise on television, the radio and in the newspaper. (*He wasn't allowed to call her Mom in class*)

Mrs Paul: Very good. All these mediums can together be termed mass media because they reach out to millions of people at once. Do you think everything that we hear in advertisements is true?

Sam raised his hand to answer.

Sam: (*with excitement*) Mrs Paul, you are absolutely right. Once I bought biscuits. The advertisement said that the biscuits were loaded with cashews but I could hardly see any cashews in them. (*looking a little upset*)

Everyone looked at Sam. It seemed as if they could relate to his experience.



Everyone started to murmur, recalling similar incidences. Just then Mrs Paul interrupted.

Mrs Paul: (*with authority*) Everyone, please be silent. (*Everyone became quiet at once.*) Some advertisements can be misleading. We need to be careful. But advertisements are important as well.

Otherwise how would we know about the different options we have and what the best features of different products are?

Disha: You are right, Mrs Paul. My father works with an advertising agency. He thinks of new ideas for advertisements.

Mrs Paul: That's great, Disha. Today we are going to do the same. I have brought some things with me. One by one, I will take them out. I will give you some time to think of an idea for an advertisement. Then I will ask you to come and present it. You can even form a group to enact your TVC.

All students: (*looking puzzled*) TVC? What's TVC?

Manan: I think it's the name of a scooter.

Mrs Paul: (*smiling*) No, Manan, TVC stands for *television commercial*. You have to enact a TVC.

Mrs Paul took out the tube of toothpaste from her bag. Then she asked everyone to think of an advertisement that would advertise the brand of toothpaste. She gave them ten minutes' planning time. All the students were excited about the task. They started to think of creative ideas to advertise the toothpaste. Finally, Anusha raised her hand.

Anusha: Mrs Paul, our TVC is ready. Manan, Sam and I would like to present it to the class.





Mrs Paul gave them permission to present that.

Sam: (gives a cry of *pain*) Oh! Mom, I have a toothache!

Sam looked so funny that everyone started laughing. However, Mrs Paul asked everyone to behave and the TVC presentation began again.

Sam: (gives a cry of *pain again*) Oh! Mom, I have a toothache!

Anusha: (looking worried) Why does my son have a toothache every second day? What should I do? Oh, God! Help me.

Manan: (acting as God) Don't worry, my child. Use Hercules toothpaste. Hercules toothpaste makes teeth strong and healthy.

Anusha took the toothpaste from Manan. Sam and Anusha danced around Manan singing, 'Hercules toothpaste. Hercules toothpaste for me and my family.'

At the end of the presentation, the class gave them a loud round of applause.

The class continued to make TVCs for the rest of the items that Mrs Paul had brought into class. Each group presented its TVC to the class and the students discussed the effectiveness of the message in each advertisement.







## Reading 1

- (1) Why was Manan lost in thought one morning?
- (2) What did Manan's mother take to school?
- (3) What question did Mrs Paul ask Anusha?
- (4) Television, the radio and the newspaper are collectively called .....
- (5) What does TVC stand for?
  - (a) Television centre
  - (b) Television commercial
  - (c) Top commercial



## Reading 2

- (1) Why is advertising of products important? **HOTS**
- (2) Sam thinks that advertisements sometimes give false information. Do you agree with him? Discuss it with a partner. **HOTS**



## Grammar

### Sentences, Clauses and Phrases

#### SENTENCES

We have already learned that a sentence consists of two parts – the subject and the predicate. The subject is the person or thing that performs an

action or is described in the sentence. The predicate is the action or description.

Complete sentences need both a subject and a predicate.

Examples: Anusha recites a poem in the class.

Mrs Paul is a very good teacher.



### TYPES OF CLAUSES

A clause consists of a subject and a verb but it may or may not be a sentence.

Read the following:

*Before I left for school . . .*

Here, *Before I left for school* has a subject (*I*) and a verb (*left*) but it is not a complete sentence in itself. It is a dependent clause.

Now read the sentence below.

*Before I left for school, I ate some bananas.*

We have added *I ate some bananas* to the clause *Before I left for school* and now it makes complete sense. The second part of the sentence, *I ate some bananas*, has a subject and a verb and it, too, makes complete sense by itself. It is also a clause, but it is an independent clause.



An independent clause has a subject and a verb and it makes complete sense by itself. It can stand as a complete sentence.

A dependent clause has a subject and a verb but it does not make complete sense by itself. It needs an independent clause to make its meaning complete.

We use subordinating conjunctions to join a dependent and an independent clause, to form sentences.

*He bought a car because he needed it.*

*She went to her friend's house after completing her homework.*



**Circle the subordinating conjunction and underline the dependent clause in the following sentences:**

- (1) Although his poem was good, he did not recite it well.
- (2) The bell rang, as soon as I finished my test.
- (3) Because it is too hot, you should wear cotton clothes.
- (4) If she goes to the cinema, she will come home late.
- (5) I like to play outside when it is raining.

### PHRASES

A group of two or more words that do not have a subject and a predicate is called a phrase.

Examples: *every evening, talking on the phone, to the park*

*Sam goes to the park every evening.*

*Talking on the phone, she told him the truth.*

Unlike a sentence, a phrase does not express a complete idea.

**Read the sentences below. If the underlined group of words is a clause, write C, and if it is a phrase, write P.**

- (1) I know what is in your bag. ..... C
- (2) When I reached home, my mother was preparing food for me. ....
- (3) The cats are sleeping on the bed. ....
- (4) Nodding at the class, the teacher started the lesson. ....
- (5) The shelf in the corner has all the science books. ....
- (6) As I entered the zoo, I saw a lot of people. ....
- (7) Smiling at the kids, the old man waved at them. ....
- (8) I have given you this responsibility because I know you can do it. ....



### **Prefixes – dis-, un-, in-, im-, il-, ir-, non-**

There are certain prefixes that we add to a word to form its negative.

Examples: *un* + *cooked* = *uncooked* (not cooked)

*im* + *proper* = *improper* (not proper)

Some negative prefixes are *dis-*, *un-*, *in-*, *im-*, *il-*, *ir-*, *non-*.

**(I) Add negative prefixes to make new words. Use the root word and the new word formed in sentences of your own.**

1. Root Word	patient	<i>Please be patient. Your turn will also come.</i>
New Word	<i>impatient</i>	<i>Don't be so impatient. Everybody's turn will come.</i>
2. Root Word	living	
New Word		
3. Root Word	belief	
New Word		
4. Root Word	regular	
New Word		
5. Root Word	lucky	
New Word		
6. Root Word	correct	
New Word		

**(2) Write two words which can be formed using each prefix.**

(a) im

.....  
 .....

(c) in

.....  
 .....

(b) dis

.....  
 .....

(d) mis

.....  
 .....





## Listening

SL



**Listen to this radio advertisement and answer the questions below.**

- (1) What is being advertised?
- (2) What is the name of the product?
- (3) Who do you think the advertisement is directed towards?
- (4) What are the features of the product being advertised ?
- (5) Do you think the advertisement is effective? Will it attract customers to the product? Why/Why not?



## Writing

### **Book Review – Be a Critic**

It is rightly said that in the company of a good book, we can never feel alone. When we read a good book, we start visualising the story. We start imagining what we read and a lot of images start appearing in our mind.

After we have read a book, it is good to review it.

A book review is an analysis and the review writer's opinion of the content, style and merit of the book.

A book review includes three things:

# Book Review

## Summary

Title and author

Setting

Main characters

Plot and problem area

## Reader's Opinion

Strengths/Parts you liked most

Weakness/Parts you did not like

Message

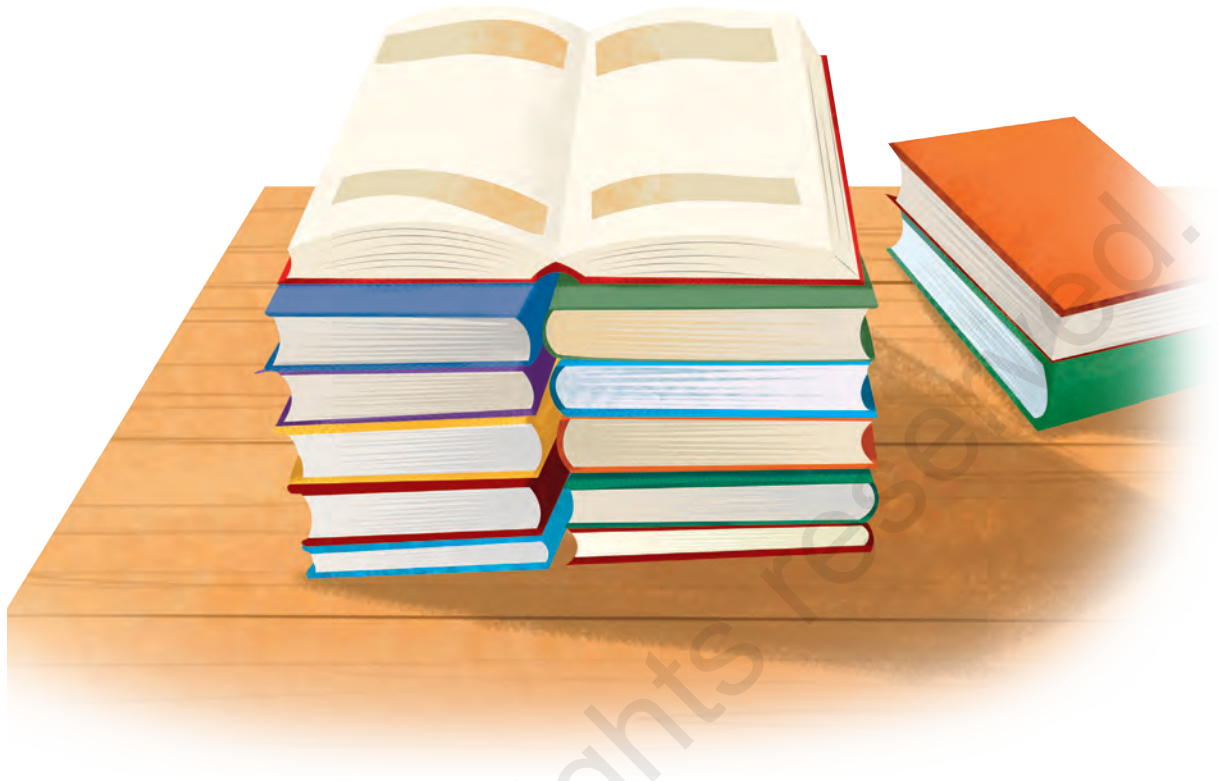
Author's writing style

## Conclusion

Your opinion with reasons

Rating or recommending the book

**Read a book that your teacher recommends and write a review of the book.**



**Speaking**

**SL**

### **Be an Advertiser**

Work in groups and think of a product that you would like to advertise. Prepare a TVC and present it to your class.

Remember your TVC should be

*Convincing,*

*Effective in attracting your target audience,*

*Informative,*

*True.*

# ENGLISH

## GRAMMAR & COMPOSITION

---

*Easy to teach and easy to learn*

*A child-friendly book like no other*

*Strictly within the child's mental range*

CLASS-5 ♦ SEMESTER-I

1.	Nouns & Pronouns	70
2.	Articles	75
3.	Adjectives	80
4.	Adverbs	84
5.	Connectors	88
6.	Prepositions	91
7.	Verbs	95
8.	The Use of Verbs in Tenses	101
9.	Simple & Continuous Tenses	104



# 1

# NOUNS & PRONOUNS

## KINDS OF NOUN

- (1) **Collective noun:** It is the name of a number or collection of persons or things taken together and spoken of as a whole; as—  
*flock, crowd, police, army, committee, jury, furniture, etc.*
- (2) **Material noun:** It is the name of a thing from which other things can be made; as—  
*gold, silver, leather, water, milk, sugar, wood, wool, etc.*
- (3) **Abstract noun:** It is a word that tells us about the nature, quality or action of a person or thing; as—  
*honesty, anger, sadness, kindness, truth, beauty, activity, etc.*

## Countable and Uncountable Nouns

- All **collective nouns** can be changed into the plural form. So they are **countable nouns**.
- But **material** and **abstract nouns** cannot be changed into the plural form. So they are **uncountable nouns**.
- Point to remember—
  - **Uncountable nouns** are always singular and take a singular verb.
    1. Waters are necessary for life. (incorrect)  
Water is necessary for life. (correct)
    2. These furnitures are for sale. (incorrect)  
This furniture is for sale. (correct)
    3. He did not care for my advices. (incorrect)  
He did not care for my advice. (correct)





## Test Yourself

I. Identify the kinds of nouns underlined in the following sentences.

1. Silver is a white metal.
2. He has pain in his legs.
3. He won much admiration.
4. All the furniture has been sold.
5. What is the depth of this river?
6. My sweater is made of pure wool.
7. A flock of sheep is grazing in the field.
8. We should love truth, beauty and goodness.



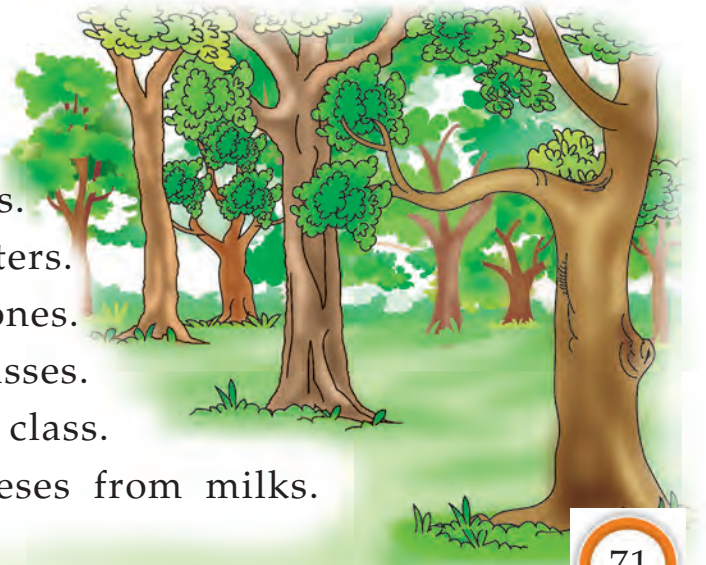
II. Put (C) for countable and (U) for uncountable nouns.

air	class	help	flame
book	dirt	ice	sea
curd	dress	ink	star
shop	pot	camel	soup
butter	milk	music	sunshine
apple	artist	news	smoke
step	pin	poetry	truth
cheese	ribbon	poem	furniture



III. Underline the words wrongly used in the following sentences, and correct them.

1. Trees give us woods.
2. I like musics very much.
3. His father deals in clothes.
4. These jugs are full of waters.
5. This house is made of stones.
6. Windows are made of glasses.
7. Don't make noises in the class.
8. We make butters and cheeses from milks.



## KINDS OF PRONOUN

- (1) **Demonstrative pronouns** are the pronouns which refer to a specific noun.

In the following sentences, italicized words are **demonstrative pronouns**.

1. *This* is my house.
2. *That* is Aarav's bat.
3. *These* are the things I don't like.
4. *Those* are the apples sent by my uncle.
5. Your coat is black; mine is a white *one*.



- (2) **Indefinite pronouns** are the pronouns which do not refer to any person or thing in particular.

In the following sentences, italicized words are **Indefinite Pronouns**.

1. *All* were drowned.
2. *Some* are born great.
3. *Anybody* can do that.
4. *None* escaped unhurt.
5. *Everyone* wants to be happy.



➤ Point to remember—

- If a **noun** is used with a **demonstrative** pronoun or **indefinite** pronoun, then it does not remain a **pronoun**. Then it becomes an **adjective**.

➤ Look at the use of italicized words in the following sentences.

Pronouns	Adjectives
1. <i>This</i> is my house.	1. <i>This</i> house is mine.
2. <i>That</i> is Aarav's bat.	2. <i>That</i> bat belongs to Aarav.
3. <i>Those</i> are the apples sent by Anu.	3. <i>Those</i> apples were sent by Anu.
4. <i>All</i> were drowned.	4. <i>All</i> the boys were drowned.
5. <i>Some</i> are born great.	5. <i>Some</i> men are born great.

- (3) **Reflexive pronouns:** When *-self* is added to personal pronouns like *my, your, her, it*; and *-selves* to *our, your, them*, we get **reflexive pronouns**.

- **Reflexive pronouns** are used as the object of a verb when the subject and the object are the same person.

Singular	Plural
I hurt <b>myself</b> .	We hurt <b>ourselves</b> .
You hurt <b>yourself</b> .	You hurt <b>yourselves</b> .
He hurt <b>himself</b> .	They hurt <b>themselves</b> .
She hurt <b>herself</b> .	
The horse hurt <b>itself</b> .	



- **Reflexive pronouns** are used similarly after a verb + preposition; as—

He spoke to himself.

Did she pay for herself?

Look after yourself.

But if the preposition indicates locality, we use the ordinary, not the reflexive pronouns; as—

Did you take your dog with you?

They put the child between them.

Did he have any money with him?

- **Reflexive pronouns** are never used as a **subject**.

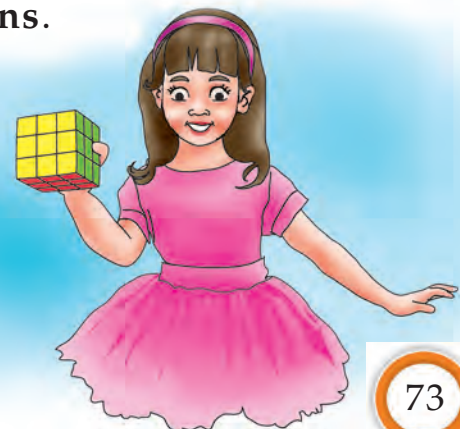
Incorrect Sentences	Correct Sentences
1. <b>Myself</b> went there.	1. I went there <b>myself</b> .
2. <b>Yourself</b> can do it.	2. You can do it <b>yourself</b> .
3. <b>Himself</b> was to blame.	3. He <b>himself</b> was to blame.



- **Reflexive pronouns** can also be used to emphasize a noun or pronoun. We call them **emphatic pronouns**.

Look at the following sentences:

1. I solved the problem *myself*.
2. We solved the problem *ourselves*.
3. You solved the problem *yourself*.
4. She solved the problem *herself*.
5. They solved the problem *themselves*.

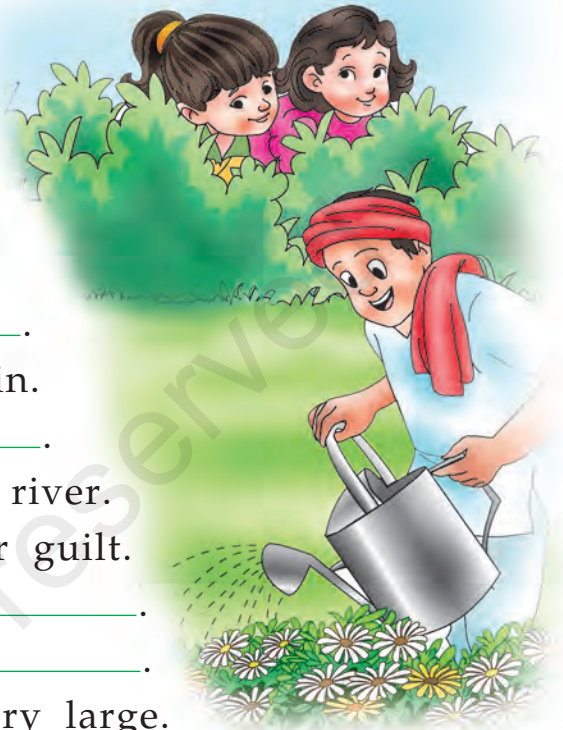




## Test Yourself

### I. Fill in the blanks with suitable reflexive or emphatic pronouns.

1. The girls hid \_\_\_\_\_.
2. He blames \_\_\_\_\_ for it.
3. We often deceive \_\_\_\_\_.
4. She \_\_\_\_\_ informed me.
5. They exerted \_\_\_\_\_ a lot.
6. The prisoner hanged \_\_\_\_\_.
7. You \_\_\_\_\_ can best explain.
8. The poor widow hurt \_\_\_\_\_.
9. We enjoyed \_\_\_\_\_ on the river.
10. They \_\_\_\_\_ admitted their guilt.
11. She spoke to the principal \_\_\_\_\_.
12. Some people think only of \_\_\_\_\_.
13. The town \_\_\_\_\_ is not very large.



### II. State whether the italicized words in the following sentences are pronouns or adjectives.

1. *All* are mortal.
2. *All* men are mortal.
3. *Few* men are rich.
4. *Few* escaped unhurt.
5. *Some* die very young.
6. *Some* men die very young.
7. Do good to *others*.
8. I want the *other* storybook.
9. Bring me *that* book.
10. *This* horse is stronger than *that*.
11. *Many* are called but *few* are chosen.
12. I prefer a white horse to a black *one*.
13. *These* books are better than those *ones*.





• Kinds of Articles  
 - Indefinite,  
 - Definite  
 • The Use of  
 - Articles  
 - 'a', 'an'  
 - 'the'.

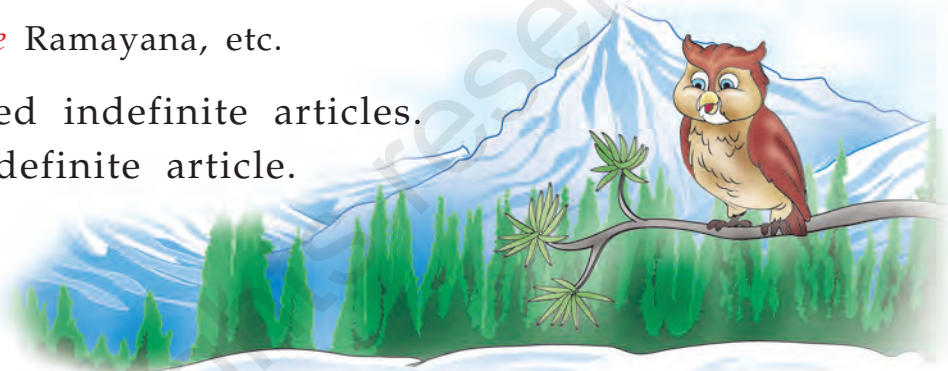
# 2 ARTICLES

➤ In English grammar, **a**, **an** and **the** are called articles. They are a kind of determiners which determine or limit the noun that follows them; as—

*A* book, *an* Indian, *the* Ramayana, etc.

➤ **A** and **an** are called indefinite articles. **The** is called the definite article.

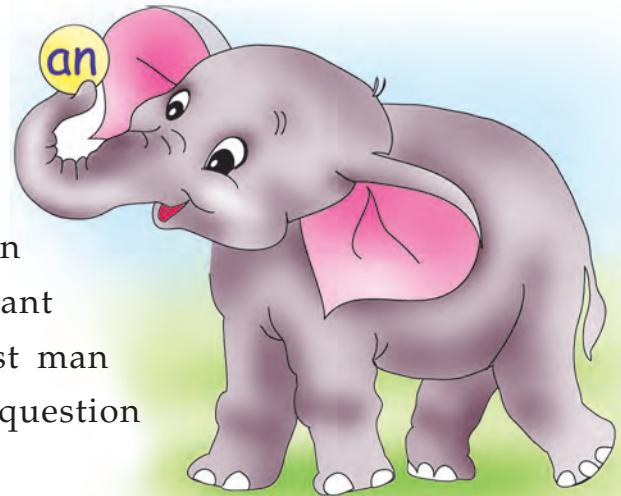
*an* owl  
 on *a* tree  
 in *the* Himalayas



➤ **A** is used before a word beginning with a consonant sound, before **u** sounded as **yoo**, and before **o** sounded as **wu**.

➤ **An** is used before a word beginning with a vowel sound or silent **h**.

- |                         |                         |
|-------------------------|-------------------------|
| <i>a</i> bird           | <i>an</i> owl           |
| <i>a</i> B.A.           | <i>an</i> M.A.          |
| <i>a</i> giant          | <i>an</i> hour          |
| <i>a</i> horse          | <i>an</i> apple         |
| <i>a</i> unicorn        | <i>an</i> Indian        |
| <i>a</i> European       | <i>an</i> elephant      |
| <i>a</i> useful animal  | <i>an</i> honest man    |
| <i>a</i> one-eyed giant | <i>an</i> easy question |



➤ **Points to remember—**

- **a/an** is used before a singular noun which is countable.
- **a/an** is not used before uncountable nouns, i.e. before things we cannot count.



## Test Yourself

### I. Fill in the blanks with 'a' or 'an'.

1. She is \_\_\_\_\_ ugly girl.
2. Varanasi is \_\_\_\_\_ holy city.
3. He is not \_\_\_\_\_ honest man.
4. Copper is \_\_\_\_\_ useful metal.
5. He returned after \_\_\_\_\_ hour.
6. French is \_\_\_\_\_ easy language.
7. Aladin had \_\_\_\_\_ wonderful lamp.
8. Misha has come without \_\_\_\_\_ umbrella.
9. I bought \_\_\_\_\_ horse and \_\_\_\_\_ ox.
10. Yesterday, \_\_\_\_\_ European came to our shop.



### II. Add 'a' or 'an' where necessary. Put a cross (X) where neither 'a' nor 'an' is required.

Note: Remember only countables take 'a' or 'an'.

1. \_\_\_\_\_ cat has \_\_\_\_\_ tail.
2. \_\_\_\_\_ iron is \_\_\_\_\_ metal.
3. \_\_\_\_\_ coffee is \_\_\_\_\_ drink.
4. \_\_\_\_\_ fish swims in \_\_\_\_\_ water.
5. \_\_\_\_\_ coat is made of \_\_\_\_\_ wool.
6. \_\_\_\_\_ orange grows on \_\_\_\_\_ tree.
7. \_\_\_\_\_ table is made of \_\_\_\_\_ wood.
8. We eat \_\_\_\_\_ soup with \_\_\_\_\_ spoon.
9. We can write \_\_\_\_\_ letter on \_\_\_\_\_ paper.
10. The cow eats \_\_\_\_\_ grass in \_\_\_\_\_ summer.
11. I like \_\_\_\_\_ jam on \_\_\_\_\_ piece of \_\_\_\_\_ bread.
12. \_\_\_\_\_ ring is made of \_\_\_\_\_ gold or \_\_\_\_\_ silver.



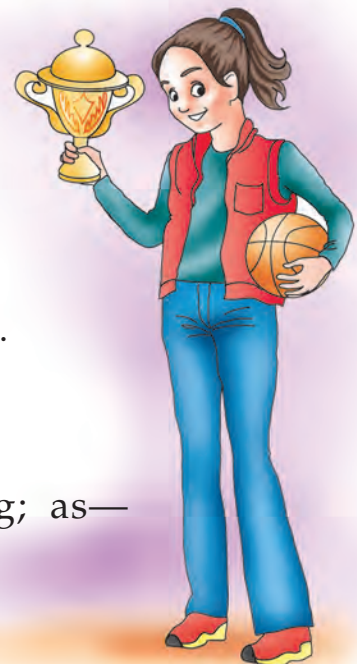
III. Complete the following exclamations with “What a an” or “What”.  
 Note: For singular and countables, use: “What a an \_\_\_\_\_ !”  
 For plurals and uncountables, use: “What \_\_\_\_\_ !”

1. \_\_\_\_\_ idea!
2. \_\_\_\_\_ good idea!
3. \_\_\_\_\_ awful news!
4. \_\_\_\_\_ horrible storm!
5. \_\_\_\_\_ fun your uncle is!
6. \_\_\_\_\_ tasty cheese this is!
7. \_\_\_\_\_ grand ideas he has!
8. \_\_\_\_\_ pretty face she has!
9. \_\_\_\_\_ clever student you are!
10. \_\_\_\_\_ beautiful music they are playing!



- We use **the** when it is clear which thing or person we mean; as—
- the floor / the ceiling / the door / the light  
 ..... of a room.
  - the roof / the garden / the kitchen / the bathroom  
 ..... of a house.
  - the supermarket / the station / the airport / the mayor  
 ..... of a town.

1. Mum is in the kitchen.  
 (= the kitchen in the house)
2. Turn off the light and close the door.  
 (= the light and the door of the room)
3. Do you live far from the station?  
 (= the railway station of your town)
4. I'd like to speak to the manager, please.  
 (= the manager of this place)



- We use **the** in the following cases also:
- (1) To speak of a particular person or thing; as—  
 Let us go to **the** Lotus Garden.  
 This is **the** book he wants.  
 She is **the** girl who won the prize.

- We don't use **the** when we are talking about something in general; as—  
Butter is not good for you. (general)  
**The** butter is in the fridge. (particular)
- (2) With a singular noun to represent a whole class; as—  
**The** rose smells sweet.  
**The** cow is a useful animal.  
**The** cat and **the** lion are of **the** same family.
- But when we use *man* or *woman* for the whole class, we never use **a**, **an** or **the** with it.  
Man is mortal.  
Woman is man's mate.
- (3) With superlatives; as—  
Honesty is **the** best policy.  
Sania is **the** best player of our team.
- (4) Before an adjective when the noun is understood; as—  
**The** rich should help **the** poor.
- (5) With the names of sacred books; as—  
**The** Vedas; **the** Puranas; **the** Ramayana; **the** Bible; **the** Koran.
- (6) With the names of natural objects that are unique; as—  
**The** sun; **the** sky; **the** ocean; **the** sea; **the** earth.
- (7) With the names of rivers, seas, oceans, gulfs, groups of islands, and mountain ranges; as—  
**The** Ganga; **the** Yamuna; **the** Indian Ocean; **the** Persian Gulf;  
**the** Andamans; **the** Himalayas; **the** Alps.



## Test Yourself

I. Put **the** at suitable places in the following sentences.

1. Sun sets in west.
2. There is no sugar in pot.
3. How beautiful stars look!
4. Music of film was very loud.
5. Moon was not shining in sky.



6. Who is captain of your team?
7. Have you heard about accident?
8. There was a shop at corner of street.

*II. Choose the correct alternatives.*

1. Rosy is outside in \_\_\_\_\_.  
(a park / the park)
2. There is \_\_\_\_\_ in our colony.  
(a park / the park)
3. Who is \_\_\_\_\_ on that bike?  
(a man / the man)
4. There was \_\_\_\_\_ on the bike.  
(a man / the man)
5. Is there \_\_\_\_\_ in this bathroom?  
(a shower / the shower)
6. \_\_\_\_\_ is broken at the moment.  
(A shower / The shower)
7. Look at \_\_\_\_\_ in this garden.  
(a swing / the swing)
8. We've got \_\_\_\_\_ in our garden.  
(a swing / the swing)



*III. Add articles (a, an or the) to the following sentences.*

1. There's \_\_\_\_\_ dog at \_\_\_\_\_ gate.
2. There isn't much milk in \_\_\_\_\_ pot.
3. There's \_\_\_\_\_ bird in \_\_\_\_\_ cage.
4. \_\_\_\_\_ photograph is on \_\_\_\_\_ wall.
5. There's \_\_\_\_\_ bottle in \_\_\_\_\_ fridge.
6. \_\_\_\_\_ old man is writing \_\_\_\_\_ letter.
7. \_\_\_\_\_ goldfish isn't in \_\_\_\_\_ aquarium.
8. \_\_\_\_\_ young lady is reading \_\_\_\_\_ novel.
9. \_\_\_\_\_ young man has got \_\_\_\_\_ moustache.
10. There's \_\_\_\_\_ alarm clock on \_\_\_\_\_ cupboard.





- Kinds of Adjective
  - Demonstrative
  - Interrogative
  - Exclamatory
  - Possessive
- Difference between Possessive Adjectives and Pronouns.



