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STANDARD FOUR

TERM - II
VOLUME II

MATHEMATICS
SCIENCE
SOCIAL SCIENCE

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Untouchability is Inhuman and a Crime

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MATHEMATICS

TERM - II

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ASSESSMENT



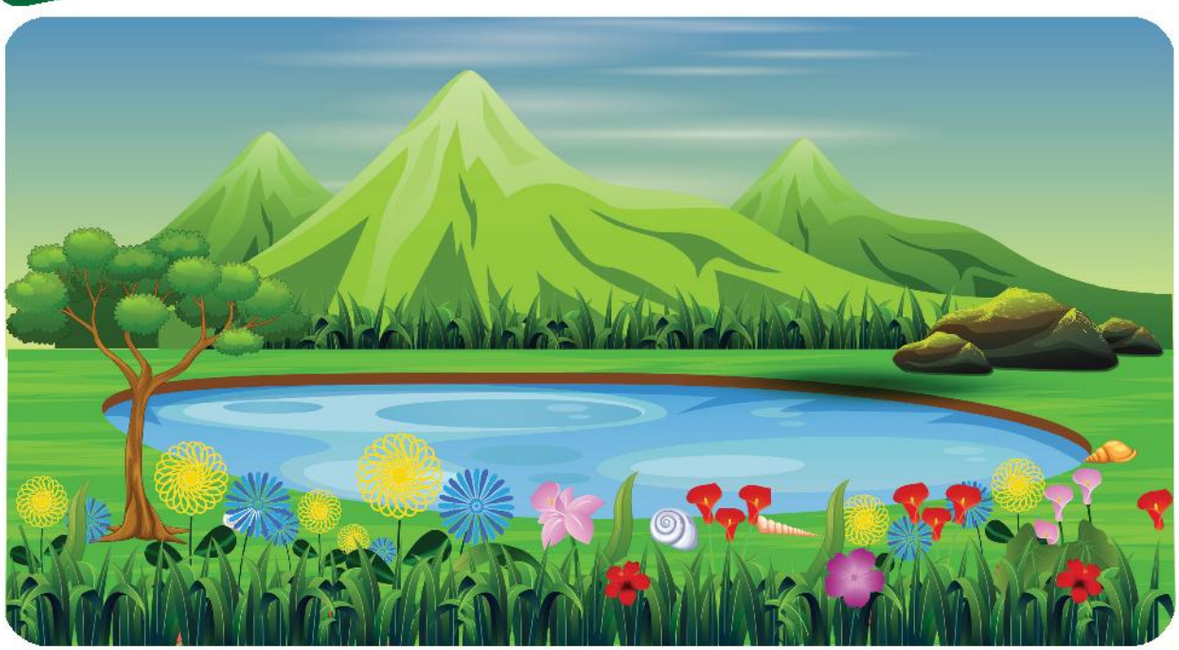
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Difference between 2-D and 3-D objects:

2-D	3-D
Length and breadth	Length, height and width.
Square, rectangle, circle, triangle, rhombus, parallelograms, trapezium, quadrilateral	Cube, cuboid, cone, cylinder, pyramid.

1.1 Iterative patterns in shapes

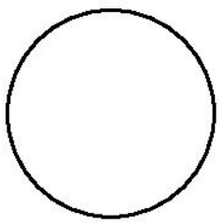


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We see patterns in trees, rivers, mountains, shells, clouds, leaves and more. Iteration is the repeated application of a process. Here we are going to see how we use the shapes to form iterative patterns.

1.1.1 Able to draw circles, spirals, ovals.

In the earlier class you have learnt to draw circles.



Circle



Spiral



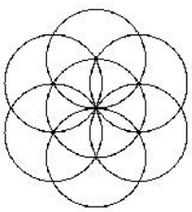
Oval

Activity

Draw the above shapes and colour it.

Using the above shapes we are going to form iterative patterns.

EXAMPLES

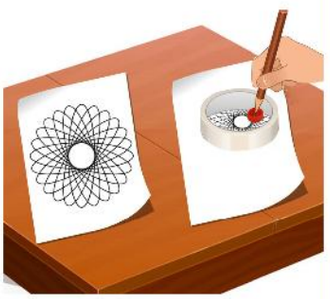




Activity

Required things: Paper, Pencil, unused bottle cap, Cellotape.