# 3

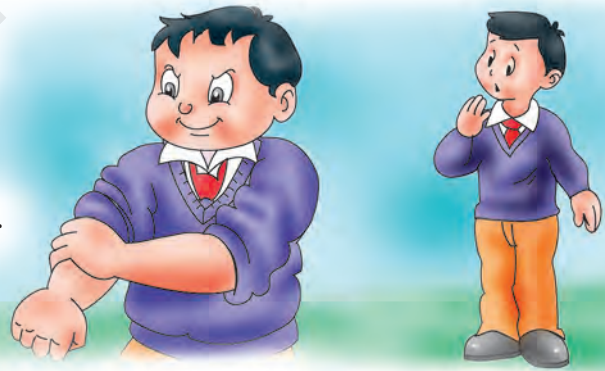
## ADJECTIVES

- An **adjective** is a word used with a noun or a pronoun to add something to its meaning.
- Adjectives not only describe the quality of a person, place or thing but also point out the noun. They are also used with nouns to ask questions; as—
  1. **This** man is a lawyer. (Pointing out the noun)
  2. **What** job does your father do? (Asking question about the noun)

The main kinds of Adjective are:

1. **Demonstrative adjectives:** These adjectives point out which person or thing is meant; as—

1. *This* boy is stronger than Hari.
2. *That* boy is industrious.
3. *These* mangoes are sour.
4. *Those* criminals must be punished.
5. Don't be in *such* a hurry.
6. I hate *such* things.



- Demonstrative adjectives answer the question: **Which?**
- *This* and *that* are used with Singular nouns; *these* and *those* with Plural nouns.

2. **Interrogative adjectives:** These adjectives (*what*, *which* and *whose*) are used with Nouns to ask questions; as—

1. *What* kind of a man is he ?
2. *Which* way shall we go ?
3. *Whose* book is this ?



- *What* is used in a general sense, and *which* in a selective sense.



3. **Exclamatory adjectives** are used to express sudden emotions as — happiness surprise, pain, etc.

The word 'What' is sometimes used as an exclamatory adjective.

**What** a genius!

**What** a folly!

**What** an idea!

**What** a blessing!

**What** a piece of work man is!



4. **Possessive adjectives** (*my, your, his, her, its, our* and *their*) are used attributively before a noun; as—

I have lost *my* umbrella.

John has invited *your* brother.

Do you know *his* name?



### Difference between possessive adjectives & pronouns

- **Possessive adjectives** are — *my, our, your, his, her, their*.
- **Possessive pronouns** are — *mine, ours, yours, his, hers, theirs*.
- **Possessive adjectives** refer to the possessor of a thing. Therefore, they are always followed by a noun.

my bag

your sweater

her doll

our house

his brother

their garden

- **Possessive pronouns** are used in place of possessive adjectives + nouns.

This is *our* car.

This car is *ours*.

This is *their* house.

This house is *theirs*.

You are using *my* pen.

You are using *mine*.

Where is *your* pen?

Where is *yours*?



- **Point to remember—**

- The apostrophe (') is not used with the Possessive pronouns :  
*ours yours hers its theirs*

Look at the following:

1. it's tail (X)

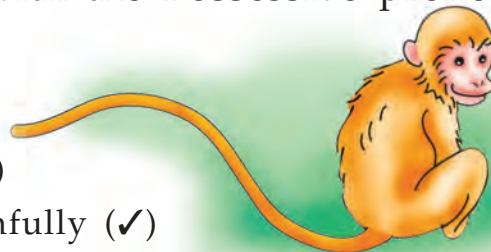
its tail (✓)

2. your's faithfully (X)

yours faithfully (✓)

3. a friend of her's (X)

a friend of hers (✓)



- The expressions of *mine*, or *hers*, etc., mean 'one of my', 'one of her', etc.

a friend of mine = one of my friends

a cousin of hers = one of her cousins

a factory of theirs = one of their factories



## Test Yourself

- I. *Identify the types of adjectives underlined in the following sentences.*

1. These apples are sold.
2. That boy is very naughty.
3. Such people are dangerous.
4. Their house is bigger than ours.
5. Which flower do you like the most?
6. What a huge animal the elephant is!
7. What a foolish mistake you have made!
8. Which way is the shortest to the station?



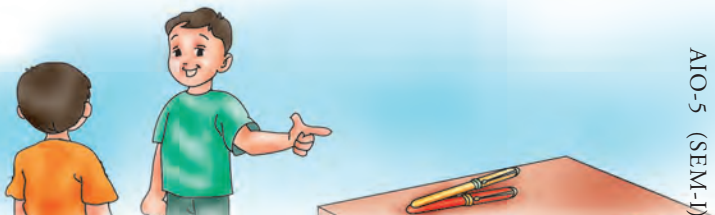
- II. *Insert the missing possessives.*

hers, theirs, her, your, mine, yours, ours, their

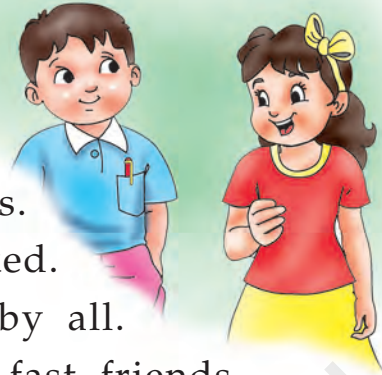
1. This is not my pen; it must be \_\_\_\_\_.
2. You can take \_\_\_\_\_ share, and give me mine.
3. She saw a cousin of \_\_\_\_\_ in the Mall last night.
4. She has lost \_\_\_\_\_ pencil; please lend her yours.
5. Have you seen a book of \_\_\_\_\_ lying about somewhere ?
6. Why don't we collect some friends of \_\_\_\_\_ and have a big party.
7. They have two of \_\_\_\_\_ houses in this street, and the house on the corner is also \_\_\_\_\_.

- III. *Correct the following sentences:*

1. I asked her's name.
2. Those are ours pens.



3. Those houses are their's.
4. Yours servant looks tired.
5. Would you lend me yours pen?
6. I shall always be sincerely your's.
7. This action of your's was not liked.
8. These ideas of our's were liked by all.
9. Your father and mine father are fast friends.
10. I shall take yours book; you can take mine book.



### Formation of Adjectives

#### (1) Many adjectives are formed from nouns.

<i>Noun</i>	<i>Adjective</i>	<i>Noun</i>	<i>Adjective</i>
boy	boyish	man	manly
fool	foolish	king	kingly
silk	silken	gift	gifted
gold	golden	dirt	dirty
care	careful	storm	stormy
play	playful	pardon	pardonable
hope	hopeful	laugh	laughable
shame	shameless	glory	glorious
sense	senseless	envy	envious

#### (2) Some adjectives are formed from verbs.

<i>Verb</i>	<i>Adjective</i>	<i>Verb</i>	<i>Adjective</i>
tire	tireless	cease	ceaseless
talk	talkative	move	movable

#### (3) Some adjectives are formed from other adjectives.

<i>Adjective</i>	<i>Adjective</i>	<i>Adjective</i>	<i>Adjective</i>
tragic	tragical	black	blackish
whole	wholesome	white	whitish
three	threefold	sick	sickly



# MATHEMATICS

CLASS-5 ♦ SEMESTER-I

1.	More on Large Numbers	114
2.	Operations on Numbers	139
3.	Factors and Multiples	156
4.	Fractions	175
5.	Decimals	201
6.	Percentages	225





# More on Large Numbers



## Learning Objectives

- Understand seven-digit numbers
- Understand eight-digit numbers
- Understand nine-digit numbers
- International place value chart
- Compare Indian and International place value systems
- Compare seven-digit, eight-digit, and nine-digit numbers
- Round off seven-digit, eight-digit, and nine-digit numbers



## LET'S RECOLLECT

- (1) Write the number names of the following:
  - (a) 23456
  - (b) 134750
- (2) Write the expanded form of the following:
  - (a) 27451
  - (b) 870156
- (3) Write in ascending order.  
675437, 13745, 13275, 675432, 2475
- (4) Make the smallest five-digit number using 3, 7, 6, 5, 2, 0.
- (5) Round off
  - (a) 74542 to the nearest tens.
  - (b) 2435 to the nearest hundreds.
  - (c) 135765 to the nearest thousands.



## REMEMBER

- A place value chart is a table that shows the place values of the digits in a number.
- The place value chart is divided into groups known as periods. For numbers having up to six digits we divide the place value chart into 3 periods, that are, ones, thousands, and lakhs.
- We put a comma counting three digits from the right, to separate the thousands period from the ones period.
- If two numbers have different numbers of digits, then the number with greater number of digits will be greater.

## SEVEN-DIGIT NUMBERS

We have studied six-digit numbers in earlier grades. The greatest six-digit number is 9,99,999. What number do we get if we add 1 to it?

$$\begin{array}{r} 999999 \\ + \quad \quad 1 \\ \hline 1000000 \end{array}$$

1000000 is the successor of 9,99,999.

**Successor:** The *successor* of a number is the number obtained by adding one to it.



1000000 is called ten lakh. It is the smallest seven-digit number.

The first two digits of a seven-digit number represent the number of lakhs.

2000000	Twenty lakh
3000000	Thirty lakh
4000000	Forty lakh
5000000	Fifty lakh
6000000	Sixty lakh
7000000	Seventy lakh
8000000	Eighty lakh
9000000	Ninety lakh

### Place Value Chart for Seven-Digit Numbers

We have studied the place value chart for numbers having up to six digits. Let us extend the place value chart to ten lakhs place. It is written to the left of the lakhs place in the place value chart under the lakhs period as TL.



Write the number 2395480 in the place value chart.

Periods						
Lakhs		Thousands		Ones		
TL	L	T.Th	Th	H	T	O
2	3	9	5	4	8	0

Places

**Periods** – ones, thousands and lakhs

**Places** (from right to left) – ones, tens, hundreds, thousands, ten thousands, lakhs and ten lakhs

Look at the place value chart. The chart makes it easy to find the place value of a digit in a number.

Let us find the place value of 6 in the following numbers:

6175380, 1304265 and 5868028

Write these numbers in the place value chart.

Lakhs		Thousands		Ones		
TL	L	T.Th	Th	H	T	O
6	1	7	5	3	8	0
1	3	0	4	2	6	5
5	8	6	8	0	2	8

The place value of 6 in 6175380 is 6000000.

The place value of 6 in 1304265 is 60.

The place value of 6 in 5868028 is 60000.

We put commas to separate the periods in a number. As we write 2395480 in the place value chart, we can easily see the periods and put the commas as follows:

The first comma is placed to separate the ones period that is 3 digits from right.

2 3 9 5 4 8 0

The next comma is placed to separate the thousands period that is 2 digits to the left of the first comma.



## Reading and Writing Seven-Digit Numbers

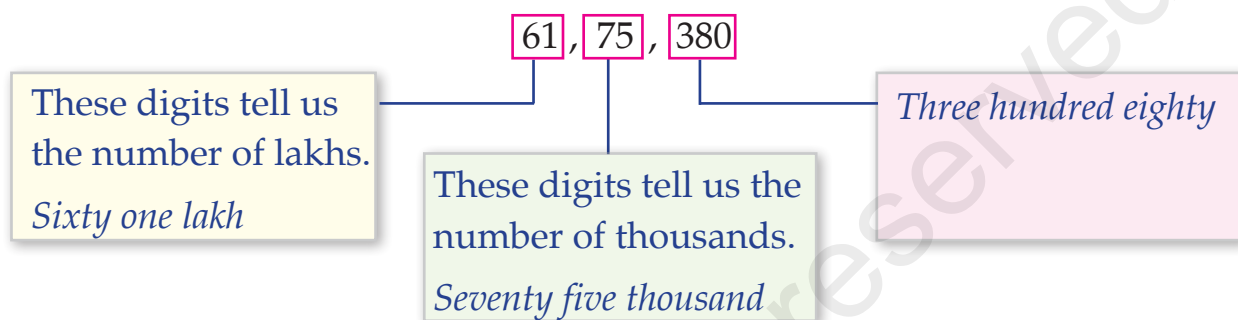
With the help of the place value chart and by using commas, we can read numbers easily.

We will take the same numbers 6175380, 1304265, 5868028 as in the earlier sections.

How do we name them? Or how do we read or write them?

For example, take the number 6175380.

First place commas at the appropriate places.



So, the number in words is sixty one lakh seventy five thousand three hundred eighty.

In the same way, we write the other two numbers.

1304265  $\longrightarrow$  13,04,265

Thirteen lakh four thousand two hundred sixty five

5868028  $\longrightarrow$  58,68,028

Fifty eight lakh sixty eight thousand twenty eight

## Expanded Form

Recall from the previous grades that the, place value of a digit in a number is the value of the digit according to its position in the number. In 6175380, place value of each digit is

6	1	7	5	3	8	0	Place value
							0 ones = 0
							8 tens = 80
							3 hundreds = 300
							5 thousands = 5000
							7 ten thousands = 70,000
							1 lakh = 1,00,000
							6 ten lakhs = 60,00,000



The expanded form of a number is the sum of the place values of all the digits in the number in order.

Let us now write these numbers in the expanded form.

61,75,380	$60,00,000 + 1,00,000 + 70,000 + 5000 + 300 + 80$
13,04,265	$10,00,000 + 3,00,000 + 4000 + 200 + 60 + 5$
58,68,028	$50,00,000 + 8,00,000 + 60,000 + 8000 + 20 + 8$



## PRACTICE EXERCISE

1.1

(1) Write the following numbers in the place value chart:

- (a) 78,34,678
- (b) 97,45,342
- (c) 54,67,245
- (d) 23,12,906

Lakhs		Thousands		Ones		
Ten Lakhs	Lakhs	Ten Thousands	Thousands	Hundreds	Tens	Ones
TL	L	T.Th	Th	H	T	O

(2) In each of the following numbers, write the place value of 5:

(a)



(b)



(c)

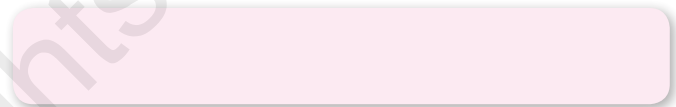
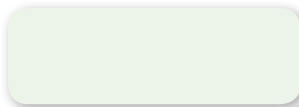


(d)

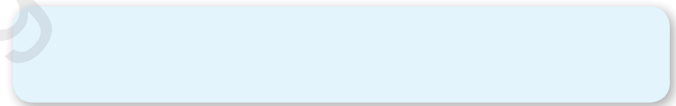
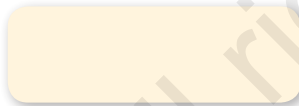


(3) Rewrite the numbers by using commas, and write their number names.

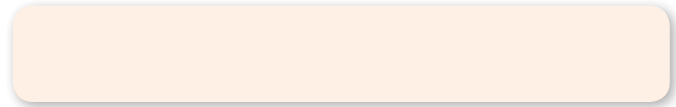
(a) 4532987



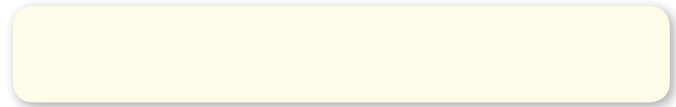
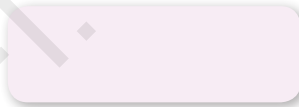
(b) 1374402



(c) 1687945



(d) 2467504

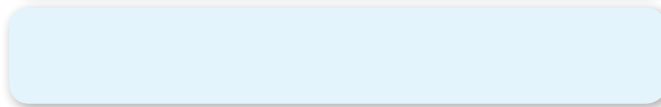


(4) Write the expanded form.

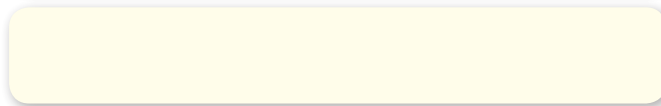
(a) 79,43,296



(b) 25,13,762



(c) 45,32,109



(5) Write the standard form.

(a)  $70,00,000 + 4000 + 700 + 30 + 4 =$

(b)  $20,00,000 + 3,00,000 + 50,000 + 2000 + 100 + 90 + 4 =$

(c)  $50,00,000 + 60,000 + 3000 + 200 =$

## EIGHT-DIGIT AND NINE-DIGIT NUMBERS

Now that we have studied seven-digit numbers, we know that the greatest seven-digit number is 99,99,999. When we add 1 to it, we get the smallest eight-digit number.

$$\begin{array}{r} 9999999 \\ + \quad \quad 1 \\ \hline 10000000 \end{array}$$

99,99,999 is the predecessor of 10000000.

**Predecessor:** The *predecessor* of a number is the number obtained by subtracting one from it.



10000000 is called one crore. It is the smallest eight-digit number.

The first digit of an eight-digit number tells us the number of crores.

Now look at these numbers.

10000000	1 crore
20000000	2 crore
30000000	3 crore
40000000	4 crore
50000000	5 crore
60000000	6 crore
70000000	7 crore
80000000	8 crore
90000000	9 crore



The greatest eight-digit number is 9,99,99,999. What will be the successor of this number?

When we add 1 to the greatest eight-digit number, we get the smallest nine-digit number.

$$\begin{array}{r}
 99999999 \\
 + \quad \quad \quad 1 \\
 \hline
 100000000
 \end{array}$$

So, the first two digits of a nine-digit number tell us the number of crores.

100000000	10 crore
200000000	20 crore
300000000	30 crore
400000000	40 crore
500000000	50 crore
600000000	60 crore
700000000	70 crore
800000000	80 crore
900000000	90 crore

### Place Value Chart for Eight-Digit and Nine-Digit Numbers

We have studied the place value chart for numbers having up to seven digits. Let us extend the place value chart to crores place and ten crores place. It is written to the left of the ten lakhs place in the place value chart under the crores period, where as C is for crores and TC for ten crores.



A new period is introduced to the left of the lakhs period.

Let us write the numbers 67211425 and 826742547 in the place value chart.

Periods								
Crores		Lakhs		Thousands		Ones		
TC	C	TL	L	T.Th	Th	H	T	O
	6	7	2	1	1	4	2	5
8	2	6	7	4	2	5	4	7

Places

122

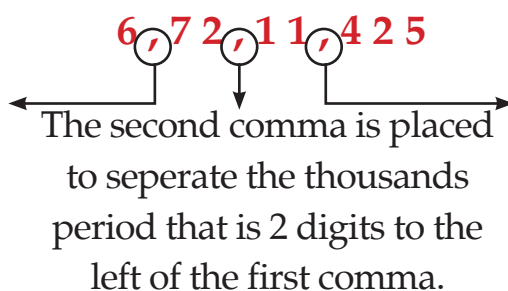
The empty places in the place value chart are filled with zeros.

**Periods** – ones, thousands, lakhs and crores

**Places (from right to left)** – ones, tens, hundreds, thousands, ten thousands, lakhs, ten lakhs, crores and ten crores

We put commas to separate the periods in a number. When we write 67211425 in the place value chart, we can easily see the periods and put the commas as follows:

The third comma is placed to separate the lakhs period that is 2 digits to the left of the second comma.

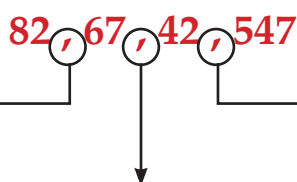


The first comma is placed to separate the ones period that is 3 digits from right.

Place	Ten Crores	Crores	Ten Lakhs	Lakhs	Ten Thousands	Thousands	Hundreds	Tens	Ones
Digits	8	2	6	7	4	2	5	4	7

Look at the place value chart. From the place value chart, it is very easy to find the place value of a digit in a number. For example, using the chart above, we can easily tell that the place value of 8 in the number 826742547 is 8 ten crores, that is, 80,00,00,000.

The third comma is placed to separate the lakhs period that is 2 digit to the left of the second comma.



The second comma is placed to separate the thousands period that is 2 digits to the left of the first comma.

The first comma is placed to separate the ones period that is 3 digits from the right.

Let us find the place value of 4 in the following numbers:

4,82,03,086, 41,72,03,422 and 1,21,24,663

Let us write these numbers in the place value chart.

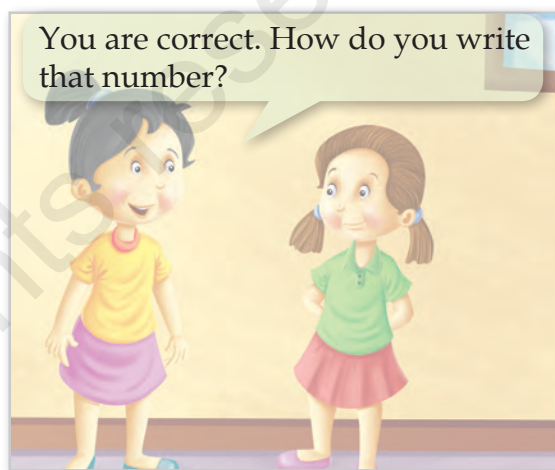
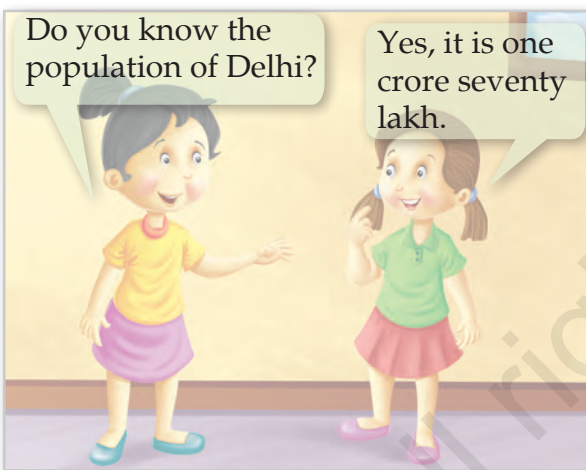
Crores		Lakhs		Thousands		Ones		
TC	C	TL	L	T.Th	T	H	T	O
	4	8	2	0	3	0	8	6
4	1	7	2	0	3	4	2	2
	1	2	1	2	4	6	6	3

The place value of 4 in 4,82,03,086 is 4,00,00,000.

There are two place values of 4 in 41,72,03,422 – 40,00,00,000 and 400.

The place value of 4 in 1,21,24,663 is 4000.

A digit can have more than one place value.



### Reading and Writing Eight-Digit and Nine-Digit Numbers

We know that with the help of the place value chart and by using commas, we can read and write number names easily.

Let us write number names for the numbers 48203086, 417203422 and 12124663.

First put commas at the appropriate places, and then observe the place values of the digits in the number.

This digit tells us the number of crores. *Four crore*

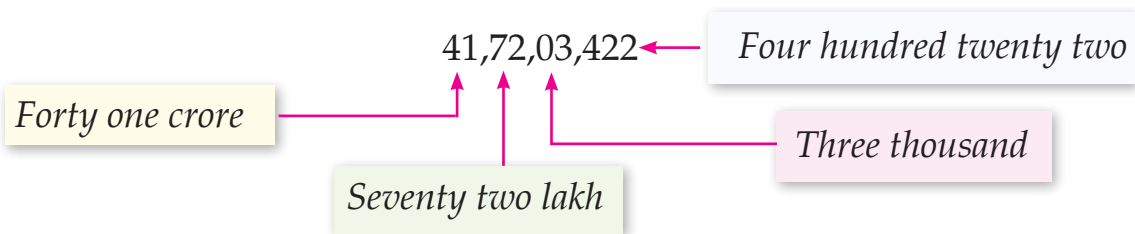
4, 82, 03, 086 ← *Eighty six*

These digits tell us the number of lakhs. *Eighty two lakh*

These digits tell us the number of thousands. *Three thousand*

So, 4,82,03,086 in words is four crore eighty two lakh three thousand eighty six.





So, 41,72,03,422 in words is forty one crore seventy two lakh three thousand four hundred twenty two.

In the same way, we will write the number 12124663.

12124663 → 1,21,24,663      One crore twenty one lakh twenty four thousand six hundred sixty three

### Expanded Form

Let us now write these numbers in the expanded form.

4,82,03,086	$4,00,00,000 + 80,00,000 + 2,00,000 + 3000 + 80 + 6$
41,72,03,422	$40,00,00,000 + 1,00,00,000 + 70,00,000 + 2,00,000 + 3000 + 400 + 20 + 2$
1,21,24,663	$1,00,00,000 + 20,00,000 + 1,00,000 + 20,000 + 4000 + 600 + 60 + 3$



## PRACTICE EXERCISE

1.2

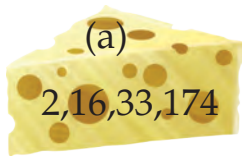
(1) Write the following numbers in the place value chart given below:

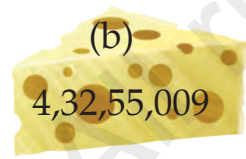
- |                  |                  |
|------------------|------------------|
| (a) 7,00,35,940  | (b) 9,23,68,700  |
| (c) 8,17,76,534  | (d) 1,90,27,005  |
| (e) 34,56,78,123 | (f) 20,05,07,008 |
| (g) 87,45,98,543 | (h) 60,47,97,234 |

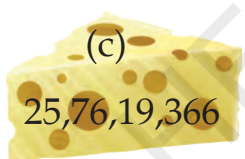


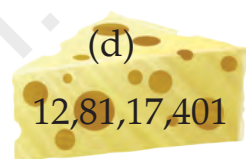
Crores		Lakhs		Thousands		Ones		
Ten Crores	Crores	Ten Lakhs	Lakhs	Ten Thousands	Thousands	Hundreds	Tens	Ones
TC	C	TL	L	T.Th	Th	H	T	O

(2) Write the place value of 2 in each of the following:

(a)  2,16,33,174

(b)  4,32,55,009

(c)  25,76,19,366

(d)  12,81,17,401

(a) 

(b) 

(c) 

(d) 

(3) Rewrite the numbers by using commas, and write their number names.

(a) 89325423



(b) 53912643

(c) 657406002

(d) 121314156

(4) Write in the expanded form.

(a) 1,39,07,652

(b) 34,09,87,126

(c) 20,73,45,621

(5) Write in the standard form.

(a)  $3,00,00,000 + 90,00,000 + 60,000 + 2000 + 1 =$

(b) 9 crores + 4 ten thousands + 2 thousands

+ 6 hundreds + 2 tens + 8 ones =

(c) 7 ten lakhs + 6 lakhs + 7 ten thousands

+ 4 hundreds + 3 ones =

## INTERNATIONAL PLACE VALUE CHART



According to the Indian place value system, the place value chart is divided into periods and then into places as follows:

Crores		Lakhs		Thousands		Ones		
TC	C	TL	L	T.Th	Th	H	T	O

International place value system is another form of defining place values of the digits in a number.

According to the international place value system, the place value chart is divided into periods and places as follows:

Millions			Thousands			Ones		
HM	TM	M	H.Th	T.Th	Th	H	T	O
Hundred Millions	Ten Millions	Millions	Hundred Thousands	Ten Thousands	Thousands	Hundreds	Tens	Ones

In an international place value system, each period has three places.

**Ones period** – ones, tens and hundreds

**Thousands period** – thousands, ten thousands and hundred thousands

**Millions period** – millions, ten millions and hundred millions

So, fifty lakh and five million are the same but are written differently in the two place value systems.

### International Place Value Chart

Millions			Thousands			Ones		
HM	TM	M	H.Th	T.Th	Th	H	T	O
		5	0	0	0	0	0	0
TC	C	TL	L	T.Th	Th	H	T	O
Crores		Lakhs		Thousands		Ones		



## COMPARISON OF INDIAN AND INTERNATIONAL PLACE VALUE CHARTS

International		Indian
Hundred millions	100000000	Ten crores
Ten millions	10000000	Crores
Millions	1000000	Ten lakhs
Hundred thousands	100000	Lakhs
Ten thousands	10000	Ten thousands
Thousands	1000	Thousands
Hundreds	100	Hundreds
Tens	10	Tens
Ones	1	Ones

Let us write the following numbers in both the systems.

710036574, 180685332 and 726821196

### Indian System

Crores		Lakhs		Thousands		Ones		
TC	C	TL	L	T.Th	Th	H	T	O
7	1	0	0	3	6	5	7	4
1	8	0	6	8	5	3	3	2
7	2	6	8	2	1	1	9	6

### International System

Millions			Thousands			Ones		
HM	TM	M	H.Th	T.Th	Th	H	T	O
7	1	0	0	3	6	5	7	4
1	8	0	6	8	5	3	3	2
7	2	6	8	2	1	1	9	6





## PRACTICE EXERCISE

1.3

- (1) Write the numbers for the following number names. Mark the periods using commas.

Number Name	Number with Commas
(a) Twenty seven million	
(b) Five million forty five thousand eight hundred seventeen	
(c) Twenty million two hundred thousand thirteen	
(d) Seventy four million nine thousand eight hundred fifty five	
(e) Eight million four hundred fifty thousand	
(f) Thirty six million three thousand three	
(g) Three million fifteen thousand seven hundred	
(h) Thirty one million five hundred seventy seven	

- (2) Write the following numbers in words:

(a) 50,050,050

(b) 72,342,987

(c) 7,777,900

(d) 4,700,189

(e) 478,324

(f) 76,000,156

(g) 14,505,222

(h) 28,014,718

(3) Rewrite by using commas according to each of the two place value systems.

Numbers	Indian System	International System
(a) 54367892	<input type="text"/>	<input type="text"/>
(b) 39062381	<input type="text"/>	<input type="text"/>
(c) 12908652	<input type="text"/>	<input type="text"/>
(d) 902371810	<input type="text"/>	<input type="text"/>

## COMPARISON OF NUMBERS

We have already compared five-digit and six-digit numbers in the previous grades. Now we shall compare seven-digit, eight-digit and nine-digit numbers.

### With Different Number of Digits

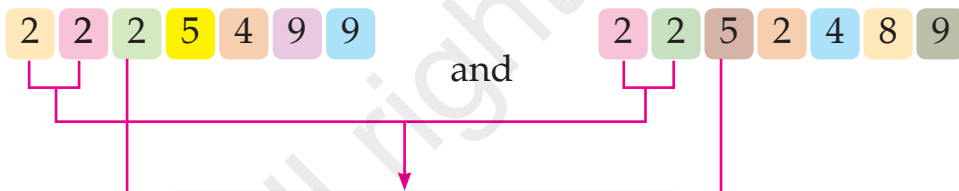
Compare 54,59,391 and 7,13,80,159.

54,59,391	and	7,13,80,159
↓		↓
Seven-digit number		Eight-digit number
Eight-digit number > Seven-digit number		
$7,13,80,159 > 54,59,391$		
The more the number of digits, the bigger the number.		

### With Same Number of Digits

Sana wants to buy a new car. She is comparing the prices of the latest cars in the market. She has shortlisted two cars. The first car costs ₹22,25,499, and the second car costs ₹22,52,489. Which car has a lower cost?

Compare the numbers 22,25,499 and 22,52,489.



The first two digits are the same

The third digits from the left in the two numbers are 2 and 5.

$$2 < 5$$

$$\text{So, } 22,25,499 < 22,52,489$$

Thus, the first car has a lower cost.

## ROUNDING OFF NUMBERS

We have studied rounding off numbers to the nearest tens, hundreds and thousands. Now, because we are studying larger numbers, we shall learn to round off the large numbers to the nearest ten thousands, lakhs, ten lakhs and crores.

Let us consider a nine-digit number and round off the number to the nearest ten thousands, lakhs, ten lakhs and crores.

5 5 0 3 5 4 0 8 1

**Do you remember?**

**Rounding digit:** If a number is to be rounded off to the nearest tens, the rounding digit is the digit at the tens place. If the number is to be rounded off to the nearest hundred, then the rounding digit is the digit at the hundreds place. If the number is to be rounded off to the nearest thousand, then the rounding digit is the digit at the thousands place, and so on.

**Step 1.** Mark the places for all the digits in the given number.

**Step 2.** Identify the rounding digit.

**Step 3.** Check the digit to the right of the rounding digit.

**Step 4.** If it is more than, or equal to 5, then the digits to the right of the rounding digit are changed to 0, and 1 is added to the rounding digit.

**Step 5.** If it is less than 5, then the digits to the right of the rounding digit are changed to 0, and the rounding digit remains the same.


**Round Off to the Nearest Ten Thousands**

55,03,54,081  55,03,50,000

**Round Off to the Nearest Lakhs**

55,03,54,081  55,04,00,000

**Round Off to the Nearest Ten Lakhs**

55,03,54,081  55,00,00,000

**Round Off to Nearest Crores**

55,03,54,081  55,00,00,000





## PRACTICE EXERCISE

1.4

(1) Compare each pair of numbers by using the sign  $<$  or  $>$ .

(a) 2,34,56,789

2,43,78,109

(b) 13,45,87,906

13,45,67,345

(c) 10,02,70,465

1,45,09,307

(d) 90,21,40,302

99,45,12,403

(2) Round off the following numbers:

(a) 34,56,190 to the nearest ten thousand

(b) 67,87,54,345 to the nearest lakh

(c) 45,73,89,234 to the nearest ten lakh

(d) 23,78,90,453 to the nearest crore



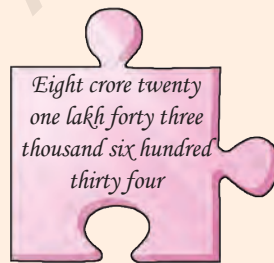
## MATH LAB ACTIVITY

### JIGSAW PUZZLE

**Materials needed:** Tracing paper, coloured sheets, a pair of scissors and white sheet of paper

**Instructions:**

- (1) Trace the given puzzle pieces on a tracing paper.
- (2) Cut them using scissors. Write the numbers and the number names exactly the same way as given here.
- (3) Stick the puzzle pieces on the white sheet of paper, matching the numbers with number names or matching the number with the way it is written in the Indian or international system.



**Weblinks:**

<https://www.youtube.com/watch?v=GPeOUhbQ-wk>

<http://www.commoncoresheets.com/Values.php>

<https://in.ixl.com/math/class-v/compare-numbers>

# MCQs

Tick (✓) the correct answer.

(1) Write the number for the number name twenty five crore three thousand three.

(a) 250003003

(b) 250003030

(c) 250030003

(d) 25003003

(2) What is the place value of 7 in 47,88,09,123?

(a) Seventy crore

(b) seven crore

(c) seventy lakhs

(d) seven lakh

(3) Write the number name for the number 40,000,009.

(a) Four million nine

(b) Four million ninety

(c) Forty million nine

(d) forty million ninety

(4) What is the predecessor of 50,00,00,000?

(a) 49,99,99,999

(b) 49,00,00,000

(c) 50,00,00,001

(d) 51,00,00,000

(5) Round off 19,68,09,245 to the nearest lakhs.

(a) 19,69,00,000

(b) 19,60,00,000

(c) 19,68,00,000

(d) 20,00,00,000





## WORK IT OUT

(1) Write the following numbers in the place value chart given below:

(a) 9,65,34,780

(b) 18,34,26,902

(c) 33,74,675

Crores		Lakhs		Thousands		Ones		
Ten Crores	Crores	Ten Lakhs	Lakhs	Ten Thousands	Thousands	Hundreds	Tens	Ones
TC	C	TL	L	T.Th	Th	H	T	O

(2) Write the following numbers in words:

(a) 4,56,90,203

(b) 21,12,210

(c) 90,78,47,290

(d) 56,132,007

(e) 37,006,765

(3) Write the number for the following number names:

(a) Twenty five million three hundred seventy four thousand one hundred thirteen

(b) Fifty six million

(c) Ninety six million nine hundred eighty nine

(d) Forty million four hundred thousand forty



**(4) Write in the standard form.**

(a)  $40,00,00,000 + 5,00,00,000 + 7000 + 800 + 9 =$

(b)  $2,00,00,000 + 1,00,000 + 3000 + 600 + 8 =$

(c)  $8,00,000 + 20,000 + 400 + 7 =$

**(5) Write in the expanded form.**

(a)  $21,17,900 =$

(b)  $4,67,89,706 =$

(c)  $15,41,91,321 =$

**(6) Write the predecessor and the successor of each number.**

Number	Predecessor	Successor
(a) 56,78,90,324	<input type="text"/>	<input type="text"/>
(b) 2,32,43,179	<input type="text"/>	<input type="text"/>
(c) 13,31,342	<input type="text"/>	<input type="text"/>

**(7) Round off**

(a) 37,24,870 to the nearest ten thousands.

(b) 19,21,89,654 to the nearest lakhs.

(c) 7,68,23,732 to the nearest ten lakhs.

(d) 21,05,70,222 to the nearest crores.

**(8) Compare each pair of numbers.**

(a) 7,09,44,212

7,09,34,320

(b) 17,78,09,234

17,87,09,234

(c) 60,04,70,234

9,67,80,423

(d) 50,34,12,199

67,79,45,124





# Operations on Numbers



## Learning Objectives

- Add large numbers
- Subtract large numbers
- Multiply large numbers
- Divide large numbers



## LET'S RECOLLECT

(1) Add the following:

(a)  $13579 + 27645$

(b)  $675152 + 132765$

(2) Subtract the following:

(a)  $675174 - 372152$

(b)  $245376 - 13247$

(3) Multiply.

(a)  $247 \times 24$

(b)  $97 \times 3$

(c)  $6754 \times 5$

(d)  $1324 \times 14$

(4) Divide.

(a)  $5436 \div 3$

(b)  $735 \div 5$

(5) Estimate the sum and the difference.

(a)  $12467 + 34523$

(b)  $67543 - 15432$

## ADDITION OF LARGE NUMBERS

In the previous grades, we have studied the addition of five-digit and six-digit numbers. We can add seven-digit and eight-digit numbers the same way.

*In a craft exhibition, there were 80,76,308 visitors on the first day, 53,78,453 visitors on the second day and 46,92,045 visitors on the last day. How many visitors attended the craft exhibition on all the three days?*



The number of visitors on the first day = 80,76,308

The number of visitors on the second day = 53,78,453

The number of visitors on the third day = 46,92,045

To find the total number of visitors, we add the number of visitors on all the three days.



### Basic Rule For Addition

Write the numbers in the column form. Start adding from right to left. That is, add the ones, then the tens, then the hundreds and so on.



Take care of the place values of the digits in each of the addends.

	C	TL	L	T.Th	Th	H	T	O
+		<sup>1</sup> 8	<sup>2</sup> 0	<sup>1</sup> 7	6	<sup>1</sup> 3	<sup>1</sup> 0	8
		5	3	7	8	4	5	3
		4	6	9	2	0	4	5
	1	8	1	4	6	8	0	6

So 1,81,46,806 people attended the exhibition on all the three days.

In words, there were *one crore eighty one lakh forty six thousand eight hundred six* visitors at the exhibition on all the three days.

In the similar manner, we can also add eight-digit numbers.

Add: 9,18,95,598 and 8,87,17,670.

	TC	C	TL	L	T.Th	Th	H	T	O
+		<sup>1</sup> 8	<sup>1</sup> 8	<sup>1</sup> 7	<sup>1</sup> 1	<sup>1</sup> 7	<sup>1</sup> 6	7	0
		9	1	8	9	5	5	9	8
	1	8	0	6	1	3	2	6	8



Find the missing digits.

$$\begin{array}{r}
 9 \quad \dots \quad 7 \quad 4 \quad 6 \quad 1 \quad \dots \quad \dots \\
 + \quad \quad 1 \quad \dots \quad \dots \quad 2 \quad \dots \quad 4 \quad 6 \\
 \hline
 9 \quad 7 \quad 2 \quad 5 \quad \dots \quad 3 \quad 9 \quad 1
 \end{array}$$





## PROJECT

Using Internet, find out the air fares for traveling to, and returning from five different countries.

Add the fares and find out the total airfare for each of the five countries. Compare your answers with the students in the class.



## PRACTICE EXERCISE

2.1

(1) Find the sum.

(a)  $5,78,90,403 + 8,45,63,907$  =

(b)  $3,32,00,004 + 67,23,007$  =

(c)  $45,07,86,530 + 20,00,80,004$  =

(d)  $78,04,123 + 21,13,678 + 1,40,03,005$  =

(2) A company made a profit of ₹1,98,56,342 in the first year and ₹2,34,76,524 in the second year. How much total profit did the company make in the two years?

(3) Rehaan bought a car for ₹45,23,600 and a flat for ₹12,32,98,234. How much money did he spend in all?



## SUBTRACTION OF LARGE NUMBERS

We have studied the subtraction of five-digit and six-digit numbers in the previous grade. Seven-digit and eight-digit numbers are subtracted the same way.

*There were 18,33,625 students who registered for the engineering entrance examination. Out of those, only*

*10,89,156 students appeared for the exam. How many students did not appear for the exam?*



Number of students who registered for the exam = 18,33,625

Number of students who appeared for the exam = 10,89,156

To find the number of students who did not appear for the exam, we need to subtract the two numbers.

We have studied the basic rules of subtraction in the previous grades. The same rules are applied to subtract large numbers.



### Basic Rules for Subtraction

- (1) Write the numbers in order in the column form.
- (2) Write the larger number first and the smaller number directly below it.
- (3) Align the number to the right.
- (4) Start subtracting from right to left. That is, first subtract the ones, then the tens, then the hundreds and so on.

Be sure about the place values of the digits before subtracting.



	TC	C	TL	L	T.Th	Th	H	T	O
			1	<del>7</del>	<del>12</del>	<del>13</del>	<del>5</del>	<del>11</del>	<del>15</del>
-			1	0	8	9	1	5	6
				7	4	4	4	6	9

So, the number of students who did not appear for the examination is *seven lakh forty four thousand four hundred sixty nine*.



- (1) What should be added to 37,68,954 to get 43,18,678?
- (2) Find the missing digits.

$$\begin{array}{r} 3 \quad 9 \quad \dots \quad 8 \quad 1 \quad \dots \quad 8 \quad 9 \\ - \quad \dots \quad 9 \quad \dots \quad 8 \quad 7 \quad 8 \quad \dots \\ \hline \dots \quad 2 \quad \dots \quad 6 \quad \dots \quad 5 \quad \dots \quad 5 \end{array}$$

We can also subtract eight-digit numbers using the same rules.

Subtract 5,08,17,720 from 6,07,71,073.

	TC	C	TL	L	T.Th	Th	H	T	O
		<sup>5</sup> ∅	<sup>9</sup> <del>10</del> ∅	<sup>17</sup> ∅	<sup>6</sup> ∅	<sup>10</sup> ∅	<sup>10</sup> ∅	7	3
-		5	0	8	1	7	7	2	0
			9	9	5	3	3	5	3



## PRACTICE EXERCISE

2.2

(1) Subtract:

(a)  $67,16,876 - 54,18,455 =$

(b)  $6,45,23,768 - 2,89,41,908 =$

(c)  $87,32,78,567 - 32,45,67,234 =$

(d)  $8,78,54,235 - 4,69,35,567 =$

(2) Mr Thomas earns ₹15,32,145 per year. If he pays ₹2,30,523 as a loan repayment, How much amount is he left with?

(3) There were 1,24,56,678 fish in an aquarium. Out of those, 12,43,498 fish died because of some disease. How many fish are left now in the aquarium?





## MULTIPLICATION OF LARGE NUMBERS

### Multiplication of Three-Digit Numbers by Three-Digit Numbers

We have already studied the multiplication of a three-digit number by one-digit and two-digit numbers. Let us recall it.

Find the product of the following:

(a)  $245 \times 2$

(b)  $153 \times 12$

(a)

Multiply 2 by the digit at the ones place, then at the tens place and then at the hundreds place of the multiplicand.  
Try to remember the number that is carried over.

	H	T	O
	2	<sup>1</sup> 4	5
×			2
<hr/>			
	4	9	0

(b)

- Multiply the multiplicand by the ones digit of the multiplier .
- Multiply the multiplicand by the tens digit of the multiplier, and add a zero at the end. Write the product below the previous product.
- Add both the products. Make sure the numbers are aligned to the right.

	H	T	O
	1	5	3
×		1	2
<hr/>			
	3	0	6
+	1	5	3
			0
<hr/>			
	1	8	3
			6

Find the product of 243 and 124.

The steps for the multiplication of three-digit numbers by two-digit numbers are extended.

	H	T	O
	2	4	3
×	1	2	4
<hr/>			

Multiply the multiplicand by the ones digit of the multiplier.

	H	T	O
	<sup>1</sup> 2	<sup>1</sup> 4	3
×			4
<hr/>			
	9	7	2



	H	T	O
	2	4	3
×	1	2	4
<hr/>			
	9	7	2
	4	8	6
	0		

Now multiply the multiplicand by the tens digit of the multiplier.

We have 2 in the tens place, so we multiply by 20.

Or multiply by the tens digit of the multiplier and add a zero at the end.

$$243 \times 2 = 486$$

Add a zero at the end.

Write 4860 under 972.

	H	T	O
	2	4	3
×		2	0
<hr/>			
	4	8	6
	0		

	H	T	O
	2	4	3
×	1	2	4
<hr/>			
	9	7	2
	4	8	6
	0		
+	2	4	3
	0		

Multiply the multiplicand by the hundreds digit of the multiplier.

We have 1 in the hundreds place, so we multiply by 100.

Or multiply by the hundreds digit of the multiplier, and add two zeros at the end.

$$243 \times 1 = 243$$

Add two zeros at the end.

Write 24300 under 4860.

	H	T	O
	2	4	3
×	1	0	0
<hr/>			
	2	4	3
	0		
	0		

	H	T	O
	2	4	3
×	1	2	4
<hr/>			
	9	7	2
	4	8	6
	0		
+	2	4	3
	0		
+	2	4	3
	0		
	3	0	1
	3	2	

Now add all three products.

Make sure the numbers are aligned to the right.

### Multiplication of Four-Digit Numbers

We have studied the steps to multiply four-digit numbers by one-digit and two-digit numbers.

We will follow the same steps to multiply four-digit numbers by three-digit numbers and by four-digit numbers.

#### By Three-Digit Numbers

Multiply 4568 by 236.

Here, 4568 is the multiplicand and 236 is the multiplier.

T.Th	Th	H	T	O
	4	5	6	8
×		2	3	6
<hr/>				
	2	7	4	0
				8

The multiplicand is multiplied by the ones digit of the multiplier.

$$(4568 \times 6)$$

TL	L	T.Th	Th	H	T	O
			4	5	6	8
			×	2	3	6
		2	7	4	0	8
1	3	7	0	4	0	0

(4568 × 6)

(4568 × 30)

The multiplicand is multiplied by the tens digit of the multiplier, and a zero is added at the end.

TL	L	T.Th	Th	H	T	O
			4	5	6	8
			×	2	3	6
		2	7	4	0	8
1	3	7	0	4	0	0
9	1	3	6	0	0	0

(4568 × 6)

(4568 × 30)

(4568 × 200)

The multiplicand is multiplied by the hundreds digit of the multiplier, and two zeros are added at the end.

TL	L	T.Th	Th	H	T	O
			4	5	6	8
			×	2	3	6
		<sup>1</sup> 2	<sup>1</sup> 7	4	0	8
	1	3	7	0	4	0
+	9	1	3	6	0	0
1	0	7	8	0	4	8

(4568 × 6)

(4568 × 30)

(4568 × 200)

Add all the products.

### By Four-Digit Numbers

We will follow the same steps to multiply four-digit numbers by four-digit numbers.

Multiply 2375 by 1243.

The steps to multiply by ones, tens and hundreds digit are discussed in the above example.

Now the multiplicand is multiplied by the thousands digit of the multiplier, and three zeros are added at the end.

Here,  $2375 \times 1 = 2375$ , and three zeros are added at the end (23,75,000).

TL	L	T.Th	Th	H	T	O
			2	3	7	5
			×	1	2	4
				7	1	2
		<sup>2</sup> 9	5	0	0	0
	<sup>2</sup> 4	7	5	0	0	0
+	2	3	7	5	0	0
2	9	5	2	1	2	5

(2375 × 3)

(2375 × 40)

(2375 × 200)

(2375 × 1000)

(add all the products)

## Multiplication of Five-Digit Numbers

We have done multiplication for four-digit numbers. Now, let us multiply five-digit numbers.

### By Two-Digit Numbers

A 12-days puja was conducted at a famous temple. Everyday, 43,245 devotees attended the puja. Find the total number of devotees who attended the puja.

Number of devotees on each day = 43,245

Number of days of puja = 12

Total number of devotees who attended the puja is given by the product of 43,245 and 12.



TL	L	T.Th	Th	H	T	O
		4	3	2	4	5
		×			1	2
<hr/>						
		8	6	<sup>1</sup> 4	9	0
+	<sup>1</sup> 4	3	2	4	5	0
<hr/>						
	5	1	8	9	4	0

(43245 × 2)

(43245 × 10)

(add the products)

So, 5,18,940 devotees attended the 12-days puja.

### By Three-Digit Numbers

Multiply 12,324 by 154.

TL	L	T.Th	Th	H	T	O
		1	2	3	2	4
		×		1	5	4
<hr/>						
		<sup>1</sup> 4	9	2	9	6
	6	1	6	2	0	0
+	1	2	3	2	4	0
<hr/>						
	1	8	9	7	8	9

(12324 × 4)

(12324 × 50)

(12324 × 100)

(add the products)





(1) Fill in the blanks with the correct digits.

$$\begin{array}{r}
 \text{(a)} \quad 3 \quad \dots \quad 6 \quad 4 \quad 5 \\
 \quad \quad \quad \quad \quad \times \quad \dots \quad 5 \\
 \hline
 1 \quad \dots \quad 8 \quad 2 \quad 2 \quad \dots \\
 + 3 \quad 5 \quad \dots \quad 4 \quad 5 \quad 0 \\
 \hline
 \dots \quad 3 \quad 4 \quad \dots \quad 7 \quad \dots
 \end{array}$$

(2) Fill in the blanks with the correct digits.

$$\begin{array}{r}
 \text{(b)} \quad \quad 2 \quad \dots \quad 6 \quad 4 \quad 5 \\
 \quad \quad \quad \quad \times \quad 1 \quad \dots \quad 4 \\
 \hline
 \quad \quad 1 \quad \dots \quad 0 \quad 5 \quad 8 \quad 0 \\
 \quad \quad \dots \quad 5 \quad 2 \quad \dots \quad 0 \quad 0 \\
 + 2 \quad \dots \quad 6 \quad 4 \quad \dots \quad 0 \quad 0 \\
 \hline
 3 \quad 4 \quad \dots \quad 7 \quad 9 \quad \dots \quad \dots
 \end{array}$$



## PRACTICE EXERCISE

2.3

(1) Multiply.

(a)  $56,704 \times 39$

(b)  $13,098 \times 12$

(c)  $43,219 \times 7$

(d)  $31,289 \times 9$

(e)  $213 \times 105$

(f)  $145 \times 205$

(g)  $8756 \times 136$

(h)  $1563 \times 245$

(i)  $47,861 \times 326$

(j)  $80,009 \times 405$

(k)  $3476 \times 2987$

(l)  $2365 \times 9837$

(2) Find the product.

(a)  $6,78,954 \times 1$

(b)  $1,34,079 \times 10$

(c)  $17,864 \times 1 \times 0$

(d)  $1,27,865 \times 100$

(3) Using suitable grouping, find the product.

(a)  $4 \times 329 \times 25$

(b)  $5 \times 145 \times 20$

(c)  $8 \times 234 \times 125$

(d)  $5 \times 4562 \times 2$

(e)  $2 \times 4897 \times 500$

(f)  $4 \times 5632 \times 125$

(4) There are 5467 apartments in a society. Each apartment pays ₹525 for maintenance per month. How much amount is collected every month for maintenance?



(5) The cost of one LCD TV is ₹67,890. What is the cost of 24 such LCD TVs?



## DIVISION OF LARGE NUMBERS

We have studied the steps for dividing large numbers by one-digit and two-digit numbers in the last grade. We follow the same steps for dividing large numbers by four-digit numbers. Let us try some examples.

### Dividing Five-Digit Numbers

#### By Two-Digit Number

A toy factory produces 23,424 toys in 24 months. How many toys does it produce in 1 month?

Let us find out.



Whenever we have to find something for 1, we have to divide.

We want to find the number of toys produced by the company in 1 month. So, we divide 23,424 by 24 through long division.

$$\begin{array}{r} 976 \\ 24 \overline{) 23424} \\ \underline{- 216} \phantom{0} \\ 182 \\ \underline{- 168} \\ 144 \\ \underline{- 144} \\ 0 \end{array}$$

**Step 1:** Since,  $23 < 24$ . So it cannot be divided by 24. So divide 234 by 24.

$24 \times 9 = 216$ , which is just smaller than 234.

Write 9 in the hundreds place of quotient and 216 under 234.

**Subtract:**  $234 - 216 = 18$ , which is the 1st remainder.

**Step 2:** Bring down 2.

Now, we divide 182 by 24.

$24 \times 7 = 168$ , which is just smaller than 182.

Write 7 in the tens place of quotient and 168 under 182.

**Subtract:**  $182 - 168 = 14$ , which is second remainder.

**Step 3:** Bring down 4.

Now we divide 144 by 24.

$24 \times 6 = 144$ , which is equal to 144.

Write 6 in the ones place of quotient and 144 under 144.

**Subtract:**  $144 - 144 = 0$  which is the final remainder.

$\therefore$  Quotient = 976

Remainder = 0

## By Three-Digit Number

Divide 46128 by 143.

$$\begin{array}{r} 322 \\ 143 \overline{) 46128} \\ \underline{- 429} \phantom{0} \\ 322 \\ \underline{- 286} \\ 368 \\ \underline{- 286} \\ 82 \end{array}$$

$143 \times 3 = 429 < 461$ , 3 is written at the hundreds place of the quotient.

$143 \times 2 = 286 < 322$ , 2 is written at the tens place of the quotient.

$143 \times 2 = 286 < 368$ , 2 is written at the ones place of the quotient.

$\therefore$  Quotient = 322  
Remainder = 82



## PRACTICE EXERCISE

2.4

(1) Find the quotient and the remainder. Check your division.

(a)  $46,732 \div 7$

(b)  $67,453 \div 9$

(c)  $89,336 \div 8$

(d)  $75,432 \div 6$

(e)  $39,876 \div 21$

(f)  $98,076 \div 32$

(g)  $65,408 \div 56$

(h)  $23,520 \div 24$

(i)  $9087 \div 459$

(j)  $5678 \div 234$

(k)  $1345 \div 178$

(l)  $8892 \div 342$

(2) A total of 76,516 bags of rice are loaded onto trucks. If one truck can carry 74 bags, then how many trucks are needed to carry 76,516 bags?

(3) There are 34 crayons in one box. How many boxes are required to pack 89,658 crayons?



## MATH LAB ACTIVITY

**Materials needed:** Number cards(0-9), rough sheet for calculations.

**Instructions:** (1) Work in pairs. Mix the set of your number cards with your partner's set of cards. Shuffle them well and choose seven cards each.

(2) Make the largest and the smallest seven-digit number from the set of cards chosen and find the difference of the two numbers made. The student who has less difference wins. Play by choosing five different sets of cards, by making five-digit, six-digit, eight-digit and nine-digit numbers.



## LEARNING BEYOND

### Lattice Multiplication

Lattice multiplication is a method of multiplying by using a grid. It is a very interesting way of doing multiplication by breaking up the process of multiplication into small steps and small numbers.

Let us multiply 235 by 132 through lattice multiplication.

As the multiplicand and the multiplier are both three-digit numbers, we need to make a  $3 \times 3$  square, that is, a square divided into 9 parts such as the one in the illustration, and divide each sub-square into two triangles.

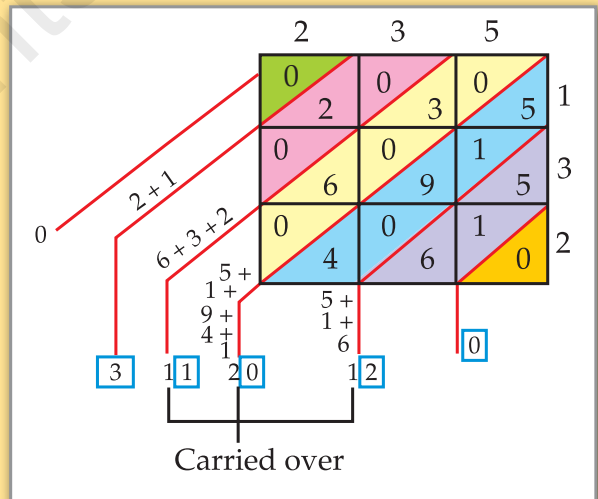
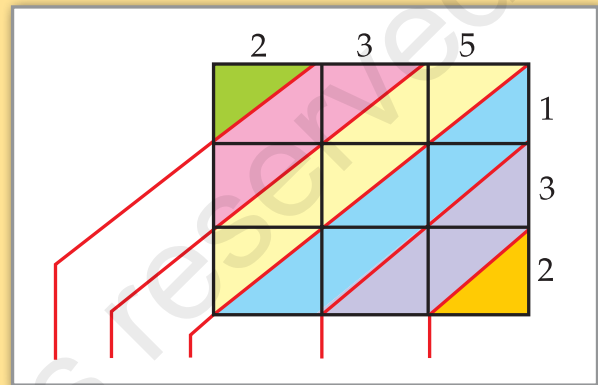
Follow the steps below.

**Step 1:** Write the multiplicand, that is, 235, at the top of the square, each number above each column.

**Step 2:** Write the multiplier, that is, 132 on the right vertical side of the square as illustrated, one number beside one row.

**Step 3:** Multiply each digit of the multiplicand with each digit of the multiplier one by one.

**Step 4:** The product can be now obtained by adding the numbers between the diagonals starting from the extreme right. The product is 31,020 (marked by blue boxes).



### Weblinks:

<https://in.ixl.com/math/class-v/add-and-subtract-whole-numbers-word-problems>

<https://in.ixl.com/math/class-v/multiply-2-digit-numbers-by-larger-numbers>

[http://www.math-drills.com/division/division\\_long\\_steps\\_2dd5dd\\_r\\_001.pdf](http://www.math-drills.com/division/division_long_steps_2dd5dd_r_001.pdf)



# MCQs

Tick (✓) the correct answer.

(1) Find the product of the greatest four-digit number and the smallest three-digit number.

(a) 1,00,00,000

(b) 10,00,000

(c) 99,99,000

(d) 9,99,900

(2) Find a number that exceeds 3,45,67,239 by 10,00,000.

(a) 3,55,67,239

(b) 4,45,67,239

(c) 3,45,77,239

(d) 33,56,739

(3) Find the quotient and the remainder:  $6,00,02 \div 2$ .

(a) Quotient = 30,000  
Remainder = 1

(b) Quotient = 30,001  
Remainder = 0

(c) Quotient = 20,003  
Remainder = 3

(d) Quotient = 20,003  
Remainder = 1

(4) Multiply  $8 \times 543 \times 125$ .

(a) 8,000

(b) 10,86,000

(c) 5,43,000

(d) 2,71,500

(5) By how much is 20 lakh less than 40,34,009?

(a) 20,34,009

(b) 20,00,000

(c) 34,20,009

(d) 38,34,009





## WORK IT OUT

(1) Solve the following:

(a)  $2,34,65,908 + 4,54,78,564$  =

(b)  $90,87,654 + 32,78,234$  =

(c)  $3,90,67,451 - 2,56,45,321$  =

(d)  $23,07,08,009 - 21,08,07,007$  =

(2) Multiply the following:

(a)  $54,908 \times 3$

(b)  $345 \times 897$

(c)  $4325 \times 675$

(d)  $2378 \times 43$

(e)  $32,876 \times 232$

(3) Find the quotient and the remainder.

(a)  $3247 \div 564$

(b)  $23,476 \div 8$

(c)  $92,453 \div 23$

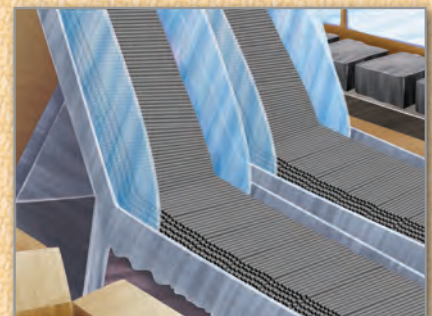
(d)  $53,212 \div 34$

(4) Find the product of the smallest five-digit number and the greatest two-digit number.

(5) Mr Smith sells 78,903 spools of sewing threads every month. How many spools does he sell in 3 years?



(6) A factory produced 1,23,45,678 pencil leads in the month of March and 3,32,78,654 in the month of April. How many pencil leads were produced in both the months?





- (7) A number exceeds 2,76,34,344 by 45,60,981. What is the number?
- (8) A total of 34,56,786 kg of nuts are imported. Out of this, 12,34,765 kg are almonds, 7,64,231 kg are cashews, and the rest are walnuts. What is the quantity of walnuts that are imported?



- (9) In a tray 72 eggs can be packed. How many trays are needed to pack 54,648 eggs? How many eggs will be left unpacked?







# Factors and Multiples



## Learning Objectives

- Understand tests of divisibility for 4, 6, 7, 8 and 11
- Describe prime and composite numbers
- Understand prime factorisation
- Understand the highest common factor (HCF)
- Understand the lowest common multiple (LCM)



## LET'S RECOLLECT

- (1) Find the factors using multiplication/division.  
(a) 42 (b) 21
- (2) Find factors using prime factorisation.  
(a) 54 (b) 24
- (3) Draw the factor tree for the following:  
(a) 12 (b) 15
- (4) Check the divisibility of 342 by 2, 3, 5 and 10.



## REMEMBER

- When a number is divided by its factors, the remainder is zero.
- A factor of a number is smaller than or equal to the number.
- 1 is the factor of every number.
- Every number is a factor of itself.
- A number has only a limited number of factors.
- The factor tree is a diagram that shows the factors of a number. These factors are further broken up into factors until they cannot be further broken up.
- If a number has 0 at the ones place, then we say that the number is divisible by 10.
- A number is divisible by 5 if it has 0 or 5 at its ones place.
- A number is said to be divisible by 3 if the sum of the digits of the number is divisible by 3.
- A number is said to be divisible by 9 if the sum of the digits of the number is divisible by 9.
- A number is divisible by 2 if it has 0, 2, 4, 6 or 8 at its ones place.
- Every number is a multiple of 1 and itself.
- The multiples of a number are greater than or equal to the number.



## **Divisibility Tests**

We have studied the divisibility tests for 2, 3, 5, 9 and 10. In this chapter we shall study the divisibility tests for 4, 6 and 11.

### **Divisibility Test For 4**

Check the numbers below for their divisibility by 4.

2344, 9,64,636, and 1,23,584

It will take time to divide these large numbers by 4. We can instead follow the divisibility rule for 4.



A number is said to be divisible by 4 if the number made by the last two digits of the number is divisible by 4 or the number ends in 00.