Take a sheet of paper, keep the cellotape on it. Make two or three holes in the bottle cap. Keep the bottle cap inside the cellotape and insert the pencil inside the hole, hold the cellotape firmly. Draw the spirograph by dragging the pencil here and there inside the cellotape. We will get the Spirograph.



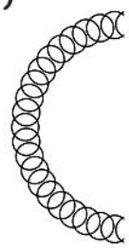
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Teacher Note; Teacher can suggest the student to use bangles also instead of cellotape



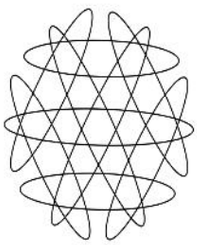
Try This

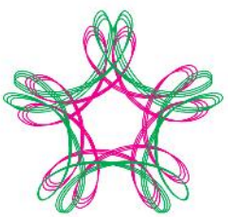
Complete the patterns using the given shapes and shade with colours of your choice.

i)	ii)	iii)
		

1.1.2 Differentiate and compare the shapes drawn.

Prepare patterns of shapes of your choice using circles, spirals and ovals. Discuss about it with your friends.





1.1.3 Explore visual examples of repeating patterns

Look at the examples given below:



Cactus is the example for oval shaped pattern.



Shell of a Snail is the example for spiral shaped pattern.



Bangle represents the circle shaped Pattern.

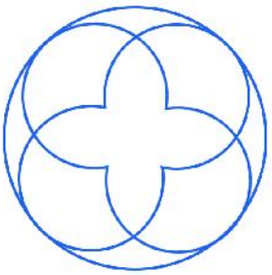
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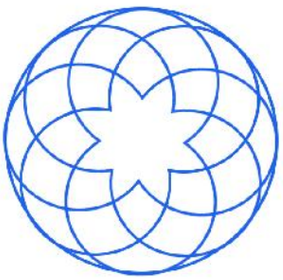
Here, few visual examples of patterns in the surroundings are given.

Rangoli



Spirograph





Observe the patterns in the surroundings. Rangoli is filled with colours using petals of flowers and fallen leaves from the trees according to creativity. Spirographs are prepared with circles, ovals and spirals in a chart or colour paper or with threads. These patterns can also be coloured.

Exercise 1.1

1) Write the shapes of the patterns present in the pictures given below

i)



ii)



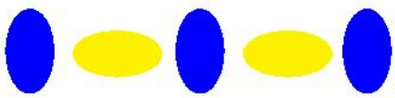
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2) Complete the patterns given below.

i.  ___ ___

ii.  ___ ___

iii.  ___ ___

iv.  ___ ___

VN6X1

3) Draw simple rangoli. Use your own creativity to fill them.

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2.1 Multiplication:

If a box contains 6 chocolates, how many chocolates are there in 10 such boxes? Shall we calculate the number of chocolates in boxes?

Number of chocolates,

One box	6	$6 \times 1 = 6$
Two boxes	$6 + 6$	$6 \times 2 = 12$
Three boxes	$6 + 6 + 6$	$6 \times 3 = 18$
Four boxes	$6 + 6 + 6 + 6$	$6 \times 4 = 24$
.	.	.
.	.	.
.	.	.
Ten boxes	$6 + 6 + 6 + 6 + 6 + 6 + 6 + 6 + 6 + 6$	$6 \times 10 = 60$

Multiplication is the shortest form of repeated addition.

EXAMPLE

If 6 fans are needed for one room. How many fans are needed for 9 rooms?

Solution:

To find the total fans we have to multiply 9 by 6.

$$\mathbf{9 \times 6 = 54}$$

54 fans are needed for 9 rooms.

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Exercise 2.1

1. $4 \times 6 =$ ☐ 2. $7 \times 6 =$ ☐ 3. $8 \times 6 =$ ☐

4. In a shirt there are 6 buttons, how many buttons will there be in 8 shirts?

5. In a carton, there are 9 rows with 6 eggs in each row. How many eggs are there in all?

Complete the 7th table:

	$7 \times 1 = 7$
	$7 \times 2 = 14$
	$7 \times 3 = 21$
	$7 \times 4 =$ _____
	$7 \times 5 = 35$
	_____
	$7 \times 7 =$ _____
	$7 \times 8 = 56$
	_____
	$7 \times 10 = 70$