23(44)

	1	1
4	4	4
-	4	
	0	4
	-	4
		0

2344 is divisible by 4

9646(36)

		9
4	3	6
-	3	6
		0

9,64,636 is divisible by 4

1235(84)

	2	1
4	8	4
-	8	
	0	4
	-	4
		0

1,23,584 is divisible by 4

### **Divisibility Test For 6**

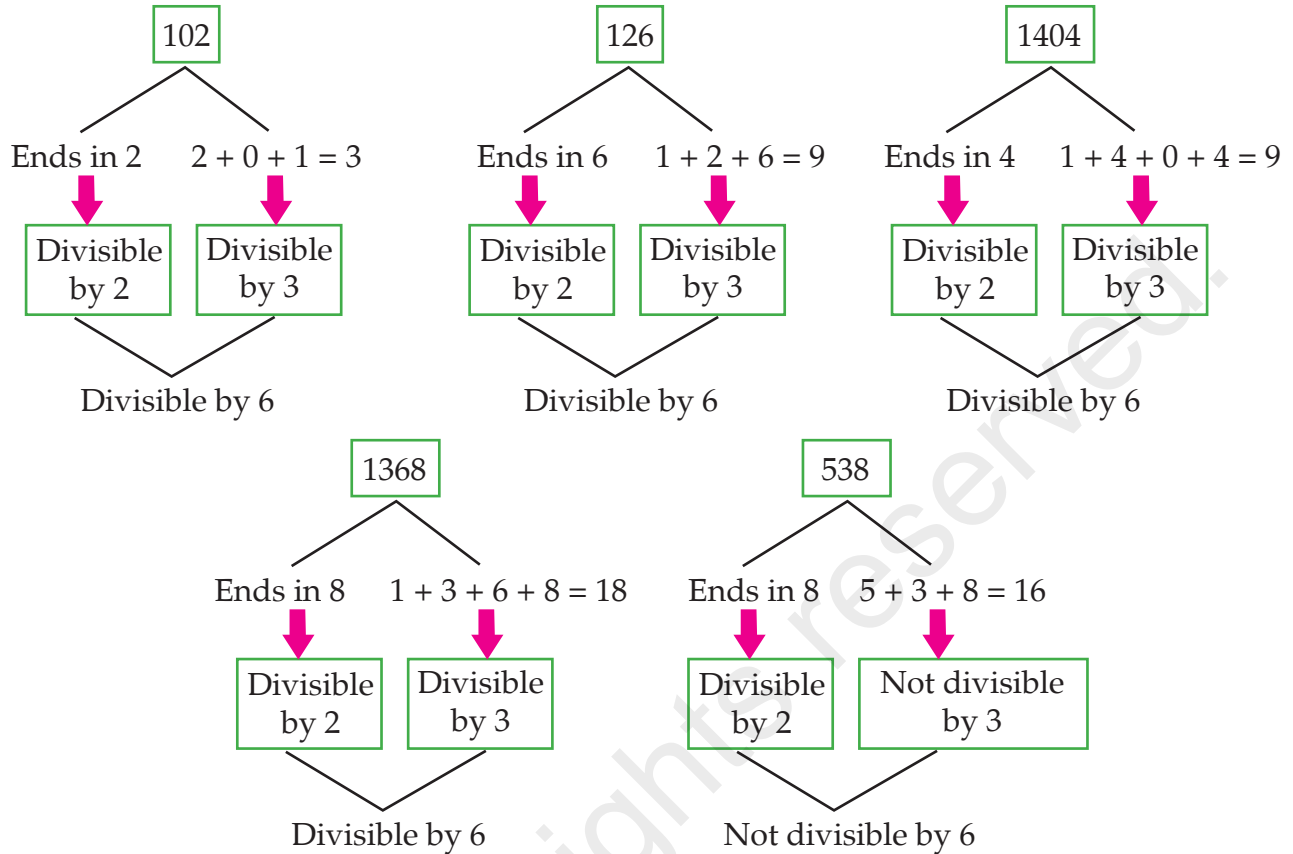
We know  $2 \times 3 = 6$ .



A number is said to be divisible by 6 if the number is divisible by both 2 and 3.

Let us test some numbers

102, 126, 1404, 1368 and 538



Hence, we can say that 102, 126, 1404 and 1368 are divisible by 6 as they are divisible by both 2 and 3.

538 is not divisible by 6 as it is divisible by 2 but not divisible by 3.

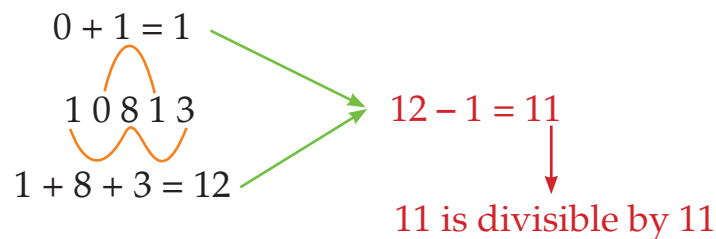
### Divisibility Test For 11



If the difference of the sums of the alternate digits of a number is either 0 or divisible by 11, then the number is divisible by 11.

Let us take a number to check its divisibility by 11.

10,813



So, 10,813 is divisible by 11.

## Enrichment

**Divisibility by 7:** If the last digit of a number is doubled and subtracted from the remaining number, that is, number without the last digit and the answer is 0 or divisible by 7, then the number is divisible by 7.

Check for the divisibility of 1372 by 7.

The last digit of the number 1372 is 2.

The double of 2 is 4 and  $137 - 4 = 133$ .

Now, 133 is divisible by 7 ( $133 \div 7 = 19$ ).

Thus, 1372 is divisible by 7.

**Divisibility by 8:** If the number made by the last three digits of a number is divisible by 8, then the number is divisible by 8.

Check for the divisibility of 1432 by 8.

The number made by the last three digits of 1432 is 432.

432 is divisible by 8.

Thus, 1432 is divisible by 8.

$$\begin{array}{r} 54 \\ 5 \overline{) 432} \\ \underline{-40} \phantom{0} \\ 32 \\ \underline{-32} \\ 0 \end{array}$$



## PRACTICE EXERCISE

3.1

(1) Colour those numbers that are divisible by 4 purple?

(a) 3524			(b) 9842	
(c) 21,792		(d) 9064		(e) 16,582

(2) Colour those numbers that are divisible by 6 pink?

(a) 59,426			(b) 30,957	
(c) 24,516		(d) 13,854		(e) 36,594



(3) Colour those numbers that are divisible by 8 green?

(a) 25,192			(b) 34,361	
		(c) 56,776		
(d) 3248			(e) 9457	

(4) Colour those numbers that are divisible by 11 red?

(a) 1,37,654			(b) 2,41,960	
		(c) 32,626		
(d) 9,41,052			(e) 95,876	

## PRIME AND COMPOSITE NUMBERS

*Prime numbers* are the numbers that can only be divided by themselves and the number 1, for example 2, 3, 5, 7, 11 and so on.

*Composite numbers* are numbers that can be divided by numbers other than 1 and themselves, for example 4, 8, 10, 12 and so on.

A prime number is a number with exactly two divisors, itself and 1.

1 has only one divisor. It cannot be written as a product of two factors, neither of which is the number itself. So 1 is also not composite. It falls in a class of numbers called *units*.



1 is neither a prime nor a composite number.

## Prime Numbers Between 1 to 100

The famous mathematician Eratosthenes from Greece devised a sieve to describe prime numbers.

A utensil consisting of a wire or plastic mesh held in a frame used for separating coarser from finer particles.

In the Sieve of Eratosthenes, composite numbers are drained out leaving prime numbers behind.

Let us see how we do it.

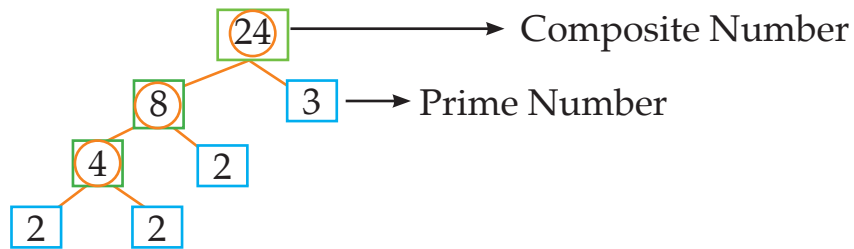
<del>1</del>	2	3	<del>4</del>	5	<del>6</del>	7	<del>8</del>	<del>9</del>	<del>10</del>
11	<del>12</del>	13	<del>14</del>	<del>15</del>	<del>16</del>	17	<del>18</del>	19	<del>20</del>
<del>21</del>	<del>22</del>	23	<del>24</del>	<del>25</del>	<del>26</del>	<del>27</del>	<del>28</del>	29	<del>30</del>
31	<del>32</del>	<del>33</del>	<del>34</del>	<del>35</del>	<del>36</del>	37	<del>38</del>	<del>39</del>	<del>40</del>
41	<del>42</del>	43	<del>44</del>	<del>45</del>	<del>46</del>	47	<del>48</del>	<del>49</del>	<del>50</del>
<del>51</del>	<del>52</del>	53	<del>54</del>	<del>55</del>	<del>56</del>	<del>57</del>	<del>58</del>	59	<del>60</del>
61	<del>62</del>	<del>63</del>	<del>64</del>	<del>65</del>	<del>66</del>	67	<del>68</del>	<del>69</del>	<del>70</del>
71	<del>72</del>	73	<del>74</del>	<del>75</del>	<del>76</del>	<del>77</del>	<del>78</del>	79	<del>80</del>
<del>81</del>	<del>82</del>	83	<del>84</del>	<del>85</del>	<del>86</del>	<del>87</del>	<del>88</del>	89	<del>90</del>
<del>91</del>	<del>92</del>	<del>93</del>	<del>94</del>	<del>95</del>	<del>96</del>	97	<del>98</del>	<del>99</del>	<del>100</del>

- (1) Cross out 1 because it is not prime.
- (2) Colour the box with the number 2, because it is the smallest even prime. Now cross out every multiple of 2; in other words, cross out every second number after 2.
- (3) Colour the box with the number 3, the next prime. Then cross out all the multiples of 3; in other words, every third number after 3. Some numbers, such as 6, may have already been crossed out because they are multiples of 2.
- (4) Colour the box with the number 5. Now cross out all the multiples of 5 or every fifth number after 5.

Continue doing this until all the numbers up to 100 have either been coloured or crossed out. You have just coloured all the prime numbers from 1 to 100.

## PRIME FACTORISATION

We have studied the factor tree earlier.



All composite numbers can be expressed as the product of their factors. When the factors of a number are prime, we call it prime factorisation of the number.

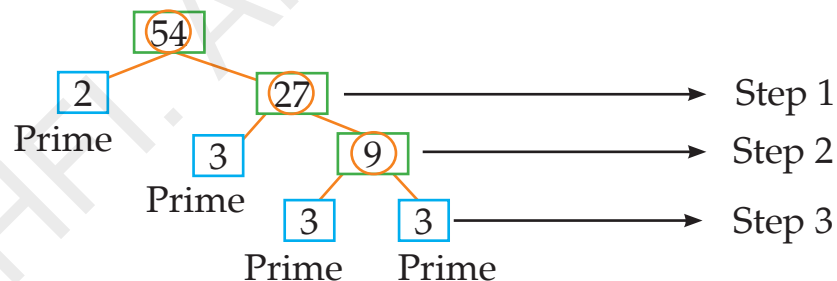
There are two methods of prime factorisation:

- (a) The factor tree method
- (b) The division method

### Factor Tree Method

We already know how to find factors of a composite number using the factor tree method.

Let us factorise 54.



**Step 1:** Divide 54 by the smallest prime. 54 can be divided by 2 and 3. Out of those, 2 is the smallest, so we shall divide 54 by 2.

$$54 = 2 \times (27), \text{ and } 27 \text{ is composite.}$$

**Step 2:** Now divide 27 by the smallest prime. Here  $27 = 3 \times (9)$ , and 9 is composite.



**Step 3:** Now divide 9 by the smallest prime,  $9 = 3 \times 3$ . 3 is a prime. Hence we have to stop here as 3 cannot be further divided.  
So, the prime factorisation of 54 is  $2 \times 3 \times 3 \times 3$ .

### Division Method

In this method also, we start by dividing the number by the smallest prime number and continue doing that until we reach 1.

Let us factorise 42.

2	42	( $42 = 2 \times 21$ )
3	21	( $21 = 3 \times 7$ )
7	7	
	1	

The prime factorisation of 42 is  $2 \times 3 \times 7$ .



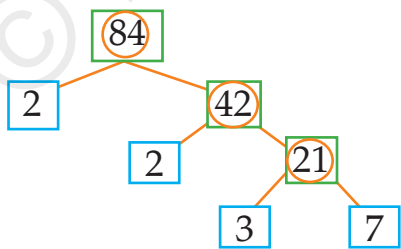
## SOME EXAMPLES

Classify the following numbers as prime or composite numbers:

- (a) 59 – Prime
- (b) 65 – Composite (as  $13 \times 5 = 65$ )
- (c) 7 – Prime
- (d) 14 – Composite (as  $7 \times 2 = 14$ )
- (e) 9 – Composite (as  $3 \times 3 = 9$ )

Find the prime factors of 84 using prime factorisation method.

**By the factor tree method**



Thus, the prime factors of 84 are 2, 3 and 7.

**By the division method**

2	84
2	42
3	21
7	7
	1



## PRACTICE EXERCISE

3.2

(1) Separate the prime and composite numbers, and write them in the bubbles below.

- (a) 15      (b) 19      (c) 23      (d) 37      (e) 45  
(f) 51      (g) 63      (h) 77      (i) 83      (j) 91  
(k) 119      (l) 95      (m) 103      (n) 78      (o) 13

Prime Numbers

Composite Numbers



(2) Write the prime numbers between

(a) 7 and 21.

(b) 23 and 43.

(c) 81 and 99.

(d) 67 and 88.

(3) Find the prime factors (using prime factorisation method) of the following numbers:

(a) 90

(b) 32

(c) 65

(d) 117

## HIGHEST COMMON FACTOR (HCF)

Factors of 42 are 1,2,3,6,7,14,21, and 42

Factors of 48 are 1,2,3,4,6,8,12,16,24 and 48

Common factors of 42 and 48 are 1,2,3 and 6. Of these, 6 is the highest.

So, 6 is the highest common factor (HCF) of 42 and 48.



The greatest number that divides any two given numbers is the HCF of the two numbers.

## METHOD OF FINDING HCF

### Short Division Method

Let us find the HCF of 28 and 42 by the short division method.

**Step 1:** Find the smallest prime number that divides both the numbers.

**Step 2:** Divide both the numbers by the prime number found in step 1, and write the respective quotients below the numbers. Here in step 2. In this  $28 \div 2 = 14$  and  $42 \div 2 = 21$ .

**Step 3:** Find the smallest prime number that divides the quotients obtained case, they are 14 and 21. Divide both the quotients by the prime number, that is, divide 14 and 21. Divide by 7.

**Step 4:** Repeat step 3 until there is no prime number that divides both the quotients obtained.

**Step 5:** Multiply all the divisors to get the HCF of the numbers.

Thus, HCF of 28 and 42 is 14 ( $= 2 \times 7$ ).

### Prime Factorisation Method

We have studied prime factorisation earlier in the chapter. For finding the HCF by prime factorisation, we find the prime factors of the given numbers separately and then find the common factors.

2	28, 42
7	14, 21
	2, 3



Let us find the HCF of 24, 32 and 48.

2	24
2	12
2	6
3	3
	1

2	32
2	16
2	8
2	4
2	2
	1

2	48
2	24
2	12
2	6
3	3
	1

The prime factorisation of

$$24 = 2 \times 2 \times 2 \times 3$$

$$32 = 2 \times 2 \times 2 \times 2 \times 2$$

$$48 = 2 \times 2 \times 2 \times 2 \times 3$$

So, the common prime factors of 24, 32 and 48 is 2.



The HCF of two or more numbers is given by the product of the common prime factors.

Hence, the HCF of 24, 32 and 48 is  $8 (= 2 \times 2 \times 2)$ .

### Long Division Method

Let us find the HCF of 81 and 513 by the long division method.

In this method, we need to follow a few steps.

**STEP 1:** Divide the bigger number by the smaller number.

Bigger number = Dividend = 513

Smaller number = Divisor = 81

**STEP 2:** Now, the remainder, which is 27, will be the new divisor, and 81, which is the divisor of the previous step, will be the new dividend.

**STEP 3:** Continue with this process until you get zero as the remainder.

81	513	6	
-	486		
	27	81	3
	-	81	
		0	

So, the HCF of 513 and 81 is 27.



## SOME EXAMPLES

Find the HCF of 48 and 56.

### Prime factorisation

2	48
2	24
2	12
2	6
3	3
	1

2	56
2	28
2	14
7	7
	1

$$48 = 2 \times 2 \times 2 \times 2 \times 3$$
$$56 = 2 \times 2 \times 2 \times 7$$

$$\text{HCF} = 2 \times 2 \times 2 = 8$$

So, the HCF of 48 and 56 is 8.

### Short division

2	48, 56
2	24, 28
2	12, 14
	6, 7

$$\text{HCF} = 2 \times 2 \times 2$$
$$= 8$$

### Long division

48	56	1	
-48			
	8	48	6
	-48		
			0

$$\text{HCF} = 8$$



## PRACTICE EXERCISE

3.3

- Find the HCF by the short division method.
  - 12 and 42
  - 28 and 72
  - 13 and 39
  - 14 and 58
- Find the HCF by the long division method.
  - 7 and 59
  - 18 and 45
  - 19 and 97
  - 14 and 46
- Find the HCF by the prime factorisation method.
  - 108 and 110
  - 45 and 100
  - 48 and 98
  - 34 and 65

## Lowest Common Multiple or LCM

We know how to find the common multiples of two numbers.

*Example:* The multiples of 4 are 4, 8, 12, 16, 20, 24, 28, 32, ...

The multiples of 8 are 8, 16, 24, 32, ...

We can see here that the common multiples of 4 and 8 are 8, 16, 24, 32, ...

The lowest multiple out of these common multiples is 8.

So, 8 is the *lowest common multiple* or LCM of 4 and 8.

## Method of Finding LCM

### Prime Factorisation Method

Let us find the LCM of 24 and 56.

First, we find the factors of both the numbers by prime factorisation.



The smallest number that can be divided by two numbers is called the lowest common multiple of the numbers.

2	24
2	12
2	6
3	3
	1

2	56
2	28
2	14
7	7
	1

Prime factorisation of

$$24 = 2 \times 2 \times 2 \times 3 \quad \text{and}$$

$$56 = 2 \times 2 \times 2 \times 7$$



The LCM of two or more numbers is the product of common and non-common factors, with the common factor taken only once.

Here the common factor is 2, the non-common factors are 3 and 7.

So,

$$\text{LCM} = 2 \times 2 \times 2 \times 3 \times 7 = 168$$



## Common Division Method

Let us find the LCM of 14 and 42 by the method of common division.

We have to follow the steps below.

**Step 1:** Divide the two given numbers by the smallest prime number that can divide at least two of the numbers.

In case a number cannot be divided by the prime number, it is brought down as it is.

**Step 2:** Continue with the process until all the numbers become 1.

**Step 3:** LCM = Product of all the divisors.

2	14, 42	→ (Divide 14 and 42 by 2.)
7	7, 21	→ (Divide 7 and 21 by 7.)
3	1, 3	→ (1 cannot be divided by 3, so 1 is brought down and 3 is divided by 3.)
	1, 1	

$$\text{LCM} = 2 \times 7 \times 3 = 42$$

Find the LCM of 27 and 81 by prime factorisation and common division method.

### Prime factorisation

3	27
3	9
3	3
	1

3	81
3	27
3	9
3	3
	1

Prime factorisation of

$$27 = 3 \times 3 \times 3$$

$$81 = 3 \times 3 \times 3 \times 3$$

$$\text{LCM} = 3 \times 3 \times 3 \times 3 = 81$$

So, the LCM of 27 and 81 is 81.

### Common division method

3	27, 81
3	9, 27
3	3, 9
3	1, 3
	1, 1

$$\text{LCM} = 3 \times 3 \times 3 \times 3 = 81$$



## SOME EXAMPLES

Find the LCM of 36 and 40 by the prime factorisation and division methods.

### Prime factorisation

2	36	2	40
2	18	2	20
3	9	2	10
3	3	5	5
	1		1

### Common division method

2	36, 40
2	18, 20
2	9, 10
3	9, 5
3	3, 5
5	1, 5
	1, 1

$$36 = 2 \times 2 \times 3 \times 3$$

$$40 = 2 \times 2 \times 2 \times 5$$

$$\text{LCM} = 2 \times 2 \times 2 \times 3 \times 3 \times 5 = 360$$

Thus, LCM of 36 and 40 is 360.

$$\text{LCM} = 2 \times 2 \times 2 \times 3 \times 3 \times 5$$

$$= 360$$



## PRACTICE EXERCISE

3.4

- Find the LCM by the prime factorisation method.
  - 12 and 33
  - 16 and 34
  - 15 and 45
  - 16 and 72
- Find the LCM by the common division method.
  - 17 and 51
  - 16 and 20
  - 32 and 36
  - 40 and 44

### Weblinks:

[http://www.softschools.com/math/division/worksheets/divisibility\\_rules\\_worksheets/](http://www.softschools.com/math/division/worksheets/divisibility_rules_worksheets/)



## FUN ACTIVITY

### FACTOR BALL!

**Materials needed:** paper, pen, balls numbered 0 to 9 (ping pong balls can be given numbers using a marker), a bowl to keep pieces of paper, a big bucket to keep the balls and three small buckets

#### Instructions:

- (1) Three student can play this game at a time.
  - (2) Tear small pieces from the paper, and write numbers that have factors other than 1, that is, composite numbers, on them. Fold the pieces and put them in the bowl on the table.
  - (3) Beside the bowl, put the three small buckets numbered 1, 2 and 3 in a row on the table. At a horizontal distance from the table, put the big bucket full of balls numbered 0 to 9.
  - (4) Choose any three students and assign them the three small buckets. All the three students pick up a piece of paper from the bowl. Then they find the factors by prime factorisation of the number they have got. For example, if student 1 picks up 24, he or she needs to find the prime factors of 24, which that are 2, 2, 2 and 3.
  - (5) The students run towards the big bucket full of balls. They pick a ball numbered with the factor of the number on the piece of paper. For example, student 1 can pick up 2 or 3. The students should pick only one ball at a time.
  - (6) Now they come back and put the ball in the small buckets.
  - (7) They again go back and bring the ball numbered with the other factor. They need to collect as many 2s as there are in the prime factorisation. The students have to collect four balls in the small bucket (three balls numbered 2 and one ball numbered 3).
- The one who collects the factor balls first wins the game.





# MCQs

Tick the (✓) correct answer.

(1) Which of the following is the least prime number?

(a) 0

(b) 1

(c) 2

(d) 3

(2) Which of the following is the greatest prime number less than 23?

(a) 19

(b) 21

(c) 23

(d) 17

(3) Which of the following is the prime factorisation of 78?

(a)  $2 \times 39$

(b)  $6 \times 13$

(c)  $1 \times 2 \times 3 \times 13$

(d)  $2 \times 3 \times 13$

(4) What is the LCM of 7 and 5?

(a) 12

(b) 5

(c) 35

(d) 7

(5) Find the HCF of 3 and 5.

(a) 1

(b) 3

(c) 5

(d) 2





## WORK IT OUT

(1) Which of the following are divisible by 4, 6, 8 and 11?

- |            |            |
|------------|------------|
| (a) 23,544 | (b) 89,776 |
| (c) 6259   | (d) 3664   |
| (e) 52,380 | (f) 32,460 |

Divisible by 4	Divisible by 6	Divisible by 8	Divisible by 11

(2) List all the prime numbers between 10 and 60.

(3) Write the composite numbers between

- |               |                |                |                |
|---------------|----------------|----------------|----------------|
| (a) 7 and 15. | (b) 21 and 27. | (c) 34 and 45. | (d) 50 and 57. |
|---------------|----------------|----------------|----------------|

(4) Find the prime factors (using prime factorisation method) of the following numbers:

- |        |        |        |        |
|--------|--------|--------|--------|
| (a) 54 | (b) 44 | (c) 89 | (d) 90 |
|--------|--------|--------|--------|

(5) Find the HCF by the short division method.

- |               |               |
|---------------|---------------|
| (a) 35 and 38 | (b) 16 and 60 |
|---------------|---------------|

(6) Find the HCF by the long division method.

- |               |               |
|---------------|---------------|
| (a) 18 and 33 | (b) 24 and 42 |
|---------------|---------------|

(7) Find the HCF by the prime factorisation method.

- |               |                |
|---------------|----------------|
| (a) 81 and 99 | (b) 78 and 143 |
|---------------|----------------|

(8) Find the LCM by the prime factorisation method.

- |               |               |
|---------------|---------------|
| (a) 72 and 40 | (b) 50 and 85 |
|---------------|---------------|

(9) Find the LCM by the division method.

- |               |               |
|---------------|---------------|
| (a) 18 and 30 | (b) 21 and 49 |
|---------------|---------------|







# Science

CLASS-5 ♦ SEMESTER-I

1.	Growing New Plants	238
2.	Adaptation and Survival of Animals	250
3.	Food and Health	260
4.	Safety and First Aid	272
5.	Rocks and Minerals	282
6.	Solutions	295
7.	Changes Around Us	303
8.	Processing of Water	310





# Growing New Plants

Chapter

1

## We Will Explore

- » Growing plants
- » Seed
- » Agriculture

Look at the pictures below. You can see some seeds of different colours, shapes and sizes.

Identify the seeds, and write the names of the seeds you know, in the space provided.



Everyday we eat different types of seeds in the form of cereals, pulses, vegetables, nuts and spices.

We have studied that new plants can grow from seeds.

Do plants grow only from seeds?

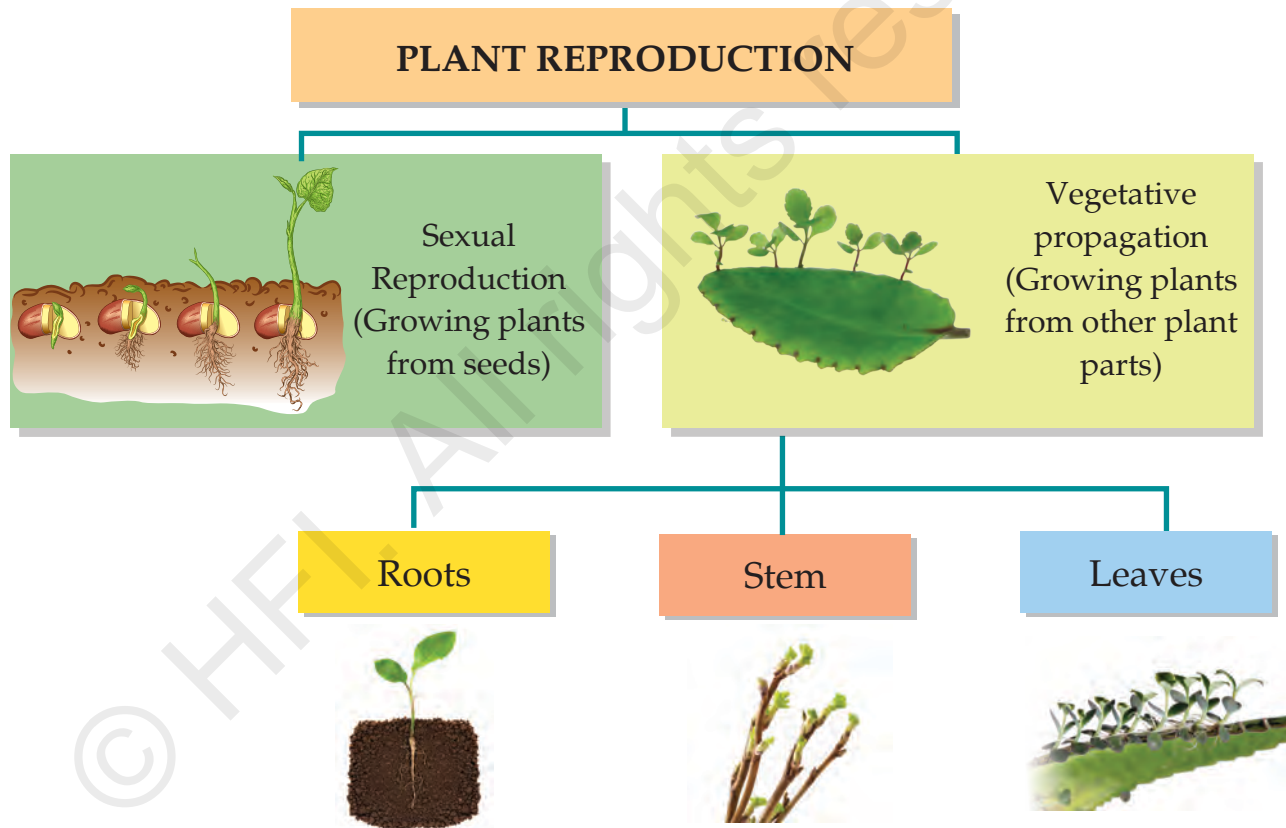
## Growing Plants

Plants grow not only from seeds but also from other parts of the plant such as stems, roots, leaves and spores.

The process of production of new plants is called plant reproduction.

Reproduction in plants can be broadly categorised into two types.

- (1) Sexual reproduction
- (2) Vegetative propagation



## SEXUAL REPRODUCTION

### Growing plants from seeds

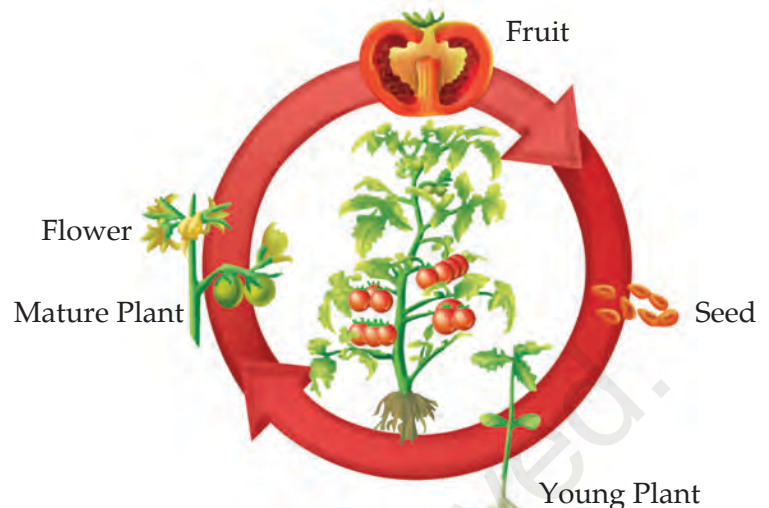
Most flowering plants grow from seeds. Seeds are found within fruits, and fruits are formed from flowers. A plant produces many seeds. But all the seeds do not grow into plants. Some seeds are eaten up by animals and birds; some seeds get

destroyed by heat, rain etc; and some others don't get proper light, water and air to grow. Thus, only a few seeds grow into new plants.

## VEGETATIVE PROPAGATION

### Growing plants from stem

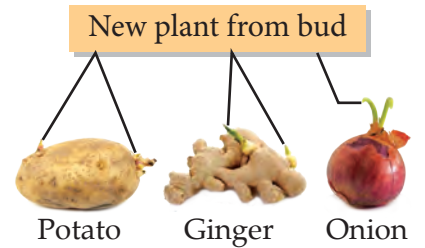
Some plants grow from stems. In such cases, stems having buds can be cut from mother plant and planted. New plants grow from the buds. Flowering plants such as *rose*, *Hibiscus* and *Bougainvillea* can be grown through cutting of the stem. Similarly, underground stems such as *potato*, *ginger* and *onion* have buds. These buds grow as new plants. Some of these plants can also grow from seeds.



Life cycle of a tomato plant



Process of growing plants through stem cuttings



Examples of underground stems

### Growing plants through root

Like stems, roots of some plants can be used for growing new plants. Roots of *sweet potato*, *Dahlia*, *carrot*, *radish* and *turnip* are modified to store food. New plants can be grown from roots of such plants. Seeds are also used for growing some of these plants.



Sweet Potato



Carrot



Radish





## Science Is Fun

### Growing sweet potato/beet/carrot plant from the root

**Materials needed :** a sweet potato and a small jar of water

**Instructions :**

- (1) Keep the sweet potato in a jar of water as shown in the picture.
- (2) Keep it for two days.