Exercise 2.2

1. $3 \times 7 =$ ☐ 2. $6 \times 7 =$ ☐ 3. $9 \times 7 =$ ☐

4. There are 7 pens in a box. How many pens will be there in 5 boxes?

5. One week has 7 days. Calculate the number of days in 10 weeks?

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Complete the 8th table: Number of legs in spider

	$8 \times 1 = 8$
	$8 \times 2 = 16$
	$8 \times 3 = 24$
	$8 \times 4 = 32$
	$8 \times 5 = 40$
	_____
	$8 \times 7 = 56$
	$8 \times 8 =$ _____
	$8 \times 9 =$ _____
	$8 \times 10 = 80$

Exercise 2.3

1. $8 \times 4 =$ ☐ 2. $8 \times 6 =$ ☐ 3. $8 \times 10 =$ ☐

4. One packet contains 8 pencils, how many pencils are there in 9 such packets?

5. The price of one ball is ₹ 10. Find the cost of 8 such balls?

Complete the 9th table:

9	$9 \times 1 = 9$
$9 + 9$	$9 \times 2 = 18$
$9 + 9 + 9$	$9 \times 3 = 27$
$9 + 9 + 9 + 9$	$9 \times 4 = 36$
$9 + 9 + 9 + 9 + 9$	$9 \times 5 = 45$
$9 + 9 + 9 + 9 + 9 + 9$	$9 \times 6 =$ ____
$9 + 9 + 9 + 9 + 9 + 9 + 9$	$9 \times 7 =$ ____
$9 + 9 + 9 + 9 + 9 + 9 + 9 + 9$	$9 \times 8 =$ ____
$9 + 9 + 9 + 9 + 9 + 9 + 9 + 9 + 9$	$9 \times 9 =$ ____
$9 + 9 + 9 + 9 + 9 + 9 + 9 + 9 + 9 + 9$	$9 \times 10 =$ ____

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$9 \times 1 =$ ____



$9 \times 2 =$ ____



$9 \times 3 =$ ____



$9 \times 4 =$ ____



$9 \times 5 =$ ____



$9 \times 6 =$ ____



$9 \times 7 =$ ____



____



$9 \times 9 =$ ____



$9 \times 10 =$ ____

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Exercise 2.4

1. $9 \times 3 =$ ☐ 2. $9 \times 6 =$ ☐ 3. $9 \times 10 =$ ☐

4. A sports team has 9 persons. How many persons will there be in 9 teams?
5. Number of rods in a window is 9. Find the number of rods in 7 windows.

Complete the 10th table:

From the tables 1 to 9 we get to know the following:

Practice the following:

$10 \times 1 = 10$	$10 \times 1 = 10$	$10 \times 1 =$ ____
$10 \times 2 = 20$	$10 \times 2 = 20$	$10 \times 2 =$ ____
$10 \times 3 = 30$	$10 \times 3 = 30$	$10 \times 3 =$ ____
$10 \times 4 = 40$	$10 \times 4 = 40$	$10 \times 4 =$ ____
$10 \times 5 = 50$	_____	$10 \times 5 =$ ____
$10 \times 6 = 60$	_____	$10 \times 6 =$ ____
$10 \times 7 = 70$	_____	$10 \times 7 =$ ____
$10 \times 8 = 80$	_____	$10 \times 8 =$ ____
$10 \times 9 = 90$	$10 \times 9 = 90$	$10 \times 9 =$ ____
$10 \times 10 = 100$	_____	$10 \times 10 =$ ____

Exercise 2.5

Fill in the boxes by multiplying with 10, 100, 1000.

1. $10 \times 7 = 70$
2. $100 \times 16 =$ ☐
3. $1000 \times 9 = 9000$

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4. $10 \times 696 =$ ☐

5. $100 \times 96 = 9600$

6. $1000 \times 6 =$ ☐

Note:

When a number is multiplied by 10, 100, 1000, it is enough to write one zero, two zeros, three zeros respectively

Multiply by 1

$10 \times 1 = 10$ $\quad\quad$ $1 \times 7 = 7$

$136 \times 1 = 136$ $\quad\quad$ $1 \times 9936 = 9936$

$2000 \times 1 = 2000$ $\quad\quad$ $1 \times 789 = 789$

The product of one and any number is the number itself.

Multiply by 0

$10 \times 0 = 0$ $\quad\quad$ $0 \times 6 = 0$

$276 \times 0 = 0$ $\quad\quad$ $0 \times 7936 = 0$

$3000 \times 0 = 0$ $\quad\quad$ $0 \times 675 = 0$

The product of zero and any number is zero.