**Observation :** You will see bunches of leaves at the top of root.

**Note :** If you want to grow potatoes, cut the small plants when they are 15 to 20 cm long and plant them in the soil.



### Growing plants through leaves

New plants can also be grown from leaves. Leaves of *Bryophyllum* plant have buds on the margin of the leaf. New plants grow from these buds.



## Knowledge Tree

**New plants can also be grown from spores**  
Some lower plants such as moss and fern do not have flowers, fruits or seeds. These are non flowering plants. These plants have special structures called spores in their leaves. New plants can be grown from these spores. In fern plants, group of spores are found in sori in leaves.



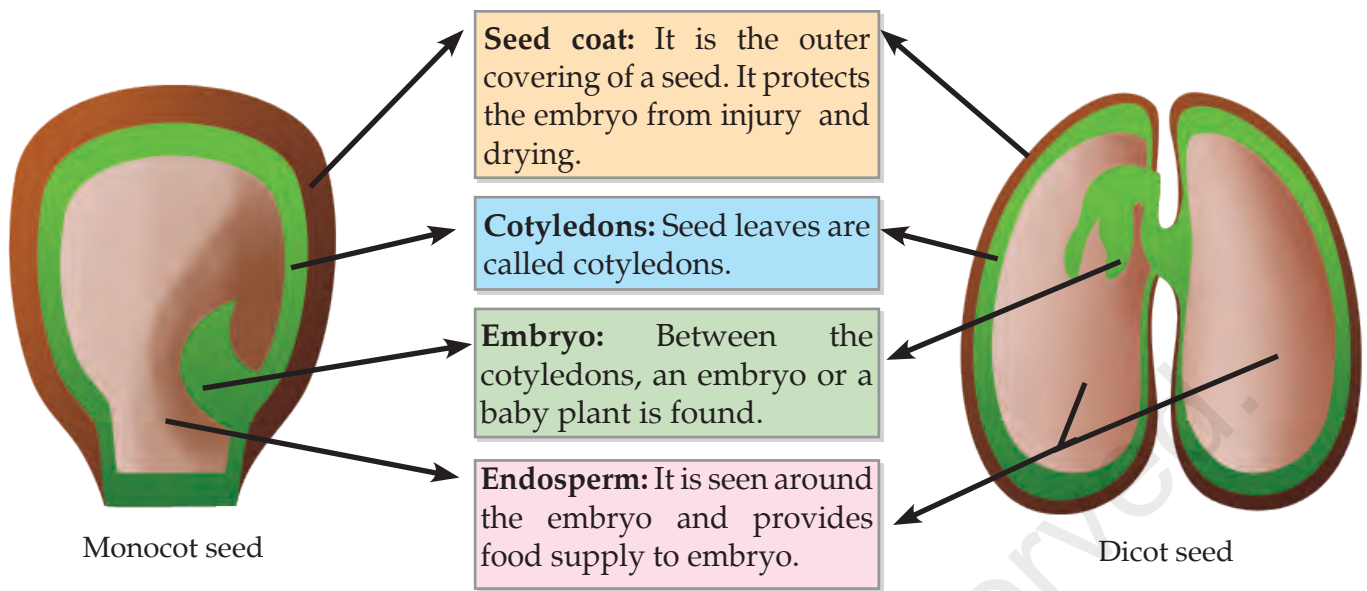
**Sori:** a group of spores aggregated into clusters / cluster of spores on leaves

### Seed

Seeds are important for plant reproduction. Let us know about the structure of the seed.

### STRUCTURE OF SEED

Seeds of some plants containing one cotyledon are called **monocot seeds** and some others having two cotyledons are called **dicot seeds**.



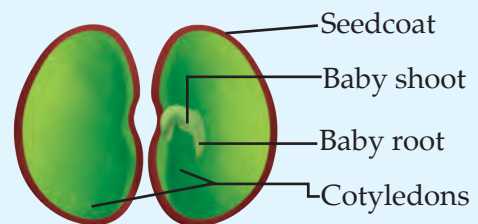
## Science Is Fun

**Observe the seed structure of kidney bean, and identify the type of seed.**

**Materials needed:** a bowl, water and 5 to 6 kidney beans

**Instructions:** Take 5 to 6 kidney beans and keep them in a bowl of water for one day. Next day, take out those beans and split one bean in hand. Before splitting, remove outer covering of the bean.

**Observation:** This outer covering is called **seed coat**. After splitting you can see two seed leaves. These are called **cotyledons**. Between these two cotyledons, a small baby plant, called **embryo** is found. It has two parts: baby shoot and baby root.



**Conclusion:** Kidney bean seed is a dicot seed as it has two cotyledons.

## DISPERSAL OF SEEDS

What will happen if the seeds fall and start growing beneath the parent plant?

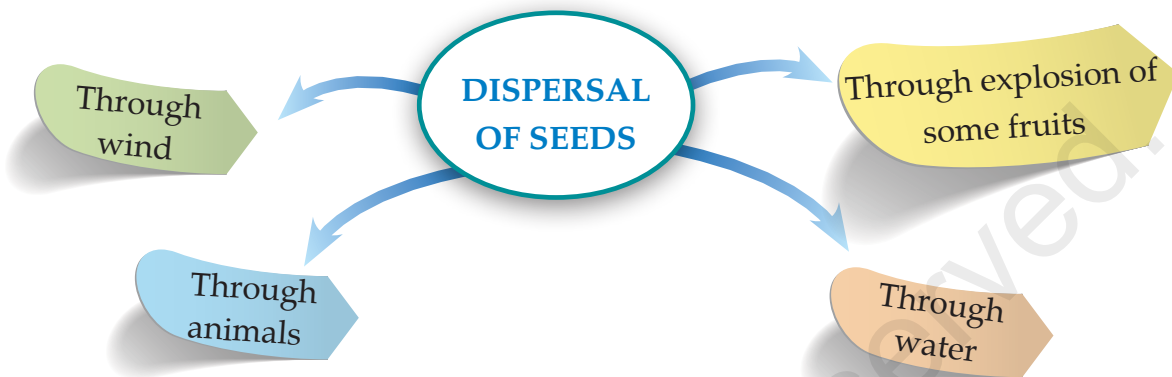
If all the seeds fall and start growing beneath the parent plant, they will be overcrowded and will not be able to get proper sunlight, water and other nutrients. Therefore, seeds must be scattered over a wide area to grow properly.

### TEACHER'S NOTE

Show a corn seed and a peanut (groundnut) seed in the class. Help the students to observe the number of cotyledons and to know the difference between two types of seeds.

The process of scattering of seeds away from the parent plant is called seed dispersal.

Dispersal of seeds occurs in various ways. They may be carried to far-off places through wind, water, insects and animals. Fruits of some plants burst open to expel seeds explosively. These are called **agents of dispersal**.

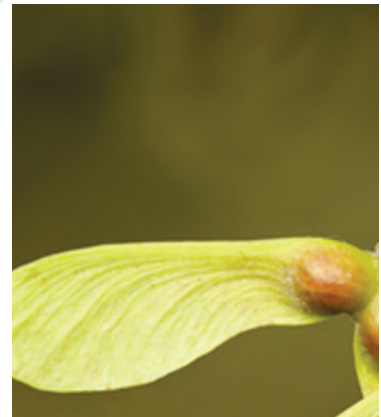


### Dispersal of seeds through wind

Seeds that are small and light are generally dispersed by the wind. Seeds of **cotton** and **Dandelion** have hair around them. These hair help in carrying the seeds by the wind. Seeds of some plants such as **drumsticks** and **maple** have a wing-like structure that help in seed dispersal by wind.



Dandelion seeds



Maple seeds



Coconut fruit



Lotus fruit

### Dispersal of seeds through water

Seeds of plants that grow near water are generally dispersed by water. **Coconut** and **lotus** are examples of seeds that are dispersed through water. Spongy light fruits of lotus help it to float away by water. Fibrous coat of coconut helps it to be carried by water.

### Dispersal of seeds through animals

Fruits of some plants such as **tiger's claws**, and **Xanthium** have hook-like structures. These hooks stick to the fur of animals or clothes of human beings and carry seeds with them. Some plants have juicy fruits that animals and birds eat. The seeds



of these fruits pass through the gut of animals and are released at different places because these seeds cannot be digested. **Guava and tomato** have such type of seeds.



Tiger's claw seeds



Xanthium seeds



Prickly poppy



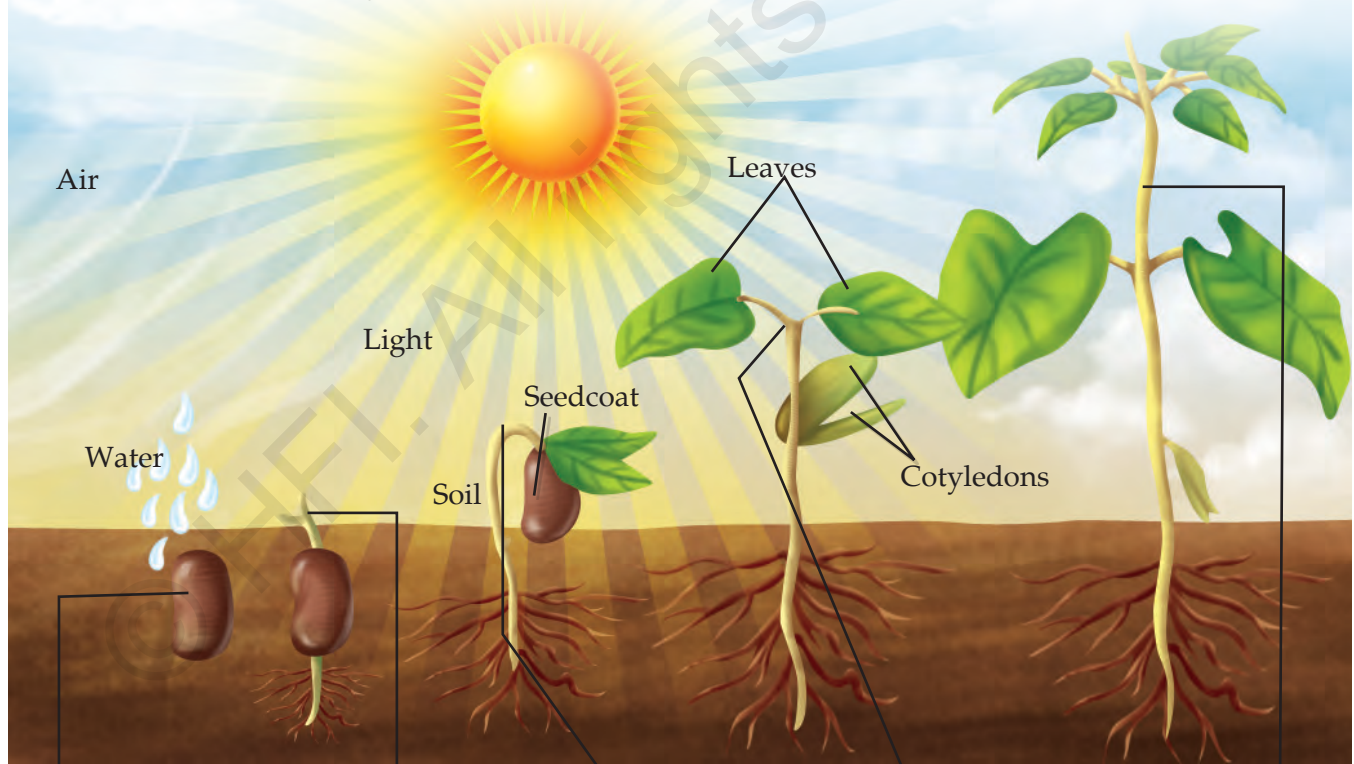
Geranium

### Dispersal of seeds through explosion

The fruits of okra, *Geranium* and poppy burst open when they ripen. The seeds are automatically scattered through explosion by force.

### GERMINATION OF SEEDS

**Germination is the process by which a plant grows from a seed.** Stages of bean seed germination are shown below. The right conditions for a seed to grow into a new plant are sufficient water, light, warmth and air. If these conditions are fulfilled, a seed grows into a baby plant or a **seedling**.



The seed gets air, water, light and proper temperature.

A very tiny plant comes out breaking the seed coat.

The plant develops root downwards and shoot upwards and cotyledons unfold.

The size of the plant increases, and leaves develop.

The height of the plant increases. The cotyledons shrink and finally disappear.

AIO-5 (SEM-1)

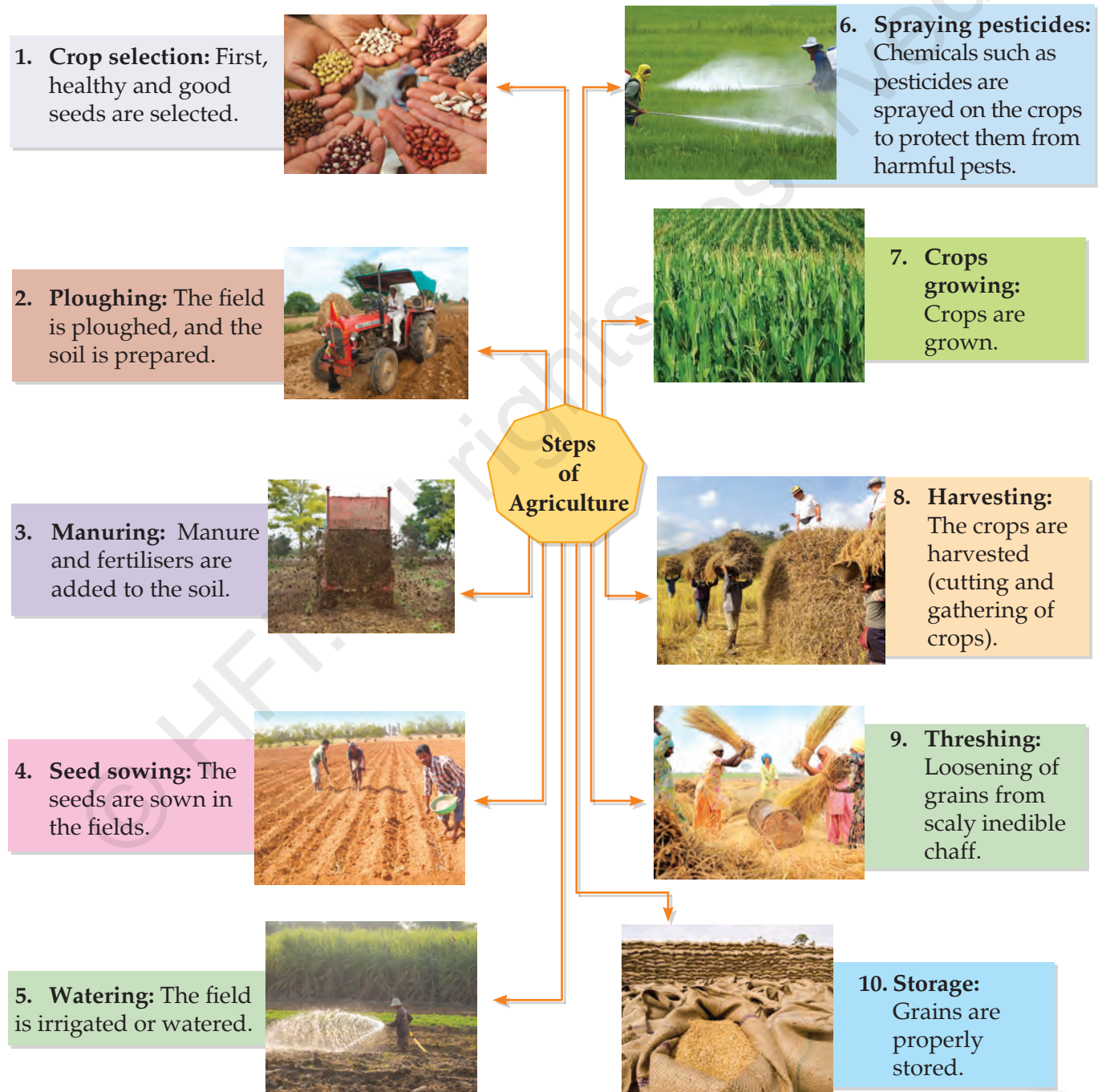
Do you know the process of growing food, fibres, oil and other desired products? It is the practice of agriculture and farming.

## Agriculture

The practice of growing of crops and rearing animals on a large scale to provide food, fibre and other products is called **agriculture**.

### STEPS OF AGRICULTURE

A farmer performs the following steps for crop production.





## Knowledge Tree

- Do you know how people grow crops in hilly areas?

People in hilly areas grow crops by cutting steps along mountains slopes. This type of farming is called **step farming** or **terrace farming**.



- Kinds of crops

We can categorise crops on the basis of their use and growing seasons.

Crops on the basis of Use	Crops on the basis of Growing Season
Food crops	Summer crops
Fibre crops	Kharif crops
Oil-producing crops	Rabi crops

- Do you know what the picture is? It is the picture of a scarecrow which looks like a human. It is made of sticks, straws and some old clothes. It is mostly seen in the crop fields.

Farmers make scarecrows to scare birds and animals away from fields.



## We Have Explored »

**Crops:** Plants that are grown in large quantities to provide food in a particular area during a particular season.

- 1 Plants are grown not only from seeds but also from other parts of plants such as stems, roots, leaves and spores.
- 2 Seeds are of two types, monocot and dicot, based on the number of cotyledons.
- 3 A seed requires light, warmth, air and water to germinate.
- 4 The process of scattering of seeds is called seed dispersal.
- 5 Seeds are dispersed through water, wind, animals and explosion.
- 6 Crops are of different kinds based on their use and growing seasons.

### TEACHER'S NOTE

Discuss the steps of agriculture and help the students to understand the cycle of agriculture. Make them understand how the chemical fertilisers used in the fields are poisonous for our health.





## Recall and Answer »

(1) Tick (✓) the correct option.

(a) Coconut seeds are mainly dispersed through

- (i) wind. (ii) water.  
(iii) animals. (iv) explosion.

(b) Seed leaves are also called

- (i) cotyledons. (ii) seedlings.  
(iii) embryo. (iv) seed coat.

(c) Which of the following seeds are dispersed through animals?

- (i) maple. (ii) coconut.  
(iii) mango. (iv) lotus.

(d) Spores are generally found in

- (i) branches. (ii) leaves.  
(iii) stems. (iv) roots.

(e) Process of scattering of seeds is called

- (i) seed germination. (ii) seed dispersal.  
(iii) seed sowing. (iv) seed selection.

(2) Choose the suitable word from the box to fill in the blanks.

water, seed coat, seeds, seedling, wind, explosion

(a) A seed grows into a baby plant. This baby plant is called a \_\_\_\_\_.

(b) Most plants grow from \_\_\_\_\_.

(c) Small and light seeds are mostly dispersed by \_\_\_\_\_.

(d) Poppy and *Geranium* fruits burst open when they ripen. The seeds are scattered through \_\_\_\_\_.

(e) When a seed grows into a baby plant in the presence of light, warmth, air and \_\_\_\_\_, it is called germination.

(3) All seeds do not grow into new plants. Explain.

- (4) What is germination? Name the conditions required for seed germination.
- (5) Name three plants that can be grown from stem part.
- (6) How are animals helpful in the dispersal of seeds?
- (7) Name different steps of agriculture.



### Think And Answer »

- (1) Give reasons for the following.
  - (a) Seed dispersal is necessary for the plants to grow properly.
  - (b) Flowers are an important part of plants.
  - (c) Ploughing is essential before sowing seeds.
- (2) Guess who I am.
  - (a) I am added to make the soil fertile.
  - (b) I contain food for the baby plant. I am a part of the seed.
- (3) Write T for true and F for false statements.
  - (a) Only water is required for the germination of seed.
  - (b) Watering is required before seed germination.
  - (c) Potato and ginger are roots of plants. We can grow new plants from these roots.



### Create and Learn »

- (1) Draw a dicot seed and label its parts.



(2) Given below are a few steps of agriculture. Identify and name the steps.


















(3) Grow a potato plant from a potato. Write down the steps in your notebook.

- (a) What are the buds found in a potato called?
- (b) What is the role of a bud?



### Think Beyond »

- (1) Plants of radish, carrot and beetroot can be grown from roots. Is it the common practice for growing such vegetables in large quantities?
- (2) Step farming is seen in the Indian states of Himachal Pradesh and Uttarakhand. Why?



### Values to Learn »

Soma is a student of class V. She has a hobby of gardening and watering plants. One day she thought to celebrate her coming birthday in a special way. She planned to grow some new plants in her garden. She made a list of some plants. Name the part from which she will be able to grow the plants.

Name of the Plant	Part of the Plant
Rose	
Money plant	
Tomato	
<i>Hibiscus</i>	
Mango	





# Adaptation and Survival of Animals

Chapter

2

## We Will Explore

- » Body coverings in animals
- » Breathing organs in animals
- » Movements in animals
- » Migration of animals

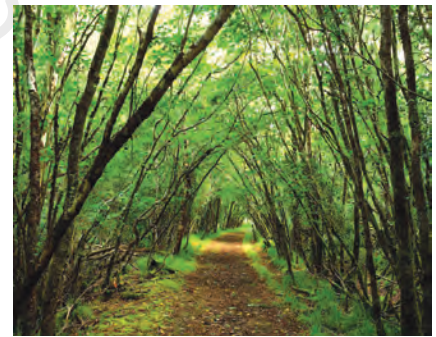
Look at the pictures below in which different habitats are shown. Write the name of one animal you would find in each of these habitats.



Desert



Snowy area



Forest

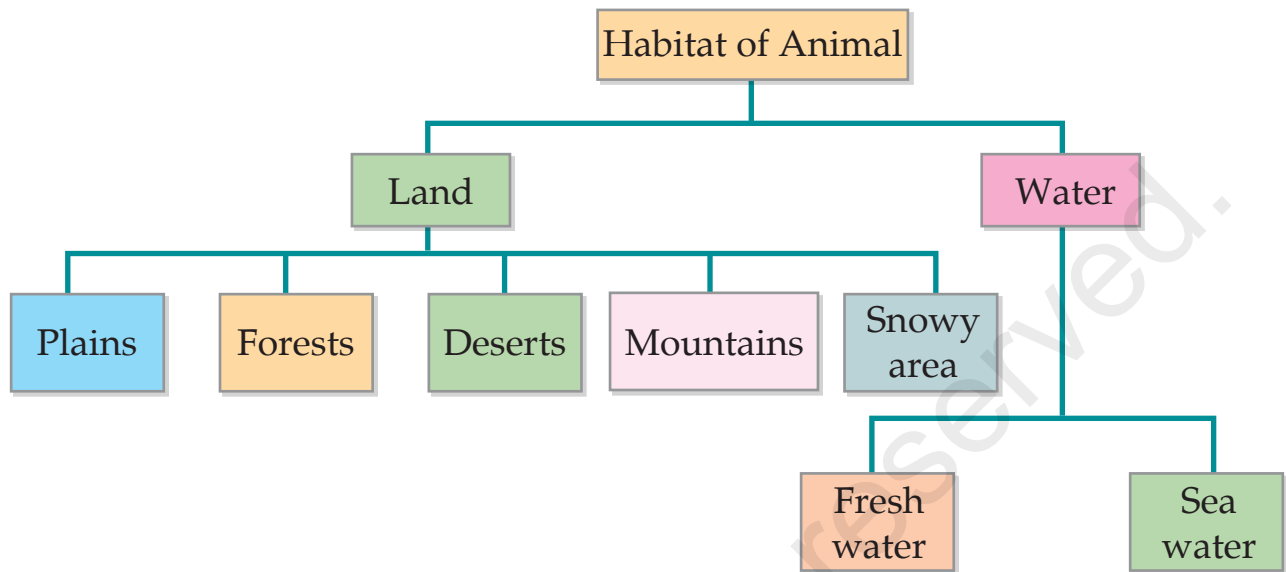


Sea water



Pond water

Different animals live in different places. **The place where an animal lives is called its habitat.** Water and land are two major types of habitats. Water includes sea water and fresh water, and land includes plain area, forest, desert, polar regions and mountains.



Animals living in a particular habitat adapt themselves to their surroundings.

**Changes in the body features or behaviours of animals that help them to survive in a particular habitat are called adaptation.**

Different animals show different types of adaptations. These adaptations may be seen in their body coverings, organs of breathing and organs of movement.

### **Body Coverings in Animals**

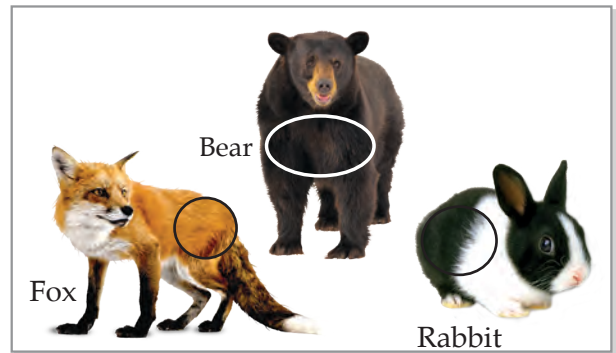
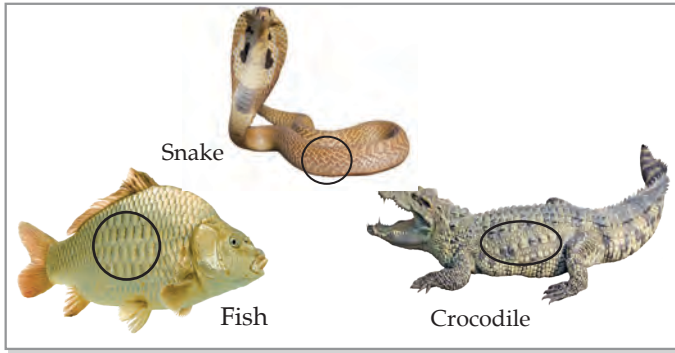
For comfort and protection, animals have different body coverings. Scales, shells, hair, fur and feathers are different body coverings found in animals.



### **Knowledge Tree**

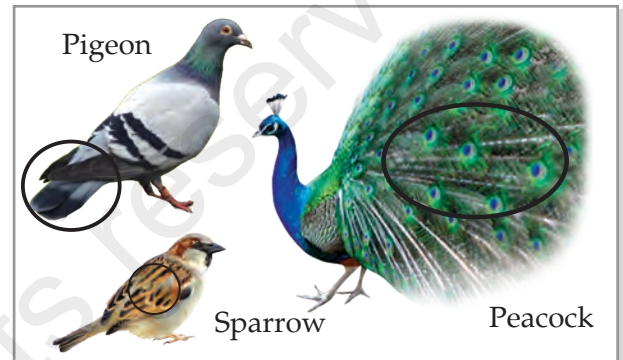
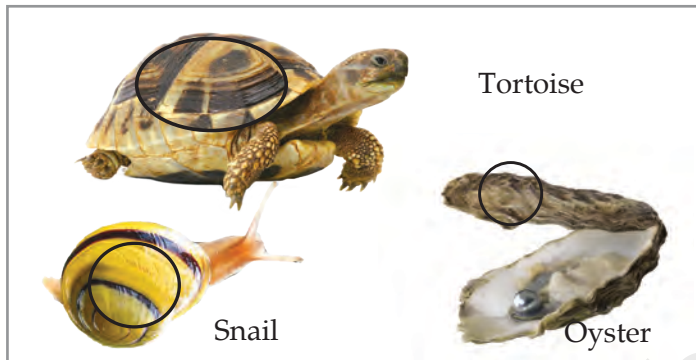
The porcupine has long spiny hair on its body covering for its protection.





**Scales:** Bodies of most animals such as snakes, lizards and crocodiles are covered with scales. Body of a fish is also covered with scales. Snakes shed their old skin periodically, replacing it with a new one.

**Fur/hair:** The body of sheep, bears, rabbits and some other animals is covered with fur or hair. This covering protects them from heat, cold and rain.



**Shell:** Animals such as turtles, tortoises, snails and oysters have shells on their body to protect them. When they are in danger, they withdraw their head and feet into the shell.

**Feathers:** Birds have feathers on their body. They help them fly and protect them from heat and cold.



## Science Is Fun

To know about the body covering of animals.

### Instructions:

Visit your computer lab. Search the internet and collect the information about different coverings of animals, and their softness, hardness or roughness. Make a list of animals you studied and categorise them by their body coverings (fur, feathers, scales, shell or skin).

## Breathing Organs in Animals

We know that all living things need air to live. They take in oxygen and give out carbon dioxide. Different animals have different breathing organs.

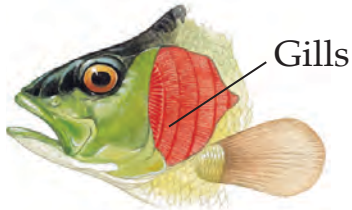
### TEACHER'S NOTE

Discuss the different kinds of animals coverings and how each covering protects the animal or keeps it warm.



(1) All insects such as grasshoppers, cockroaches, ants, ladybirds, flies, mosquitoes and butterflies breathe through small holes in their body. These are called **spiracles**.

Spiracles



(2) Aquatic animals such as fishes and tiny frogs (tadpoles) breathe through **gills**.

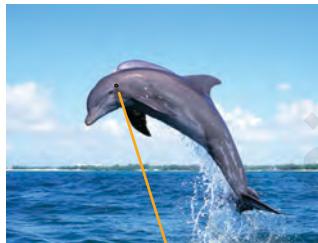
(3) Frogs and earthworms breathe through their **moist skin**. When the frogs are on land, they breathe through lungs.



(4) Except insects and some aquatic animals, all other animals including human beings breathe through their **lungs**. From the nose, the air is carried through the windpipe to a special breathing organ, **lungs**. Whales and dolphins are aquatic animals, but they have lungs to breathe. They cannot breathe under the water. They come to the surface for breathing. They breathe through **blowholes** or nostrils on the top of their head.



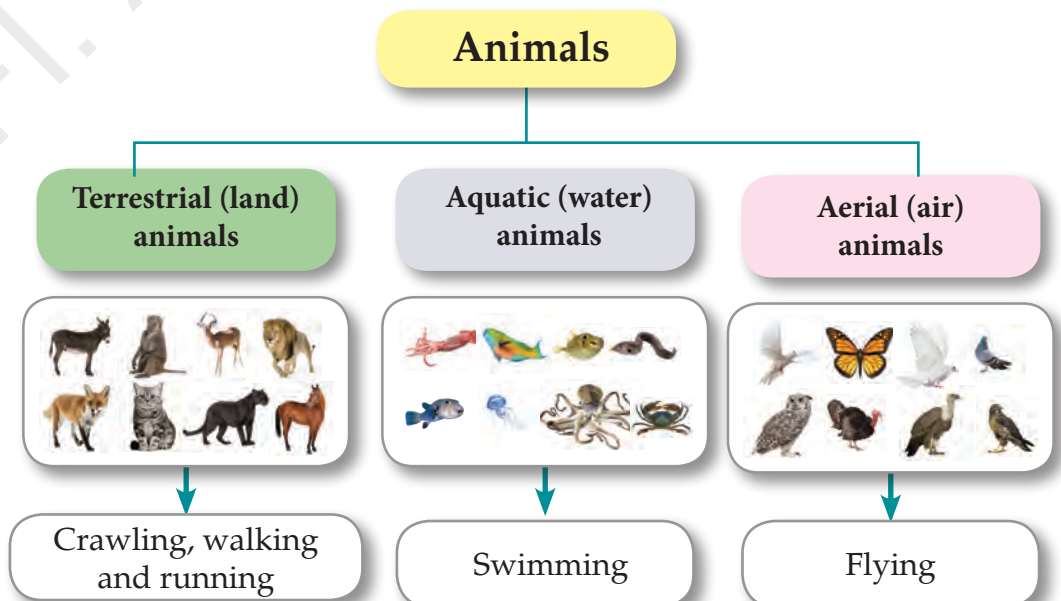
Lungs in human being



Blowholes in dolphin

## Movements in Animals

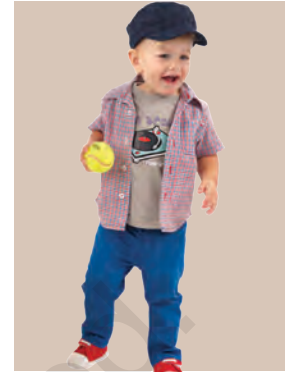
Animals move from one place to another in search of food and water and to protect themselves from the enemies. They also move to build their shelter. They



move from one place to another using different body parts (fins, feet, legs and wings).

### TERRESTRIAL (LAND) ANIMALS

Animals that live on land are **terrestrial animals**. Most mammals have four limbs. Front two limbs are called **forelimbs**, and back two limbs are called **hindlimbs**. Animals such as cat, dog, lion and tiger use four limbs to move, while human beings use only two limbs i.e. hindlimbs (legs) to move. They use their forelimbs as hands. Because of this humans have an erect posture.



Animals such as lizards, crocodiles, tortoises and snakes crawl on the ground with the help of their limbs. Snakes do not have legs at all. They crawl without limbs. They move through their muscles and scales (body covering) of their body.

### AQUATIC (WATER) ANIMALS

Fishes, frogs and turtles are some water animals. Fishes have **fins** to swim in water. The fins are used to move forward, while the tail fin helps to change the direction of movement. Turtles have **paddle-like limbs** to move, and frogs have **webbed feet** to move in water. Penguins use two forelimbs as **flippers** to push water and swim.



### AERIAL (AIR) ANIMALS

Most of the insects and birds fly. Insects are six-legged small animals. Mosquitoes, bees, butterflies, house flies and moths are the insects that can fly with the help of their wings. Their wings have scales. Insects do not have feathers like birds. They can crawl



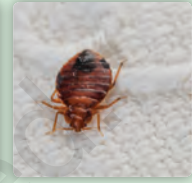
on their legs. Grasshoppers use their long hind legs for hopping.

Birds have forelimbs, but they are in the form of wings that help them to fly. The wings of birds have feathers. When a bird lands after flight, it uses its hind limbs to walk. Hindlimbs are also used to walk, run, perch, search food and attack enemies. Ostriches, emus and penguins are some birds that cannot fly, as their wings are weak for flying.



## Knowledge Tree

Insects such as ant, lice and bedbugs have no wings. They move by crawling.



Penguin



Emu



Ostrich



## Science Is Fun

Observe the movement of animals.

### Instructions:

Observe different animals (land animals, water animals, birds and insects) in your surroundings. Make a list of these animals. Group the animals on the basis of their movement such as running, jumping, crawling, swimming and flying.

## Migration among Animals



Eel



Butterfly



Locust

The movement of animals from one place to another is known as migration. Animals migrate in search of food, to escape from harsh weather and for breeding purposes.

Eels are migratory fishes that travel from a river to a sea for laying eggs. When eggs hatch, the young ones travel back to the river. Locusts and butterfly are migratory insects.

Migration is most common in birds. Siberian cranes, European storks, Greater flamingos and mallard ducks are some migratory birds that visit India every winter.

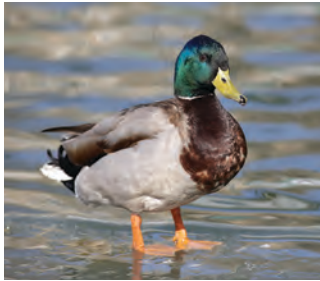




Siberian Crane



Greater Flamingo



Mallard Duck

## Myths and Truths

**Myth:** 'Cry crocodile tears' is a phrase applicable to someone who shows fake sadness. It comes from an old myth.

**Truth:** The truth is crocodiles shed tears to keep their eyes wet, which is required for protection of their eyes. It is not due to any emotional reasons.



## We Have Explored »

- 1 The home or surrounding of an animal where it lives, eats and grows is called its habitat.
- 2 Different animals have different body coverings such as scales, shell, hairs, fur and feathers.
- 3 Animals have different breathing organs such as gills, skin, spiracles and lungs.
- 4 Animals move in different ways from one place to another using different body parts such as feet, fins, flippers, wings and legs.
- 5 Animals migrate in search of food, to escape from harsh weather and for breeding purposes.



## Recall and Answer »

- (1) Tick (✓) the correct option.
  - (a) Snails protect themselves by withdrawing
    - (i) fur on the body.
    - (ii) into the shell.
    - (iii) feathers on the body.
    - (iv) spiny hair on the body.

- (b) Which of the following animals have spiracles to breathe?
- (i) fish (ii) salamander  
(iii) cockroach (iv) earthworm
- (c) Which of the following uses only hindlimbs as legs for movement?
- (i) tiger (ii) lizard  
(iii) snake (iv) human being
- (d) Wings are absent in which of the following insects?
- (i) mosquito (ii) lice  
(iii) butterfly (iv) flies
- (2) Fill in the blanks.
- (a) The home or surrounding of an animal where it lives, eats and grows is called its \_\_\_\_\_.
- (b) Fishes breathe through \_\_\_\_\_.
- (c) Movement of animals from one place to another in search of food, to protect and for breeding purposes is called \_\_\_\_\_.
- (d) Penguins use two forelimbs as \_\_\_\_\_ to swim.
- (e) Birds and reptiles breathe through \_\_\_\_\_.
- (3) Answer the following.
- (a) Name one migratory insect.
- (b) Name the bird that cannot fly.
- (c) Name the reptile which has no legs.
- (4) Name the different types of habitats of animals.
- (5) Why do animals move from one place to another ?
- (6) Give three examples of animals that have scales on their body covering.
- (7) How many legs do insects have? What type of body coverings do they have?
- (8) Differentiate between the movement of aquatic animals and terrestrial animals.
- (9) How do the snakes move?
- (10) Name the different types of breathing organs in the animals. Give examples of animals for each type.



### Think And Answer »

- (1) Write down the name of two animals for each of the following groups.

Animals with Shell	Animals with Scale	Animals with Fur

- (2) In the table, arrange the following according to their breathing organs: pigeon, horse, prawn, tadpole, butterfly, whale, man, snake and grasshopper.

Body Surface	Spiracles	Gills	Lungs

- (3) Observe the picture, and answer the questions below.  
 (a) What are the similarities between the two animals?  
 (b) What are the differences between them?



Bird

Butterfly



**Create and Learn** »

- (1) Name the breathing organ of the insect. Label this organ in the picture below.



- (2) Below are pictures of a few animals. Write the name of the organ that helps each to swim in water in the box provided.













### Think Beyond »

Dolphin is an aquatic (water) animal, and dog is a terrestrial (land) animal. What is the common feature between them?



### Values to Learn »

All the animals in the nature are important. Should we kill them out of fear or should we let them live freely in their natural environment? Like us, they also move for a variety of reasons such as to find food and a suitable habitat and to be away from danger. A list of animals is given below. Write the ways of movement they show to escape from their enemies.

Animals	Ways of Movement
Deer	
Man	
Fish	
Penguin	
Butterfly	
Pigeon	



# Food and Health

## Chapter

# 3

### We Will Explore

Manav and Urja are talking with each other in the park.



Taking care of our health is important. We fall ill if we do not take care of our health. To keep our body fit and healthy, we should eat proper food and drink sufficient water. We should also exercise regularly and rest properly. We should avoid eating junk food.

The materials present in the food that are needed by our body for good health and growth are called nutrients.

Our body needs all types of nutrients in a particular amount. Therefore, it is important to know the role of nutrients present in our food and recognise the various types of food which contain these nutrients.

## Types of Nutrients and Their Functions

Nutrients are of five types: **carbohydrates**, **fats**, **proteins**, **vitamins** and **minerals**. On the basis of their functions, nutrients are divided into three groups. These are energy-giving, body-building and protective nutrients

**Energy-Giving Nutrients** (carbohydrates and fats): Carbohydrates and fats are the nutrients that give us energy. Fats give us more energy than carbohydrates. Fats also keep our body warm. **Rice, corn, bread, sweet potato, potato and banana** are a few food sources that contain plenty of carbohydrates. Fats are found in **ghee, oil, cheese, butter and some nuts**.



**Body-Building Nutrients** (proteins): Proteins help in the growth and repair of our body. **Milk, eggs, meat, yoghurt, fish, soybean and pulses** are rich in proteins.



**Protective Nutrients** (vitamins and minerals): We need vitamins and minerals present in vegetables and fruits to protect our body. These nutrients mostly help our body fight against diseases. Vitamins A, B, C, D, E and K along with minerals such as iron, calcium and iodine are required for our body.



**Be fit and healthy**



**Fibre-Giving Components (roughage)**: Certain foods that we get from plants contain fibres. These fibres are called roughage. Roughage helps the body get rid of undigested food. Green leafy vegetables such as carrots, cabbages, beans and cucumbers contain roughage.



**Water** : It is essential for our body to function properly.





## Knowledge Tree

### Obesity and cholesterol

Obesity is a condition in which excess fat accumulates in the body. It has many adverse effects on health.

Cholesterol is an essential fat-like substance found in our body. A high level of cholesterol in the blood causes diseases such as heart attack, blood pressure and diabetes. People who are overweight or obese are more likely to have high cholesterol.

### Balanced Diet

Sometimes we get tired after doing some work or playing. We need proper food, rest and sleep to become energetic again. To keep our body fit and healthy, we should follow some tips such as

- eating a balanced diet
- exercising regularly
- resting or sleeping enough
- playing some outdoor games
- sitting, standing and walking with a correct posture



Playing



Running

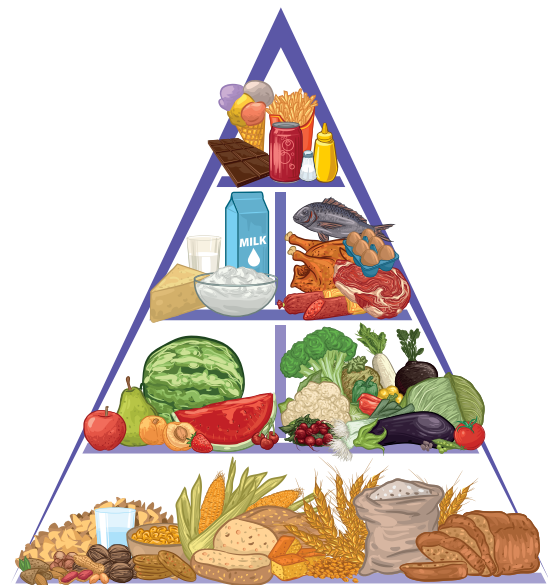


Swimming



Exercising

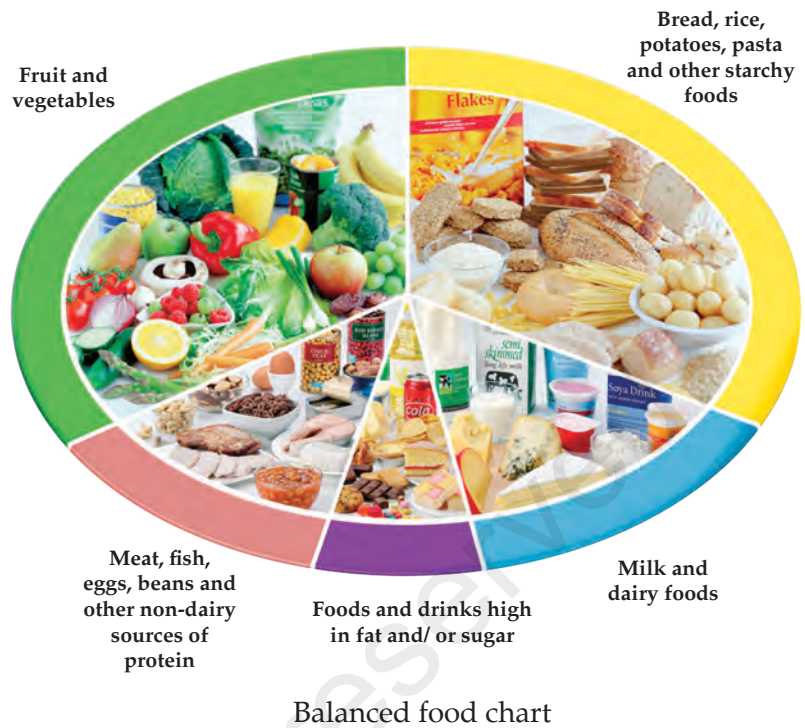
A **balanced diet** contains all the nutrients in correct quantities. A healthy diet has proper quantities of food from all the food groups. Look at the food **pyramid**. The foods at the bottom of the pyramid are meant to be eaten in a greater quantity than those at the top. Different people have different nutritional requirements. A child's nutritional requirements are different from an adult's. Similarly, a sick man's nutritional requirements are different from those of a healthy man.



Food pyramid

For a growing child, the following will constitute a balanced diet.

- Rice and bread must form a greater part of the daily diet.
- All seasonal fruits and vegetables must be taken in good amount.
- Protein-rich food such as milk, curd, cheese, etc. should be consumed moderately.
- Oily food, ghee and butter should be part of daily diet.



## Science Is Fun

Make a healthy balanced plate for lunch at your home.

**Instructions :** Some pictures of food items are given below. Choose (✓) the foods that would make a healthy balanced plate for lunch.



Boiled egg



Rice



Dal



Pizza



Milk



Salad



French fries



Fruits



Chapati



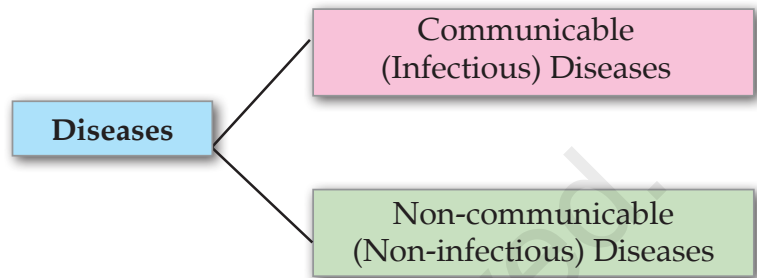
Burger



A healthy diet can protect our body against certain types of diseases. Let us discuss about diseases.

Disease is an abnormal condition in which the body or some part of the body is not able to function properly.

Diseases can occur because of many reasons. Some diseases occur because of the lack of some nutrients. These are called **deficiency** or **non-infectious** diseases. Some other diseases are caused because of germs or bad microbes. These diseases spread from one person to another. These are called **infectious** diseases. Therefore, diseases can broadly be classified into two types on the basis of their spreading nature.



### Communicable Diseases

Communicable diseases are the diseases that spread from one person to another or from an animal to a person. These diseases are spread by **bad microbes** or **germs**. Most germs or microbes belong to four major groups: bacteria, virus, fungi and protozoa.

Microbes	Bacteria	Virus	Fungi	Protozoa
Pictures of Microbes				
Diseases	Typhoid, cholera, diarrhoea	Common cold, polio, measles	Eye, hair and skin infections.	Malaria, amoebic dysentery

Germs are so small that we can only see them with the help of microscopes. They are found in air, dirty water and food. These germs spread through cough, sneeze, infected food and water.

**Microscope:** an instrument, used for viewing very small objects



Diseases such as chickenpox, measles, whooping cough, common cold and ringworm spread through direct contact and through air. The clothing and other articles used by a sick person are infected. When a healthy person comes in contact with these, germs enter his body and cause diseases.

### Through direct contact



Diseases such as whooping cough, influenza, diphtheria and common cold spread through air and through direct contact. Coughing and sneezing by a person release germs into the air. When a healthy person breathes the air, germs enter his body.

### Through the air



Diseases such as AIDS spread through needle. Germs can spread through the infective equipment such as needles and scissors.

### Through infected equipment



## Spread of Diseases

Diseases such as plague, malaria and dengue are caused by the bites of insects such as mosquitoes, fleas and bugs. Plague is spread through fleas on rats. The female Anopheles mosquito causes malaria, and Aedes mosquito causes dengue. Germs pass from the mouthparts of the mosquitoes to a healthy person.

### Through animals



### Through infected food and water



Diseases such as cholera, jaundice, typhoid and diarrhoea spread through infected food and water. Flies carry germs, when sit on food, pass germs to food. Eating this infected food, cause diseases.



## Knowledge Tree

AIDS (Acquired Immune Deficiency Syndrome) is an incurable communicable viral disease, caused due to HIV (human immunodeficiency virus) in the blood. HIV destroys the ability of our body to fight disease.

## PREVENTION OF COMMUNICABLE DISEASES

Communicable diseases spread through touch and infected food, water and air. There are many ways to prevent these diseases. A few steps are given in the table below.

Sunlight is a natural disinfectant. (Something that kills germs.) Let sufficient air and sunlight enter the house.



Wash hands frequently with hand wash especially before and after eating. Trim nails regularly, as they carry microbes. Wash vegetables and fruits before cooking and eating.



Floors and walls of the room must be sprayed with disinfectant.



Food should be covered to prevent flies sitting on it. Heat the milk properly to kill harmful bacteria.



Boil, chlorinate and filter drinking water. Store water in clean and covered containers.



Remove stagnant water from pots, vessels and coolers when they are not in use. Cover all dustbins. Use mosquito repellent or mosquito net.



Wash bed sheets, clothes and mattresses properly, and expose them into sunlight from time to time.



Vaccination is an effective way to prevent communicable diseases. Vaccines are available for the diseases such as diphtheria, hepatitis, typhoid, polio and small pox.



## Non-Communicable Diseases





Non-communicable diseases do not spread by germs. They are caused due to deficiency of nutrients in the diet or some other reasons. A table is given below showing the list of deficiency diseases, symptoms, cause and preventive measures.




### Science Is Fun

**Group activity to prevent communicable diseases.**

**Instructions:** Form a group of five or six friends. Discuss among yourself what are the ways to prevent communicable diseases in your locality. Write five points of actions and follow them. Help yourself and your locality.

Diseases	Symptoms	Lack of Nutrients	Source of food to eat
Kwashiorkor 	Stomach and ankles become swollen, patchy skin and discoloured hair	Protein	Pulses, eggs, fish and meat
Night blindness 	Not able to see properly in the dark	Vitamin A	Green leafy vegetables, carrots, papayas, milk, egg yolk and mango
Beriberi 	Poor growth of body, weak muscles and tiredness	Vitamin B	Unpolished rice, meat, milk, peas and cereals
Scurvy 	Bleeding from gums and joint swelling	Vitamin C	<i>Amla</i> , orange, lemon, tomato, apple



<p>Rickets</p> 	Soft bones and bow legs	Vitamin D	Fish, milk and sun rays
<p>Goitre</p> 	Swelling in the neck region	Iodine	Seafood, iodised salt and vegetables
<p>Anaemia</p> 	Getting tired easily and looking pale and unhealthy	Iron	Bananas, spinach, jaggery, grapes and dates
<p>Osteoporosis</p> 	Weak bones	Calcium	Milk, meat and green vegetables



## Knowledge Tree

GermS in milk are killed by **pasteurisation**. In this process, the milk is heated at a high temperature for at least half an hour and then cooled down quickly. This kills harmful bacteria.



## Science Is Fun

Match the lack of vitamins and minerals with the diseases caused.

Vitamins and minerals
Iron
Calcium
Vitamin A
Iodine
Vitamin D

Diseases
Goitre
Night blindness
Anaemia
Rickets
Osteoporosis



## We Have Explored »

- 1 Carbohydrates and fats give us energy, proteins help in growth and vitamins and minerals protect us from diseases.
- 2 To stay fit and healthy, we should eat a balanced diet, exercise regularly and take enough rest.
- 3 Diseases can be classified into two types: communicable and non-communicable diseases.
- 4 Communicable diseases are spread by bad microbes or germs. These diseases spread from one person to another.
- 5 Non-communicable diseases are caused due to deficiency of nutrients in the diet.



## Recall and Answer »

- (1) Tick (✓) the correct option.
  - (a) Which of the following is a non-communicable disease?  
(i) malaria    (ii) typhoid    (iii) goitre    (iv) measles
  - (b) Vaccination can protect against diseases such as measles, mumps and  
(i) AIDS.    (ii) polio.    (iii) malaria.    (iv) anaemia.
  - (c) This disease is caused by protozoa.  
(i) typhoid    (ii) chickenpox    (iii) malaria    (iv) cholera
- (2) Match the diseases to the group of microbes which cause the diseases.

Diseases
Malaria
Skin disease
Measles
Diarrhoea

Microbes
Bacteria
Protozoa
Fungi
Virus

- (3) Write T for true and F for false statements.
  - (a) Foods having ghee, oil and butter have plenty of carbohydrates.
  - (b) Diseases such as dengue and malaria are spread through mosquito bites.
  - (c) The lack of nutrients in the diet causes infectious diseases.
  - (d) Chlorine tablets are used to purify water.
- (4) What are nutrients? Classify nutrients on the basis of their functions.
- (5) Write two or three tips to keep our body fit and healthy.

- (6) What are communicable diseases?
- (7) Write the ways through which communicable diseases spread.
- (8) Name three diseases for which vaccination is given.
- (9) What are deficiency diseases? Give some examples.



### Think And Answer »

- (1) A few unhealthy conditions of children are given in the table below. Read the symptoms. Write down the names of vitamins or minerals that cause the diseases, name of the diseases and suggest foods to be taken.

Symptoms of Diseases	Lack of Vitamins or Minerals	Name of the Diseases	Food to be Taken
(a) Rita looks tired, pale and unhealthy.			
(b) Rohan has bow legs and pain in his bones.			
(c) Mona is not able to see properly in the dark.			
(d) Sonu has a big swelling in his neck.			

- (2) Some foods are given in the table below. Think and write down some healthy food to replace each one of them.

Food Items	Healthy Food
Burger	
Pizza	
Cold drinks	
Potato chips	
Ice cream	





## Create and Learn »

- (1) Make and enjoy your healthy nutritious sandwich.

**Materials needed:** two slices of brown bread, butter, a few slices of tomato and cucumber, pepper and salt

**Instruction:**

- (a) Take the slices of bread. Apply butter on one side of both the slices.
- (b) Put the slices of cucumber and tomato on one slice.
- (c) Sprinkle salt and pepper on it.
- (d) Place the other bread on it and press gently.
- (e) Enjoy your yummy sandwich!



## Think Beyond »

- (1) Guess who I am. Give reasons.
  - (a) I give more energy, yet people avoid me.
  - (b) Children need me more than adults.



## Values to Learn »

- (1) To prevent the spread of infectious diseases, we should keep ourselves and our homes clean. Write few points on what we should do for the prevention of infectious diseases.
- (2) We should make efforts to prevent the spread of germs.
  - (a) Do you use any mosquito repellent at your home? Name a common mosquito repellent.
  - (b) Name the disinfectant you use at home to clean the floors and the bathrooms.
  - (c) Name a natural disinfectant.

### TEACHER'S NOTE

The teacher can bring some packaged food products such as bread, milk, juice, chips and chocolates to the class. Read out the nutritional value of these products. Let the students know about the nutrients.



# Social Studies



CLASS-5 ♦ SEMESTER-I

1.	Continents and Oceans	324
2.	Latitudes and Longitudes	335
3.	Movements of the Earth	346
4.	The Heat Zones	356
5.	The Equatorial Rainforests	366
6.	The Temperate Grasslands	375
7.	The Hot Deserts	383
8.	The Frigid Zones	391
9.	Our Environment	400
10.	Pollution and Its Effects	409



# Continents and Oceans



## You Will Learn

- The seven continents
- Oceans around the world



## LET US BEGIN

In the previous classes, you have learnt about the seven continents and five oceans. Answer the following questions and check your memory.

1. Name the seven continents.

.....

.....

.....

.....

.....

.....

.....

2. Name the five oceans.

.....

.....

.....

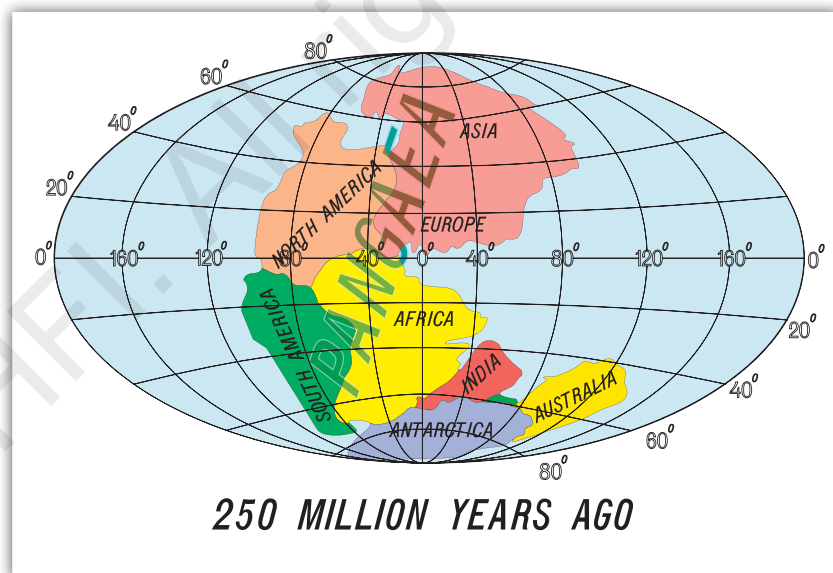
.....



Cheeni is excited to get a photograph from her cousin, Tara. Uncle, Aunt and Tara are on a vacation around the world on a **cruise**.



In the previous class, we have learnt that water on the Earth is shown in blue while the land is shown in green or brown. All major landmasses are surrounded by water. The large landmasses that we see on the globe are called **continents**. The large waterbodies on the surface of the Earth are called **oceans**. Millions of years ago, all continents were joined together as one supercontinent called **Pangaea**. Gradually, the Pangaea broke up into landmasses and drifted apart to form continents.

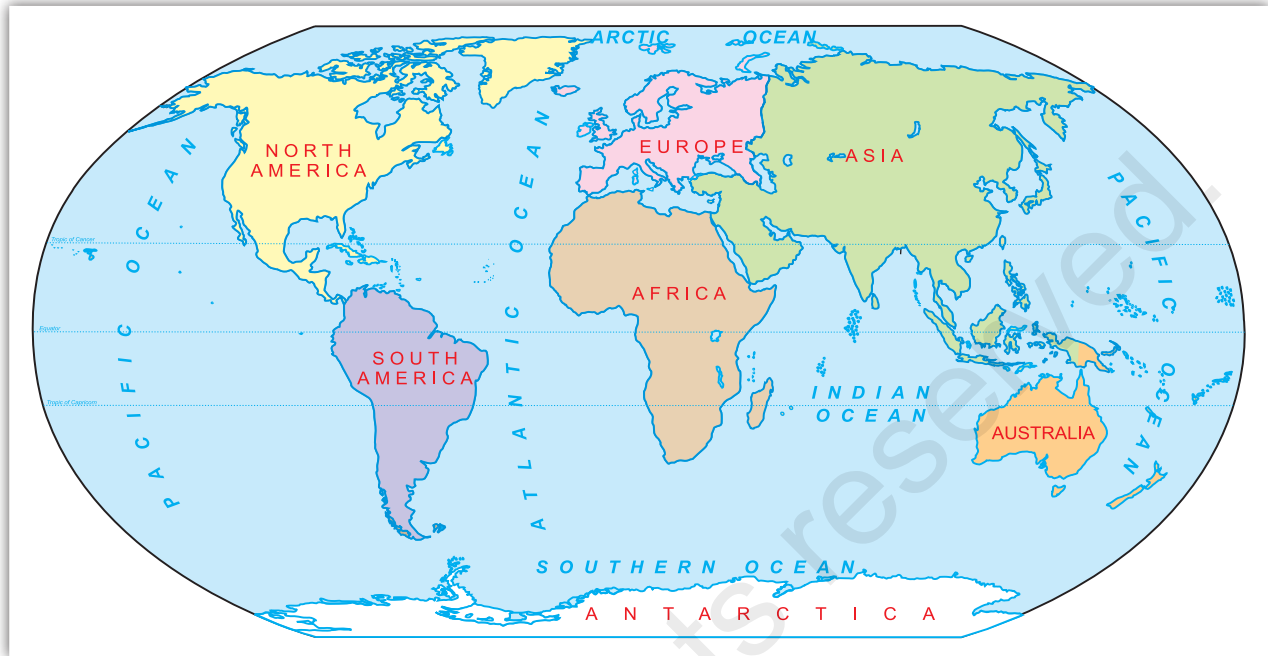


## Let Us Explore

What would have happened if the Pangaea had never broken off to form different continents? How would it have affected our world today?

## THE SEVEN CONTINENTS

The seven continents of the world are Asia, Africa, North America, South America, Antarctica, Europe and Australia.



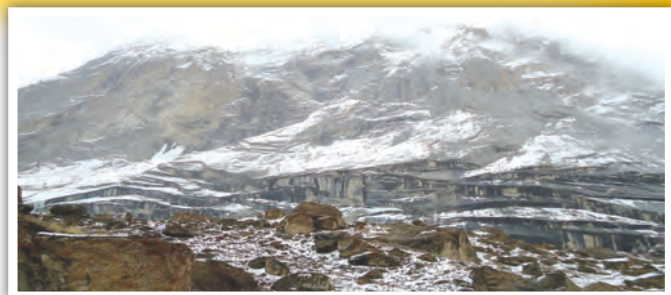
Map 1.1: The Continents and Oceans

**Asia** is the largest continent. Some of the world's largest and most populated countries such as China and India are located in Asia. Asia is surrounded by the Pacific Ocean in the east, the Arctic Ocean in the north, and the Indian Ocean in the south. Asia has varied and interesting geographical features. Asia also has the two highest mountain ranges in the world—the Himalayas and the Karakoram ranges. Other important physical features include the Gobi Desert, the Tibetan Plateau, the Thar Desert, the Taklamakan Desert and the Yangtze River. The mountain ranges contain many glaciers, which slowly melt and the water flows down to form some of the largest rivers in the world such as the Ganga and the Brahmaputra. The world's highest mountain peak, Mt Everest, is located in Asia.



### Do You Know?

The glaciers in the Himalayas hold freshwater ice. The Siachen Glacier, located in the Himalayas, is the largest glacier found outside the North and South Poles.



A view of the Siachen Glacier

**Africa** is the second largest continent in the world. It is well known for its varied physical features and variety of **wildlife**. Mount Kilimanjaro is the highest mountain in Africa. The Sahara Desert lies in the northern part of Africa. It is the largest hot desert in the world. It is so large that it can cover an area as large as the continent of Europe. The Nile is the longest river in the world. The Egyptian Civilisation grew on the banks of the Nile River. The continent of Africa is surrounded by the Mediterranean Sea in the north, the Atlantic Ocean in the west and the Indian Ocean in the east. Africa is famous for its diamond mines.



## Let Us Explore

Find out why Africa is also known as the 'cradle of humanity'.



## Do You Know?

Mount Kilimanjaro is a dormant volcanic mountain in Tanzania. It is the highest free-standing mountain in the world. Its upper part is covered with snow. It has three volcanic cones —Kibo, Mawenzi and Shira.



*Mount Kilimanjaro in Africa*

**North America** is the third largest continent in the world. The United States of America, Canada and Mexico are the three main countries of North America. There are many high mountains, plateaus and lakes in North America. The Rockies is the highest mountain range in North America. On the eastern part of North America, there is a group of five large lakes. They together form the **Great Lakes**. The Yellowstone National Park is the world's first national park. It is famous for its hot springs and variety of wildlife.



## Do You Know?

Yellowstone National Park is one of the natural wonders of the world. It is a volcanic hot spot. The Old Faithful is one of the largest hot geysers in this park.



*Old Faithful geyser in Yellowstone National Park*



**South America** is the fourth largest continent in the world. This continent is home to the densest forests and the largest variety of plants and animals. The Amazon River in South America is the second longest river in the world and the largest river in terms of the amount of water that flows in it. The Amazon rainforests are located on the banks of the Amazon River. They are the largest and the densest forests in the world. South America has a wide range of climates and landforms. There are snow-covered Andes Mountains as one extreme and the dry La Guajira Desert located in Colombia as the other extreme. Many wild animals and reptiles such as the anaconda, Andean condor and armadillo are found in South America.



*A view of the Amazon River and rainforests*



### Do You Know?

Mount Erebus in Antarctica is the southernmost active volcano on Earth. Gamburtsev Mountains are a range of steep peaks that run across the continent of Antarctica.



*Gamburtsev Mountains*



*Mt Erebus*

**Antarctica** is the fifth largest continent in the world. It is called the White Continent as it is covered with snow and ice all through the year. There are no permanent human settlements in Antarctica. This continent is home to a large number of seals, penguins, seabirds and whales. The Antarctic **ice sheet** is the largest single mass of ice on Earth. The South Pole is located almost at the centre of this continent. Antarctica's Vostok Station recorded  $-89.2^{\circ}\text{C}$  (degrees Celsius) as the coldest temperature on the Earth.

**Europe** is the sixth largest continent in terms of size. Europe is the third most populated continent in the world. United Kingdom, Norway, France, Germany and Spain are some important countries of Europe. Europe is surrounded by the Mediterranean Sea in the south, bordered by the continent of Asia in the east and the Atlantic Ocean in the west. Europe and Asia are together called Eurasia. Eurasia is the longest stretch of land on Earth. The Volga and the Danube are two important rivers of Europe. The Alps and the Urals are two famous mountain ranges in Europe. Mont Blanc is the highest mountain in the Alps.

**Australia** is the smallest continent in the world. It is the only continent which is also a country and an island. Australia is surrounded by water on all sides. It is famous for its Great Barrier Reef and the Great Australian Desert. The Great Barrier Reef is the largest coral reef on Earth. It is one of the prominent tourist attractions and is a protected marine environment. Plants and animals that live in the oceans are called marine life. The south-western and south-eastern tips of Australia have a mild climate. The remaining part of the continent is mostly dry and has extreme climate. Most of Australia's population live in the south-western and south-eastern part of the continent.



### Do You Know?

There was a time when Europe had rainforests. Today, Perućica in Bosnia is one of the last rainforests left in Europe.



*The Great Barrier Reef of Australia*



### Do You Know?

Ayers Rock, also known as Uluru, is the largest single rock on the Earth. It stands as high as 1,143 feet and is visible from a faraway distance.



*Ayers Rock*

## OCEANS AROUND THE WORLD

The oceans of the world are connected with each other and are separated by the continents. The oceans have salty water and a rich variety of marine plants and animals.

The **Pacific Ocean** is the largest and the deepest ocean in the world. It covers about 30 per cent of the Earth's surface and touches all continents except Europe and Africa. The Mariana Trench in the Pacific Ocean is the deepest **trench** in the world. Some of the world's most active and **dormant** volcanoes lie in the Pacific Ocean.



*Marine life in the Pacific Ocean*



*Undersea view of the Mid-Atlantic Ridge*

The **Atlantic Ocean** is the world's second largest ocean. It is bound by the continents of Europe and Africa in the east and by North America and South America in the west. The ocean forms the shape of the letter 'S'. A long range of undersea mountains lies beneath the Atlantic Ocean. It is called the Mid-Atlantic Ridge. In many places, the mountains reach above the sea level and form islands. The Atlantic Ocean produces a large part of the world's fish supply. It also has large deposits of petroleum, natural gas and coal.

The **Indian Ocean** is the third largest ocean in the world. It is bound by Africa towards the west, Asia towards the north and Australia towards the east. The Arabian Sea and the Bay of Bengal are parts of the Indian Ocean. The water of the Indian Ocean is warmer than any other ocean in the world.

The **Arctic Ocean** is the smallest ocean in the world. It lies in the northern polar region around the Arctic Circle. The ocean is frozen during the winter season. During summer, the ice melts to form large icebergs and floating islands called 'ice floes'. The North Pole is located almost at the centre of this frozen ocean.





## Talking Point

Find out the names of the rivers that flow into each of these—the Arabian Sea, the Bay of Bengal and the Arctic Ocean.

The **Southern Ocean** has been named as the fifth ocean. The southern portions of the Pacific Ocean, the Atlantic Ocean and the Indian Ocean combine to form the Southern Ocean. The ocean water lying to the south of 60°S latitude is called the Southern Ocean. It completely surrounds the continent of Antarctica. The ocean remains mostly frozen for the whole year. Earlier it was known as the Antarctic Ocean.



A view of the Arctic Ocean



## You Have Learnt

- Large landmasses on the Earth's surface are called continents.
- The large interconnected masses of salty water are called oceans.
- The seven continents are Asia, Africa, North America, South America, Antarctica, Europe and Australia.
- The five oceans of the world are the Pacific Ocean, the Atlantic Ocean, the Indian Ocean, the Arctic Ocean and the Southern Ocean.



*cruise*: a large ship carrying people across the oceans and seas, from one country to another

*peak*: the pointed top of a mountain

*wildlife*: animals, birds and insects that live in the forests of any particular region

*ice sheet*: a layer of ice covering a large area of land for a long period of time

*coral reef*: large underwater structures composed of skeletons of corals, which are marine animals

*marine*: connected with the sea and the creatures and plants that live there

*trench*: a long, narrow and deep hole

*dormant*: something that has not been active for a long time

# EXERCISES



## Let Us Answer

### A Fill in the blanks.

1. Large landmasses on Earth's surface are called .....
2. The ..... is the first national park in the world.
3. The ..... and the ..... are important rivers of Europe.
4. The ..... in the Pacific Ocean is the deepest trench in the world.
5. The ..... is the largest coral reef in the world.

### B Write T for True and F for False.

1. The Himalayas are located in Asia.
2. The Atlantic Ocean produces a large part of the world's fish supply.
3. The water of the Indian Ocean is colder than the water of the Pacific, Atlantic and Arctic Oceans.
4. Australia is the largest continent in the world.
5. Europe is the second most populated continent in the world.

### C Read the riddles and name the following.

1. I am the world's largest desert. I am in Africa: .....
2. I am the ocean near the North Pole. I am frozen in the winter season: .....
3. I am the largest and deepest ocean in the world: .....
4. I form the shape of the letter 'S'. I have an undersea mountain range: .....
5. I am the southernmost continent and I am known as the White Continent: .....

### D Answer the following questions in your exercise book.

1. Name the seven continents and five oceans in order of their size, starting from the largest to the smallest.
2. What is marine life?
3. Describe the Arctic Ocean during summer.
4. What is the Mid-Atlantic Ridge?
5. Write a brief description about Asia.



## Think Beyond

HOTS Question

If you took a flight from New Delhi to New York, how many oceans and countries would you cross on the way? You may take the help of a political map of the world. Write the names of the oceans and countries in your notebook.



## Let Us Do

- A** Imagine that you are a young explorer, travelling from India to Australia. Apart from your clothes, make a list of five essential things you need to carry with you. Write a travelogue about your journey over the Indian Ocean.
- B** Collect pictures of some natural wonders of the seven continents and five oceans. Make a chart and display it in the class.



## Life Skills

Thinking & Environmental Skills

Discuss the problems that fish, birds and other marine animals face due to overfishing and other human activities in the oceans. Share your ideas on how to stop pollution in the oceans.



## Internet Links

- [http://www.sheppardsoftware.com/World\\_Continents.htm](http://www.sheppardsoftware.com/World_Continents.htm)
- [www.historyonthenet.com/lessons/sourcesmain.htm](http://www.historyonthenet.com/lessons/sourcesmain.htm)

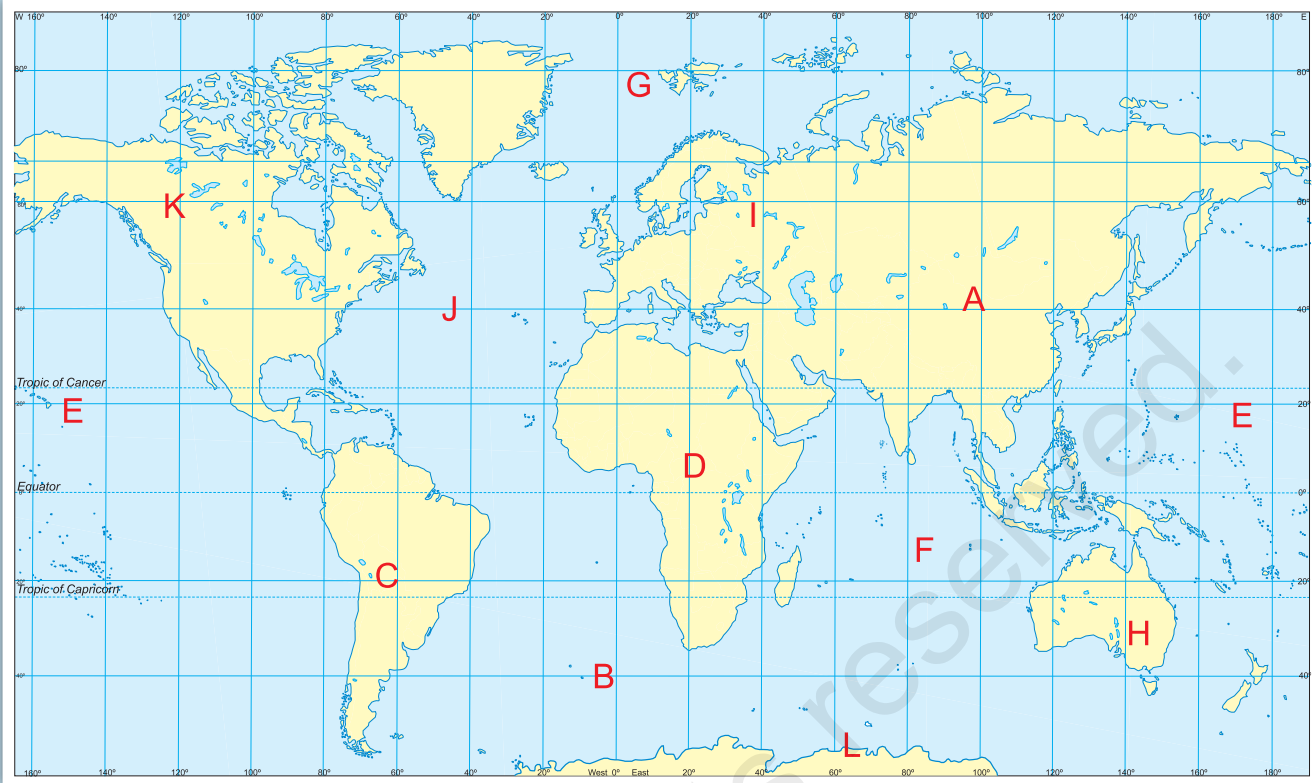


## Map Work

Refer to the map on the next page and determine which letter represents each continent or ocean.

- |                        |                          |
|------------------------|--------------------------|
| 1. North America ..... | 7. Antarctica .....      |
| 2. South America ..... | 8. Pacific Ocean .....   |
| 3. Europe .....        | 9. Atlantic Ocean .....  |
| 4. Asia .....          | 10. Indian Ocean .....   |
| 5. Africa .....        | 11. Arctic Ocean .....   |
| 6. Australia .....     | 12. Southern Ocean ..... |





Discuss in the class the continents and oceans with the help of maps and globes. Explain to children that maps and globes are representations of the Earth's surface. Help children understand how the continents evolved from the supercontinent, Pangaea. Show flashcards or pictures of some of the most important landforms and waterbodies on Earth. Ask children to work in groups to create a world map, you may guide children to make each continent as follows: North America (in green), South America (in yellow), Europe (in red), Asia (in purple), Africa (in pink), Australia (in brown) and Antarctica (in orange). Children must label each continent with a marker. Also, ask children to label the five oceans and draw a compass rose. This project works well to promote group activities, reinforces the location of the continents and oceans as well as their relative size and shape.

# Latitudes and Longitudes



## You Will Learn

- Finding places on Earth
- Latitudes
- Longitudes
- Longitude and time
- Geographic grid



## LET US BEGIN

Refer to your school atlas. Open the political map of India. Study the network of lines (grid) on the map. With the help of the degrees mentioned on the vertical and horizontal lines, answer the questions that follow.



1. Write the degree for the Tropic of Cancer.

.....  
 .....  
 .....

2. Write the degrees of the vertical and horizontal lines closest to New Delhi.

Vertical line:

Horizontal line:

.....  
 .....  
 .....

3. What is the scale of the map mentioned on the map?

.....  
 .....  
 .....

Cheeni is travelling to New York with Mom to attend the 'Young Geographer of the Year' competition.



How will the pilot find the air route to New York?



## FINDING PLACES ON EARTH

In Class 4, we have learnt that globes and maps help us to locate places on Earth. A **globe** is a miniature model of the Earth. If you look at a globe, you will see that it is a ball fixed to a stand, with a rod passing through it. The globe spins along this rod. In the same way, our Earth also spins along an imaginary line called the **axis** of the Earth. The axis of the Earth is always tilted to one side, just like the globe. The axis has two end points called the **North Pole** and the **South Pole**. The North Pole is the northernmost point and the South Pole is the southernmost point of the Earth.



Fig. 2.1: A globe

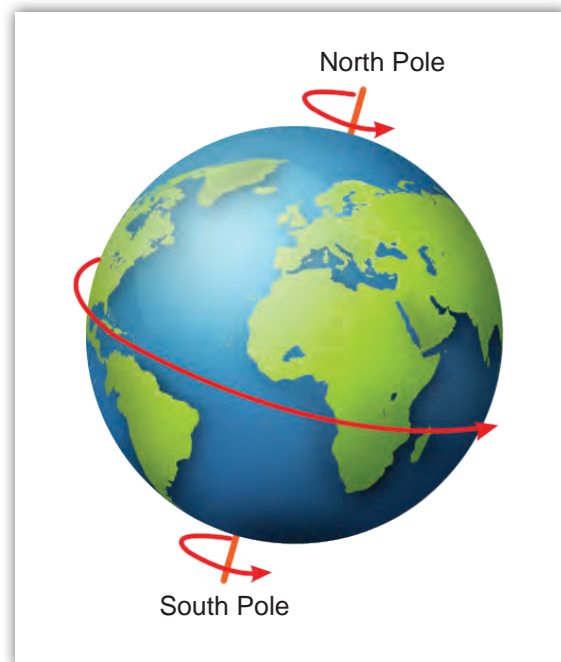


Fig. 2.2: The Earth and its tilted axis



There are a number of **horizontal** and **vertical** lines marked on the globe. These are imaginary lines which help us to find the exact location of any place on a globe or a map. These lines also help us to find out the time of any place on Earth. The vertical imaginary lines that run from north to south are called **longitudes**. The horizontal imaginary lines that run from east to west are called **latitudes**.

## LATITUDES

Between the two poles there is an imaginary line that divides the Earth into two equal halves. This imaginary line is called the **Equator**. There are imaginary circular lines drawn **parallel** to the Equator. These lines are called **latitudes**. The part of the Earth lying above the Equator is called the **Northern Hemisphere**. The part of the Earth lying below the Equator is called the **Southern Hemisphere**.

Latitudes are measured as angles north or south of the Equator. Lines of latitude to the north of the Equator are marked from  $1^{\circ}\text{N}$  to  $90^{\circ}\text{N}$ . There are 90 latitudes drawn to the north of the Equator. Similarly, lines of latitude to the south of the Equator are marked from  $1^{\circ}\text{S}$  to  $90^{\circ}\text{S}$ . There are 90 latitudes drawn to the south of the Equator. Therefore, including the Equator ( $0^{\circ}$ ) there are 181 latitudes. As you move north or south from the Equator, the lines of latitude become smaller. The latitudes  $90^{\circ}\text{N}$  and  $90^{\circ}\text{S}$  are not circular lines but end as points. These points are known as the North Pole and the South Pole.

Look at Fig 2.3. Apart from the Equator and the Poles, there are four more important lines of latitude—the Tropic of Cancer ( $23\frac{1}{2}^{\circ}\text{N}$ ), the Tropic of Capricorn ( $23\frac{1}{2}^{\circ}\text{S}$ ), the Arctic Circle ( $66\frac{1}{2}^{\circ}\text{N}$ ) and the Antarctic Circle ( $66\frac{1}{2}^{\circ}\text{S}$ ).

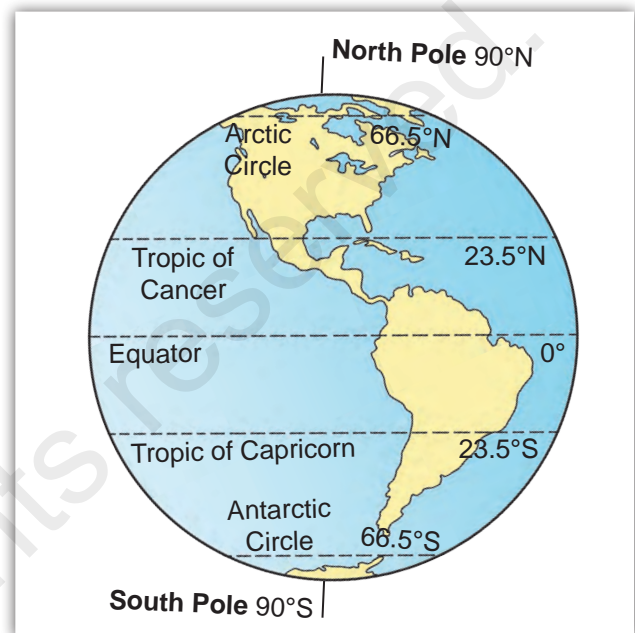


Fig. 2.3: Important parallels of latitude



### Let Us Explore

Study the map of India. You may also observe India on a globe. Find out the lines of latitude that pass through India.

## LONGITUDES

Look at Fig. 2.4. There are vertical lines running from the North Pole to the South Pole. These imaginary lines that run from the North Pole to the South Pole are called longitudes or **Meridians of Longitude**. There are 360 lines of longitude. The  $0^\circ$  longitude and the  $180^\circ$  longitude, together divide the Earth into two equal halves—the Eastern Hemisphere and the Western Hemisphere. The  $0^\circ$  longitude is called the Prime Meridian or Greenwich Meridian. Lines of longitude to the east of the Prime Meridian are marked from  $1^\circ\text{E}$  to  $180^\circ\text{E}$ . Similarly, lines of longitude to the west of the Prime Meridian are marked from  $1^\circ\text{W}$  to  $180^\circ\text{W}$ .

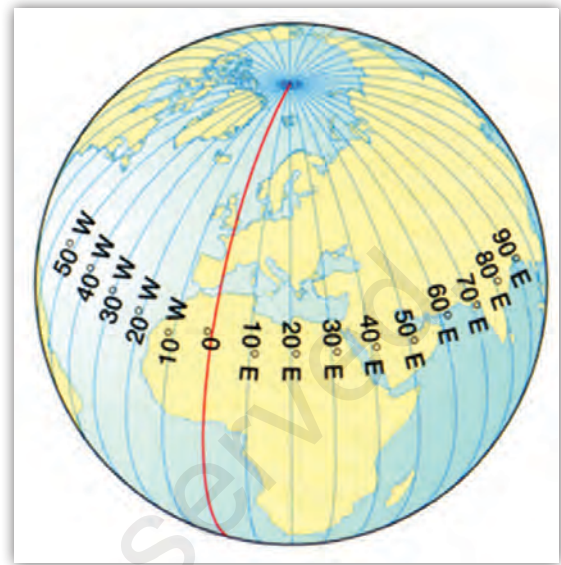


Fig. 2.4: Meridians of Longitude



### Do You Know?

In 1884, an international conference decided that the  $0^\circ$  longitude which passes through the Royal Observatory at Greenwich in England, be accepted as the Prime Meridian.



Royal Observatory at Greenwich

Unlike the lines of latitude, the longitudes do not run parallel to each other. The distance between two longitudes is greatest at the Equator and goes on decreasing towards the poles. All longitudes meet at the North Pole and the South Pole.

On the globe,  $180^\circ\text{E}$  and  $180^\circ\text{W}$  refer to the same longitude. This meridian is simply written as  $180^\circ$  without the letters E or W. This longitude is known as the **International Date Line**.

This is where each calendar day changes. The Eastern Hemisphere is ahead in time from the Western Hemisphere.

The International Date Line is not a perfect straight line, it is zigzag. It has been drawn in an irregular manner so that the islands and countries through which it passes, remain on the same day.



### Let Us Explore

Look at the world map and find out the names of the countries through which the Prime Meridian passes.

## LONGITUDE AND TIME

Time varies in different parts of the world. Longitudes also help to calculate the time of a place. Do you know what time it is in London (United Kingdom) when it is 8 am in New Delhi, in India?

When the Sun shines directly overhead a particular longitude, it is mid-day at all places on that longitude. As the Earth rotates from west to east, places on the east have mid-day before the places on the west. London and New Delhi are 5 hours 30 minutes apart. This happens because the Sun is first overhead at New Delhi. It takes another 5 hours and 30 minutes for the Earth to rotate enough for the Sun to be overhead on London. That means when it is 8:00 am in New Delhi, it is 2:30 am in London.

Along the  $180^\circ$  longitude, the International Date Line is where each calendar day starts and ends. At any hour of the day, a traveller travelling across the International Date Line from the east to west gains a day. While travelling across the International Date Line from west to east, the traveller loses a day.

## GEOGRAPHIC GRID

On a globe or a map, the latitudes and longitudes intersect to form a network of lines known as **grid**. Look at Fig. 2.5. The point on the grid where latitudes and longitudes intersect each other is called a **coordinate**. Coordinates help us to locate any place or point on the Earth. They specify the exact location of places on the Earth's surface.

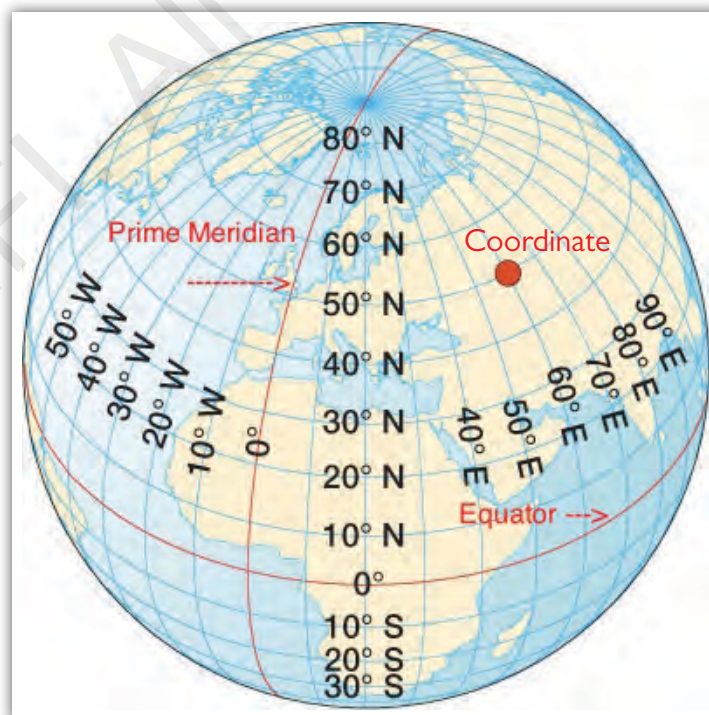


Fig. 2.5: Grid and Coordinates



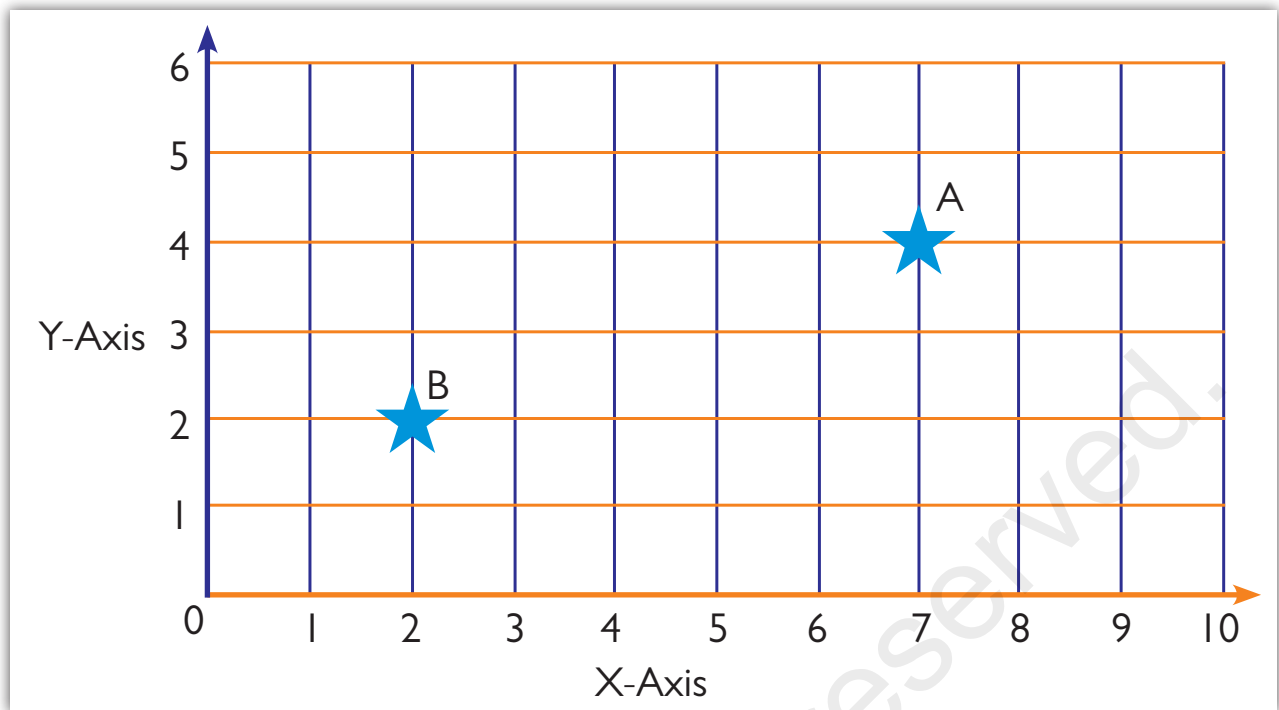


Fig. 2.6: Grid and Coordinates

Fig. 2.6 illustrates how the exact location of any place can be specified using the coordinate system. In the example, the two axes are labelled as X and Y. The origin is marked in the lower left hand corner. The distance travelled along each axis from the origin is shown. In this coordinate system, the value associated with the X-axis is given first, followed by the value assigned on the Y-axis. The location represented by star A in Fig. 2.6 has the coordinate 7,4. Try to find the coordinate for star B.



### Do You Know?

The Earth takes 24 hours to complete one rotation on its axis. There are 360 degrees of longitudes. The Earth takes 4 minutes to rotate from one longitude to the next.



## You Have Learnt

- The Equator divides the Earth into two equal halves—the Northern Hemisphere and the Southern Hemisphere.
- The lines of latitude are imaginary lines that run parallel to the Equator.
- The meridians of longitude are imaginary lines running from the North Pole to the South Pole.
- The  $0^\circ$  longitude (Prime Meridian) and the  $180^\circ$  longitude (International Date Line) divide the Earth into two halves—the Eastern Hemisphere and the Western Hemisphere.
- The lines of latitude and longitude intersect to form a grid.
- The intersection point of a latitude and a longitude is called a coordinate and helps in locating any place on the Earth.



*horizontal: lines running from east to west*

*vertical: lines running from north to south*

*parallel: two or more lines which have the same distance between them at every point*

# EXERCISES



## Let Us Answer

### A Fill in the blanks.

1. The longitudes run from ..... to .....
2. The longitudes meet at the two .....
3. There are ..... lines of latitude.
4. The  $0^\circ$  latitude is known as the .....
5. The Earth spins along an imaginary line known as the .....

### B Tick (✓) the correct answer.

1. If you move from  $0^\circ$  latitude towards the Tropic of Cancer, you will be travelling:  
a. north       b. south   
c. east       d. west
2. The  $0^\circ$  longitude is known as the:  
a. Prime Meridian       b. Equator   
c. Tropic of Cancer       d. Tropic of Capricorn
3. The main use of the grid of meridians and parallels is to:  
a. tell time       b. locate places   
c. check latitudes of places       d. check longitudes of places
4. The line of latitude that divides the Earth into Northern Hemisphere and Southern Hemisphere is known as the:  
a. Prime Meridian       b. Arctic Circle   
c. North Pole       d. Equator
5. The point at which longitudes meet in the south is known as the:  
a. Equator       b. North Pole   
c. South Pole       d. Prime Meridian

### C Rearrange the jumbled words and name the following.

1. Important meridian: ..... (RMIEP ANDIRIME)
2. The line where the date changes: ..... (NRITANOETNLAI ADET NLIE)
3. Lines that run from north to south and meet at the poles: ..... (IGTESLDONU)



- The most important latitude that divides the Earth into two equal halves: .....(QAORTEU)
- Two points on the Earth where latitudes decrease in size and reduce to a dot: .....(LOPES)

**D** Answer the following questions in your exercise book.

- Name the important lines of latitude.
- What is the International Date Line?
- Why are the lines of latitude and longitude important to us?
- What is a grid? How does a grid help us?



## Think Beyond

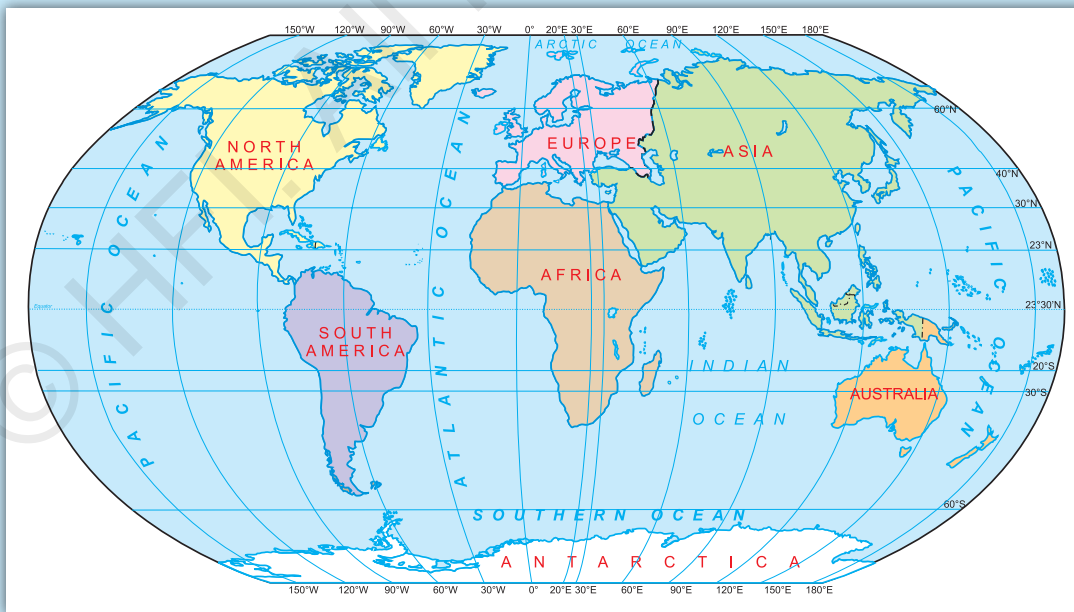
**HOTS Question**

The International Date Line is not a straight line. It is zigzag. What could be the consequence if the International Date Line was straight and passed through a country?



## Let Us Do

**A** Refer to the given map and answer the following questions.

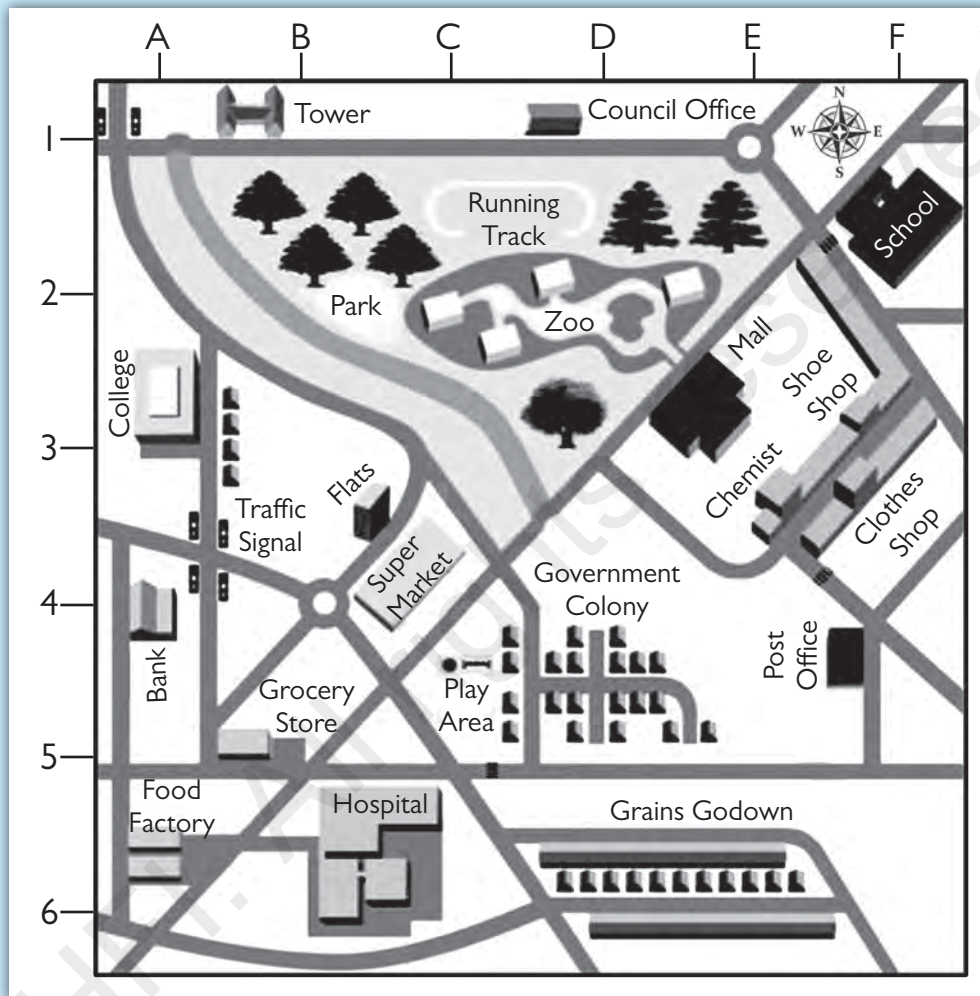


- In which continent do these coordinates lie:  $40^{\circ}\text{N}$  and  $20^{\circ}\text{E}$ ?
- In which ocean do these coordinates lie:  $20^{\circ}\text{S}$  and  $60^{\circ}\text{E}$ ?

3. In which ocean do these coordinates lie:  $60^{\circ}\text{S}$  and  $30^{\circ}\text{W}$ ?
4. In which ocean do these coordinates lie:  $20^{\circ}\text{S}$  and  $120^{\circ}\text{W}$ ?

**B**

Let us do this map reading activity to understand how we can locate places with the help of grids and tell directions on the map with the help of a compass rose.



1. Mark the shortest route from the flats to the school.
2. Which place is closest to the school?
3. Which place is farthest from the school?
4. Which important building lies to the east of the zoo?
5. What lies to the northwest of the play area?
6. What is located at A3 and D6 respectively?
7. What is the grid location of the Grains Godown?
8. When you travel from the school to the hospital, which important places lie to your right and left? List them.



## Life Skills

### Social & Emotional Skills

One day, while coming from her painting class, Cheeni noticed an elderly couple that looked very worried. The couple told Cheeni that they had forgotten their way to the metro station where they had parked their car. How would you have helped them if you were in Cheeni's place?



## Internet Links

- [http://www.educationworld.com/a\\_lesson/dailylp/dailylp/dailylp130.shtml](http://www.educationworld.com/a_lesson/dailylp/dailylp/dailylp130.shtml)
- [http://www.bbc.co.uk/bitesize/ks3/geography/geographical\\_enquiry/geographical\\_skills/revision/6/](http://www.bbc.co.uk/bitesize/ks3/geography/geographical_enquiry/geographical_skills/revision/6/)



## Map Work

On an outline map of the world, mark the following.

1. Draw a red line for the Equator ( $0^\circ$  latitude).
2. Draw a purple line for the Prime Meridian ( $0^\circ$  longitude).
3. Draw a blue line for the Tropic of Cancer ( $23\frac{1}{2}^\circ\text{N}$ ).
4. Draw a green line for the Tropic of Capricorn ( $23\frac{1}{2}^\circ\text{S}$ ).
5. Mark with arrows the northern, southern, eastern and western hemispheres and label the arrows.



Make children understand that maps and globes are representations of the Earth's surface that are used for learning and exploring places. You may also start the class by drawing lines on an orange, to demonstrate the difference between latitude and longitude. This activity will give children a visual understanding of the difference between latitude and longitude. You may also do the same activity by blowing up a blue balloon (to represent the Earth), and drawing some lines of latitude and longitude on it, to help children understand how latitudes and longitudes are used to locate places. You may also play a game to give children a hands-on understanding of latitudes and longitudes. Clear the desks to the sides of the classroom and create a huge grid on the floor using a chalk. Then label the lines as latitudes and longitudes and number them. Place small objects like pencil box, eraser, pencil, pen, toffee, etc., at different intersections of lines. Divide the class into 2 teams and play the game. Call out the object and ask a team to tell its coordinates. The team that gives maximum correct answers wins the game. This allows the children to visually see the lines as well as practise saying them correctly.



# Movements of the Earth



## You Will Learn

- Rotation of the Earth
- Revolution of the Earth
- Formation of seasons



## LET US BEGIN

Read the following sentences and mark (✓) or (X) for each sentence.

1. The Earth has two movements: rotation and revolution.
2. The Earth rotates along its axis.
3. Earth takes one day or 24 hours to complete one revolution.
4. Rotation causes day and night.
5. The part of the Earth facing the Sun has day.
6. The part which is away from the Sun has night.
7. The Earth rotates from west to east.
8. The Earth revolves around the Moon.
9. The Earth takes about one year to complete one rotation.
10. The Earth's revolution causes seasons.

Uncle, Aunt and Tara are on a vacation in New York. Cheeni and Angie called up Tara to talk to her. They were surprised to know that it was day in New Delhi while it was night in New York.



The different positions of the Sun at different times of the day give us the impression that the Sun moves from one corner of the sky to the other. But the fact is that the Sun does not move. It only appears that the Sun rises in the east and sets in the west every day. In the previous class, you have learnt that the Earth has two kinds of movements—rotation and revolution. Let us learn more about these movements of the Earth.

## ROTATION OF THE EARTH

The spinning movement of the Earth along its axis is called **rotation**. The Earth completes one rotation in 24 hours. The **axis** is an imaginary line from the North Pole to the South Pole, along which the Earth rotates. The axis of the Earth is slightly tilted to one side. At any point of time, only some part of the Earth faces the Sun. The part of the Earth that faces the Sun experiences day. The other part of the Earth that does not face the Sun experiences night. This spinning motion of the Earth causes day and night.

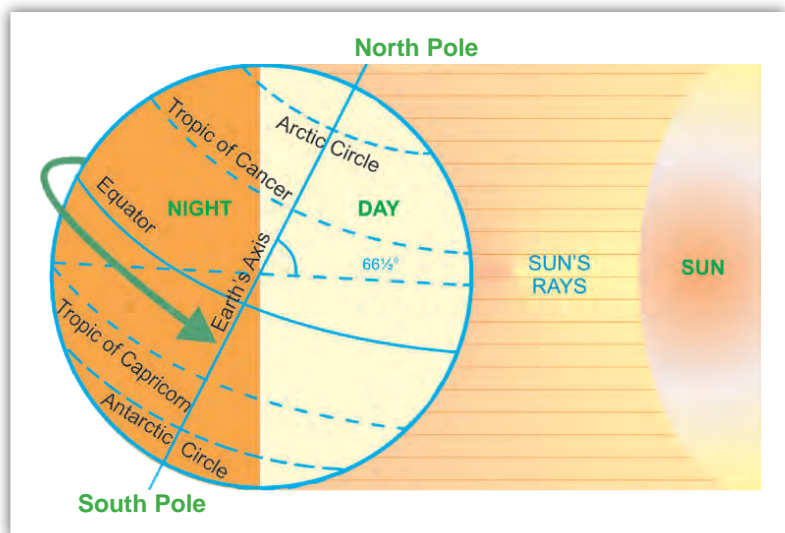


Fig. 3.1: The Earth rotates from west to east



The Earth rotates from west to east. So the places in the east have sunrise earlier than the places in the west. The Sun is fixed in one position and the Earth rotates from west to east, therefore it appears to us that the Sun rises in the east, travels across the sky and sets in the west.

Let us understand how rotation causes day and night, with the help of a torch and a globe. Suppose the torch is the Sun and the globe is the Earth. When we flash the torch on the globe from one side (in a dark room), only half of the globe gets lighted. The other half of the globe is in darkness. Now let us mark one-half of the globe as E and the other half as W. If the light of the torch falls on E, it has day and at that time, W is in darkness and has night. Slowly rotate the globe in anticlockwise direction and stop halfway. You will notice that W slowly gets lighted (it has day) while E has now moved into darkness (It has night).



## Let Us Explore

The Earth rotates on its axis like a spinning top. Then, why do we not feel the spinning movement of the Earth?



*The torch and globe experiment*

When the Earth rotates, the part of the Earth that faces the Sun receives light and experiences day. While the other half of the Earth does not receive light and experiences night. The experiment also shows that as the Earth rotates on its axis from west to east, the eastern part of the Earth faces the Sun first and the western part of the Earth receives sunlight later.





### Do You Know?

Japan is located in the extreme east and is one of the first countries to receive sunlight every day. Therefore, Japan is called the 'Land of the Rising Sun'.

## REVOLUTION OF THE EARTH

In addition to rotation, the Earth also moves around the Sun on a fixed path called its **orbit**. This movement of the Earth around the Sun is called **revolution**. The Earth takes about  $365\frac{1}{4}$  days to complete one revolution. We consider one calendar year to have 365 days. The balance  $\frac{1}{4}$  day (6 hours) is added over 4 years in a row. This adds up to an additional 24 hours or one day. Once in every 4 years, this extra day is added to the month of February. As a result, February has 29 days and we have 366 days in that year instead of 365 days. This year is called a **leap year**.



### Talking Point

Remember that any particular year that can be divided by number 4 without any remainder is a leap year. 2012 was a leap year. Which was the leap year before 2012? Which will be the next leap year?

## FORMATION OF SEASONS

Observe a globe carefully to understand the **tilted** axis of the Earth. The Earth always remains tilted to the same side and at the same angle. The tilt of the Earth's axis and the revolution of the Earth causes seasons. The revolution of the Earth gives us different seasons—spring, summer, autumn and winter. Let us observe Fig. 3.2 to understand how seasons are formed.



### Do You Know?

In 1571, Johannes Kepler, a great German astronomer and mathematician discovered that the shape of the Earth's orbit around the Sun is not circular but oval in shape. It is a geometrical shape which is called an ellipse.

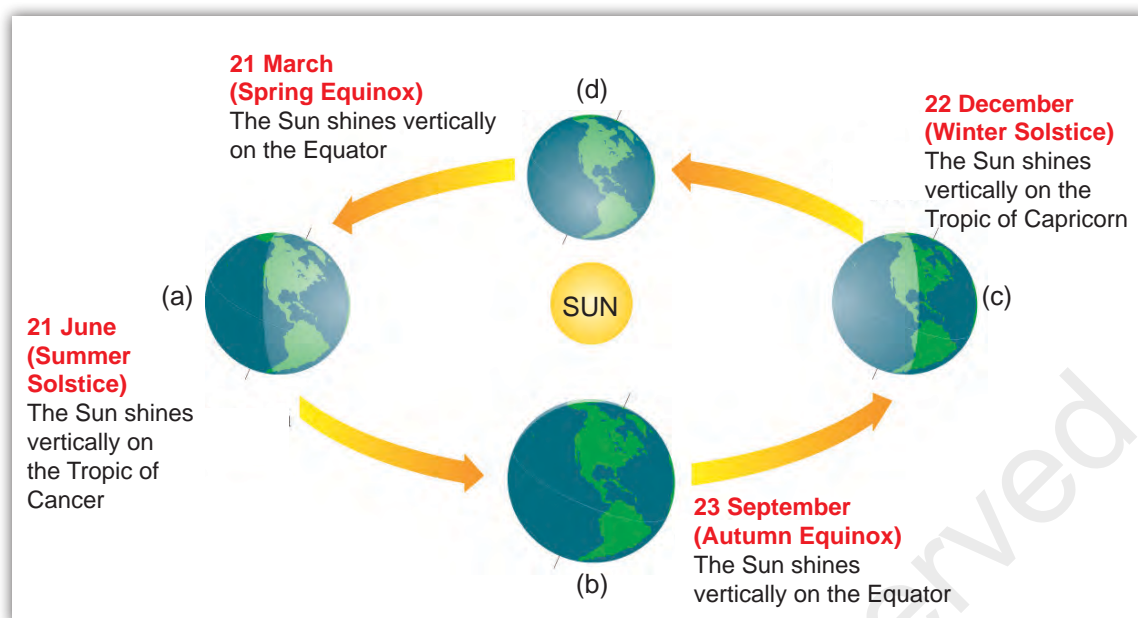


Fig. 3.2: Formation of seasons

Fig. 3.2 (a) shows the position of the Earth on 21 June. In this position, the Northern Hemisphere is tilted towards the Sun. At this time, the Sun's rays fall directly on the Tropic of Cancer. This is known as **Summer Solstice**. The Northern Hemisphere experiences summer. As the axis of the Earth is tilted, the Earth experiences more hours of daylight in the Northern Hemisphere. So the days are longer in summer. The Southern Hemisphere is tilted away from the Sun and experiences winter. It experiences longer nights and shorter days.

Fig. 3.2 (c) shows the position of the Earth on 22 December. The seasons in the two hemispheres are reversed. The Northern Hemisphere is tilted away from the Sun and has winter. On the other hand, the Southern Hemisphere is tilted towards the Sun and has summer. This is known as **Winter Solstice**. At this position, the Sun shines directly on the Tropic of Capricorn.

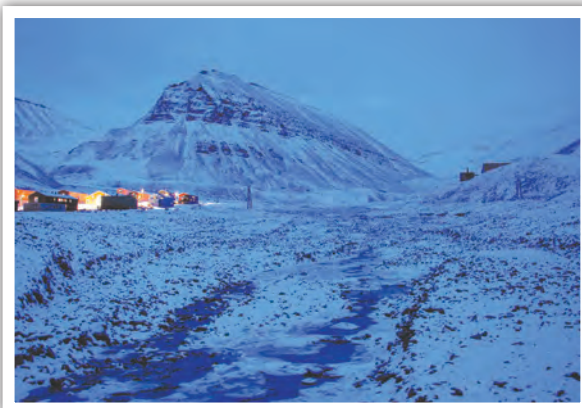
Fig. 3.2 (b) and Fig. 3.2 (d) show the position of the Earth on 23 September and 21 March, respectively. The Sun shines directly over the Equator. So the length of the days and nights are equal in both the hemispheres. 23 September is known as the **Autumn Equinox**. At this time, the Northern Hemisphere experiences autumn while the Southern Hemisphere has spring. 21 March is known as the **Spring Equinox**. Now the seasons in the two hemispheres are reversed.



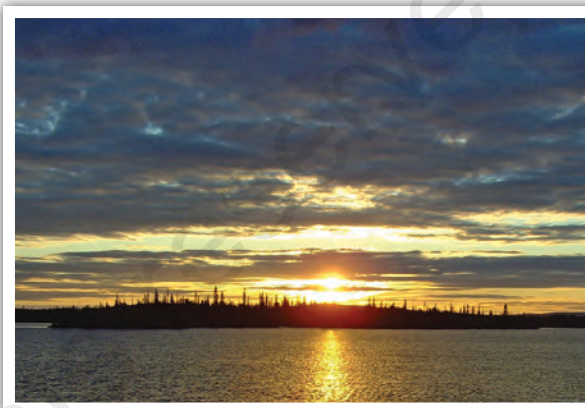
### Let Us Explore

If the Sun gives almost the same amount of heat and light throughout the year, why do the polar regions experience long winters and extreme cold?

In some places around the North and South Poles, the Sun remains visible even at midnight during some months of the year. In the Northern Hemisphere, in certain parts of Norway, Sweden and Iceland, the Sun can be seen even at midnight, from May to July. When the North Pole is tilted towards the Sun, the North Pole experiences about six months of daytime. At this time the South Pole is tilted away from the Sun and does not receive sunlight. Hence, the South Pole experiences about six months of night-time. When the South Pole is tilted towards the Sun, the South Pole has six months of daytime while the North Pole has six months of night-time.



*Six months of continuous night-time*



*Six months of continuous daytime*



## You Have Learnt

- The Earth has two kinds of movements—rotation and revolution.
- The Earth's spinning movement on its tilted axis is called rotation.
- The Earth's movement around the Sun on its fixed path is called revolution.
- The revolution of the Earth and its tilted axis cause change of seasons.
- The length of days and nights varies during summer and winter.
- During winter the nights are longer than the days.
- The length of days and nights are equal during the equinoxes.



*orbit: a curved path followed by an object (planet) while moving around another object (planet)*



# EXERCISES



## Let Us Answer

### A Tick (✓) the correct answer.

1. Day and night are caused by
  - a. Rotation
  - b. Revolution
  - c. Tilt of the axis
2. The part of the Earth which is away from the Sun has
  - a. Day
  - b. Night
  - c. Evening
3. The fixed path on which the Earth revolves around the Sun is called
  - a. Axis
  - b. Orbit
  - c. Equator
4. In the month of December, the South Pole of the Earth is
  - a. Straight
  - b. Tilted towards the Sun
  - c. Tilted away from the Sun
5. The seasons on the Earth are caused by
  - a. The revolution of the Earth
  - b. The tilt of the Earth's axis
  - c. The revolution of the Earth and the tilt of the Earth's axis

### B Match the following.

Column A	Column B
1. Revolution and rotation	a. Summer in the Northern Hemisphere
2. 366	b. Movements of the Earth
3. Winter solstice	c. Days in the leap year
4. 21 June	d. The Sun shines directly on the Equator
5. Spring Equinox	e. Shorter days and longer nights in the Northern Hemisphere

### C Rearrange the jumbled words related to the movements of the Earth.

1. TAINORTO.....
2. OUONTILERV.....
3. LOTSECSI.....
4. XIOQUEN.....
5. IBRTO.....

**D** Answer the following questions in your exercise book.

1. What are the two important movements of the Earth? What are the effects of these movements?
2. How is a leap year calculated?
3. Why is it winter in the Southern Hemisphere when it is summer in the Northern Hemisphere?
4. With the help of a diagram, explain how we have day and night on Earth.



## Think Beyond

**HOTS Question**

What would have happened if the Earth's axis was not tilted? What effect would it have on our lives?



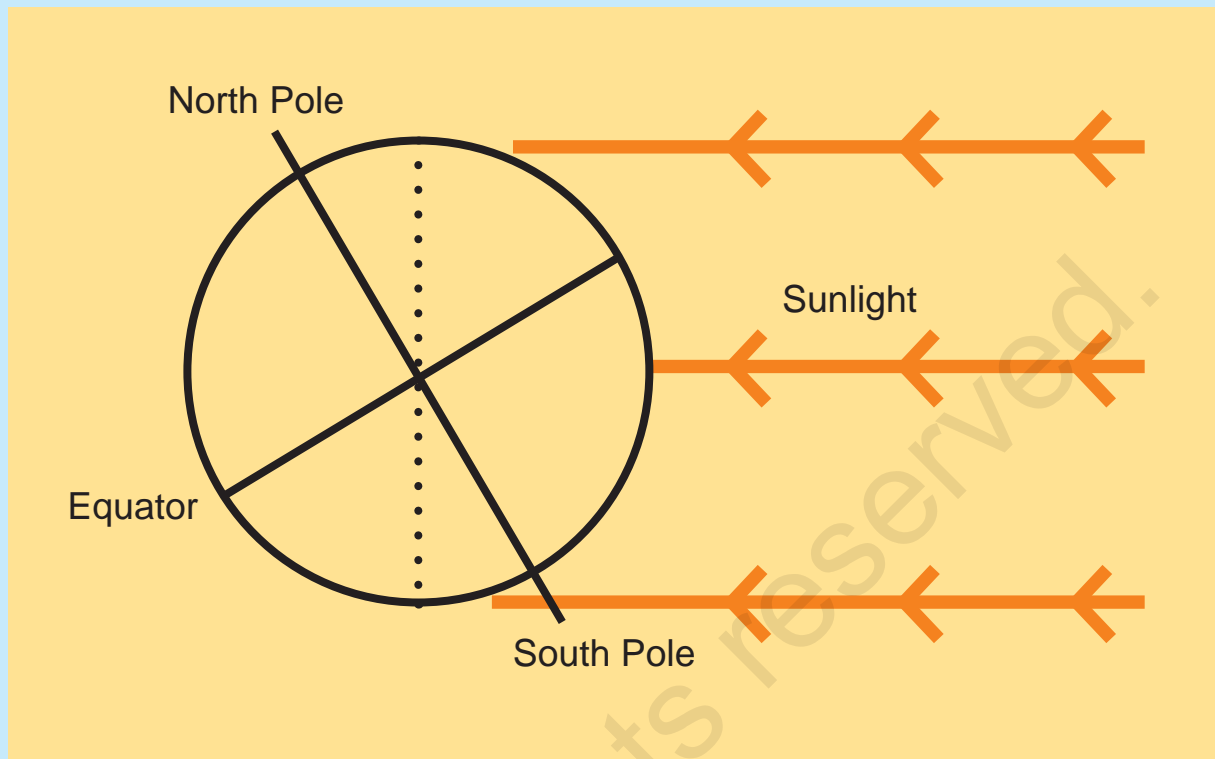
## Let Us Do

**A** Draw a diagram showing the formation of seasons and label it correctly.



**B**

Use this diagram of the Earth with its tilted axis to answer these questions.



1. What is the season in the Northern Hemisphere—summer or winter? Explain why.
2. Explain why days and nights are equal during autumn and spring equinox.



## Life Skills

## Observation & Analytical Skills

The light from the Sun causes shadows on the Earth. The length of the shadows keeps changing during the day, as the Sun appears to change its position in the sky. Go out in an open field or park and observe the length/size of your shadow in the morning, afternoon and evening. Why did the length of the shadows vary?



## Internet Links

- <http://www.kidsgeo.com/geography-for-kids/0017-the-earths-movements.php>
- <http://easyscienceforkids.com/all-about-seasons/>
- <http://www.thunderboltkids.co.za/Grade6/04-earth-and-beyond/chapter2.html>





## Project Time

### Make your own Globe!

#### You will need:

- Round balloon
- Newspaper strips
- Glue
- Paint

#### You must do:

1. Blow air into a round balloon and tie a knot. Tie a piece of string around the end of the balloon.
2. Cut a few sheets of newspaper into strips. Apply glue on one side of each strip and paste it on the balloon. Cover the balloon completely with paper strips.
3. Dry it in the air.
4. Draw the seven continents of the Earth on the balloon, with a marker pen to make it look like a real globe.
5. Refer to an atlas and paint the continents with yellow, brown and green. Paint the regions around the poles white. Colour the oceans in blue colour.
6. Let the paint dry. Your globe is now ready!



Define the axis of the Earth as an imaginary line on which the Earth rotates. Help children to understand the concept of rotation of the Earth and the occurrence of day and night. You may demonstrate the occurrence of day and night with the help of a torch and a globe. Demonstrate the formation of day and night as the impact of rotation of the Earth. Relate the concept of rotation with the tilted axis of the Earth and varying lengths of days and nights. Define the orbit as the path on which the Earth moves on its journey around the Sun. Explain the elliptical shape of the orbit. Explain the concept of revolution and occurrence of seasons. Define the terms Solstice and Equinox in terms of seasons. You may also organise a visit to a planetarium where the children can see the other celestial bodies and understand the rotation and revolution of the Earth through audio-visuals.



# GENERAL



# KNOWLEDGE

CLASS-5 ♦ SEMESTER-I

1.	Persons and the Associated Places	418
2.	Great People of the Past	419
3.	Events and Dates	421
4.	Our Parliament	423
5.	Great Fighters of India	424
6.	Where in India	425
7.	National Parks in India	426
8.	Orchestra	427
9.	World's Superlatives	428
10.	Sobriquets	429
11.	Wonders of the Past	431
12.	International Emblems	432
13.	Famous Leaders	433
14.	International Languages	435
15.	Countries and Capitals	436

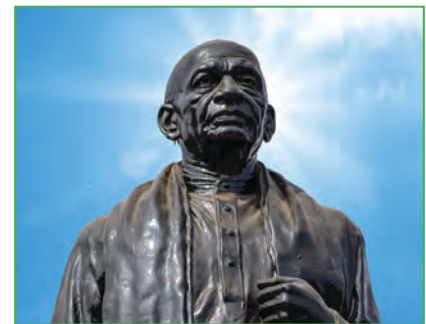
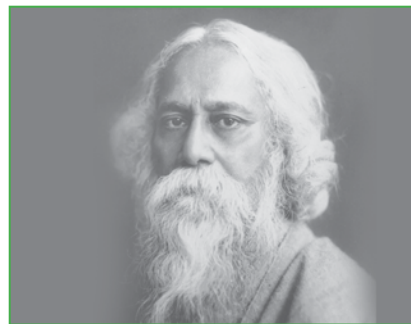


# Persons and the Associated Places



Match the famous persons and the places they are associated with.

- |                          |                          |
|--------------------------|--------------------------|
| 1. Aurobindo Ghosh       | (a) Cuttack              |
| 2. Tipu Sultan           | (b) Jalandhar            |
| 3. Subhash Chandra Bose  | (c) Fatehpur Sikri       |
| 4. Jawaharlal Nehru      | (d) Shantiniketan        |
| 5. Vinoba Bhave          | (e) Jamshedpur           |
| 6. Gopal Krishna Gokhale | (f) Puducherry           |
| 7. Jamsetji Tata         | (g) Porbandar            |
| 8. Sardar Patel          | (h) Seringapatnam        |
| 9. Bal Gangadhar Tilak   | (i) Shantivan            |
| 10. Rana Pratap          | (j) Zeradei, Bihar       |
| 11. Mahatma Gandhi       | (k) Chittor              |
| 12. Rabindranath Tagore  | (l) Paunar               |
| 13. Dr. Rajendra Prasad  | (m) Ratnagiri            |
| 14. Bhagat Singh         | (n) Maharashtra          |
| 15. Akbar                | (o) Bardoli (Satyagraha) |







# Great People of the Past



The following people were famous in their own way. Read their brief description given below and write their names. Take help from the clues in the box.

Rani Laxmi Bai, Banabhatta, Kautilya, Annie Besant, Kabir, Aryabhatta, Guru Tegh Bahadur, Alexander, Sushruta, Charaka, Krishnadevaraya, Manu, Kalidasa, Rana Pratap, C.V. Raman, Ramakrishna Paramhansa, Megasthenes, Madame Montessori, Panini, Razia Sultana

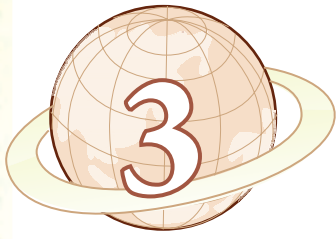
- The Sikh Guru who attained martyrdom during the reign of Emperor Aurangzeb. ....
- The King of Macedonia who set out for mighty military exploits and invaded India in 327 B.C.E. ....
- He was the most celebrated of the learned men and court poet of King Harshavardhana. He was the author of Kadambari. ....
- The great Indian astronomer and mathematician after whom India's first scientific satellite was named. ....
- An Irish woman who was a staunch supporter of India's freedom and became the President of the Indian National Congress. ....
- The queen of Maratha who is symbolised as a warrior queen, riding a horse with her son tied on her back. ....
- He was one of the greatest exponents of Bhakti Movement in the Middle Ages. He preached the unity of God and equality of all religions. ....
- A great politician and the author of Arthashastra. He helped Chandragupta Maurya in securing political power. ....
- He is known as the 'Father of Surgery'. ....
- He is known as the 'Father of Medicine'. He consolidated Ayurveda in 400 BCE. ....
- The greatest epic poet in Sanskrit, he wrote the Shakuntala. ....



12. The most famous Raja of Vijayanagar Kingdom, the last great Hindu ruler of Southern India. ....
13. The famous Hindu lawgiver, the author of Manu Smriti. ....
14. An ambassador to Chandragupta Maurya's court sent by Seleucus. ....
15. Italian educator and originator of the method of education known as Montessori System. ....
16. The great Sanskrit grammarian of ancient India. ....
17. Great religious saint and teacher of Bengal whose teachings led Swami Vivekananda to found the Ramakrishna Mission. ....
18. An eminent Indian scientist who was awarded the Nobel Prize in 1930. ....
19. The bravest and most illustrious figure in the history of Rajputs who refused to submit to Akbar. ....
20. The first Muslim female ruler of the Delhi Sultanate. ....



© HFEI. All rights reserved.



# Events and Dates



Fill in the correct years of the events given below. Take help from the clues given in the box.

1931	1853	1739	1498	1526	1757	1857	1935	1576	1784	1885	1937
1928	1793	1600	1942	2000	1946	1943	1998	1947	1956	1965	1962
1964	261 BCE	1206	1914	1025	1668						

1. Battle of Kalinga .....
2. Sultan Mahmud Ghazni invaded India .....
3. Slave Dynasty was founded by Qutb-ud-Din Aibak .....
4. Vasco-da-Gama landed at Calicut (now Kozhikode) .....
5. First battle of Panipat .....
6. Battle of Haldighati .....
7. English East India Company was formed .....
8. England took control over Bombay (now Mumbai) .....
9. Nadir Shah conquered Delhi .....
10. Battle of Plassey .....
11. Pitt's India Act .....
12. Permanent Settlement of Bengal .....
13. First Indian Railway line opened (Bombay to Thane) .....
14. First war of Independence .....
15. The first meeting of the Indian National Congress .....
16. World War I .....
17. Simon Commission came to India .....
18. Gandhi-Irwin Pact .....





19. Government of India Act for Provincial Autonomy .....
20. Inauguration of Provincial Autonomy .....
21. Quit India Movement .....
22. Bengal Famine .....
23. British Cabinet Mission visited India, interim government formed at the Centre .....
24. India was partitioned into India and Pakistan .....
25. Reorganisation of Indian states on linguistic basis .....
26. Chinese military aggression against India .....
27. Death of Jawaharlal Nehru, the first Prime Minister of India .....
28. 1st Indo-Pak war followed by Tashkent Agreement .....
29. India achieves a major breakthrough in nuclear build-up by conducting three nuclear tests at the Pokhran range. ....
30. Formation of three new states of Uttarakhand, Jharkhand and Chhattisgarh. ....