Order of multiplication

$4 \times 6 = 24 = 6 \times 4$	$796 \times 9 = 7164 = 9 \times 796$
$136 \times 15 = 2040 = 15 \times 136$	$1326 \times 6 = 7956 = 6 \times 1326$
$1000 \times 9 = 9000 = 9 \times 1000$	$26 \times 24 = 624 = 24 \times 26$

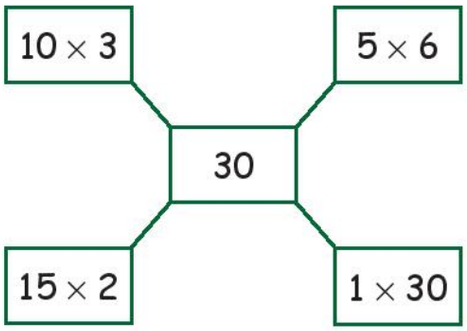
The product of two number does not change, if we interchange the order of numbers.

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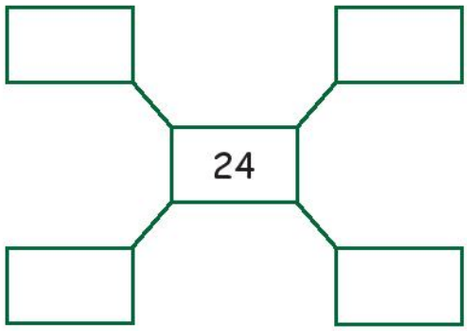
Exercise 2.6

Complete the following. One is done for you.

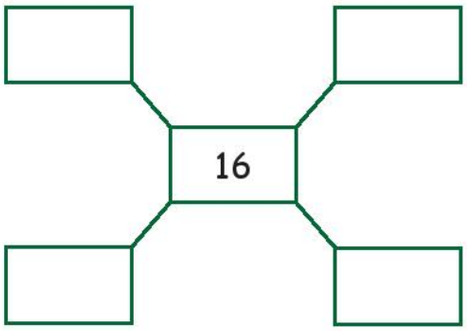
1.



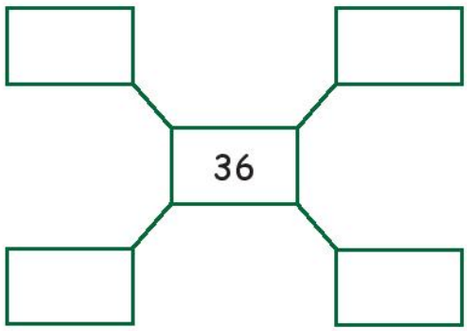
2.



3.



4.



2.2 Multiplication by lattice algorithm (up to 2 digit number by 2 digit number and 3 digit number by single digit number)

2.1.1 Able to do elementary multiplication of 2 digit by 2 digit and 3 digit by single digit numbers using lattice algorithm and the standard (column) algorithm.

Multiplication of 2 digit by a 2 digit number:

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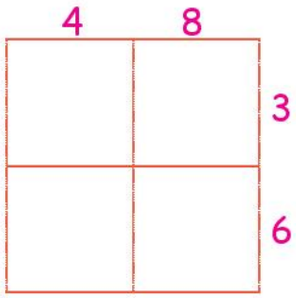
Lattice Algorithm:-

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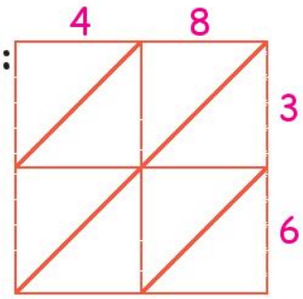
EXAMPLE 1

48×36

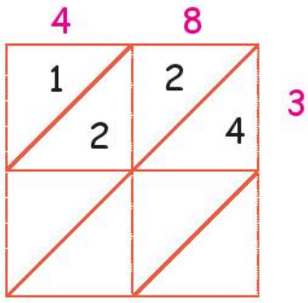
Step: 1



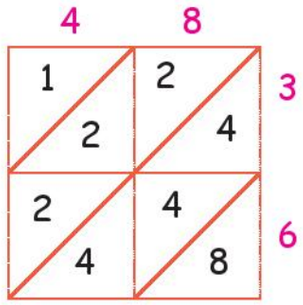
Step: 2:



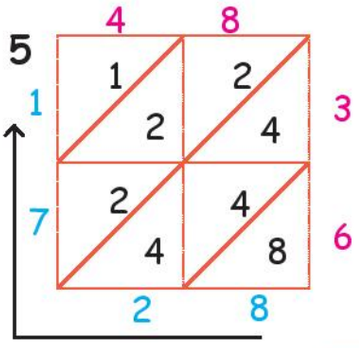
Step: 3



Step: 4



Step: 5



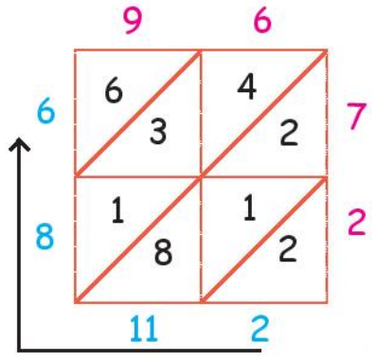
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$48 \times 36 = 1728$

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Multiply: 96×72

EXAMPLE 2



$96 \times 72 = 6912$

Standard Algorithm:

Multiply: 48×36

$36 = 30 + 6$

$$\begin{array}{r} 48 \times 36 \\ \hline 288 \\ 144 \\ \hline 1728 \end{array}$$

Step 1:	48×6 = 288 ones
Step 2:	48×30 = 1440 ones
Step 3:	$288 + 1440$ = 1728 ones

EXAMPLE 3

In a school there are 24 desks in each class room. If there are 18 class rooms in the school, Find the total number of desks.



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Solution:

Number of desks in each class rooms = 24

Number of desks in 18 class rooms = 18×24

$24 = 20 + 4$

Standard Algorithm:

Multiply: 18×24

18×24

72

360

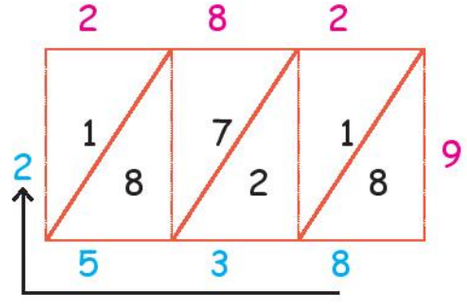
432

Step: 1	Step: 2	Step: 3
18	18	72
$4 \times$ ones	$20 \times$ ones	360 +
72 ones	360 ones	432

Multiply 3 digit number by 1 digit number: Lattice Algorithm:

EXAMPLE 1

282×9

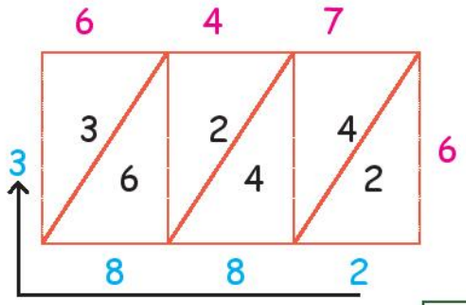


$282 \times 9 = 2538$

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EXAMPLE 2

647×6



$647 \times 6 = 3882$

Standard Algorithm

EXAMPLE 3

282×9

TH	H	T	O
	(7)	(1)	
	2	8	2
		×	9
2	5	3	8

$282 \times 9 = 2538$

Step: 1	Multiply the ones: 2 ones × 9 = 18 ones = 10 ones + 8 ones = 1 ten + 8 ten write 8 in the ones place and carry over 1 to the tens place.

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Step: 2	Multiply the tens: 8 tens × 9 = 72 tens. 72 tens + 1 tens = 73 tens = 70 tens + 3 tens = 7 hundreds + 3 tens Write 3 in tens place and carry over 7 to the hundred place.
Step: 3	Multiply the hundreds: 2 hundreds × 9 = 18 hundreds. 18 hundreds + 7 hundreds = 25 hundreds. = 20 hundreds + 5 hundreds = 2 thousands + 5 hundreds

EXAMPLE 4

A book has 396 pages. How many pages are there in 9 such books?

Solution:

No. of pages in a book = 396 pages

Number of pages in 9 books = 396 × 9

= 3564 pages.

TH	H	T	O
	(8)	(5)	
	3	9	6
		×	9
3	5	6	4

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Exercise 2.7

1. Multiply the following numbers by using lattice method.

   (i) 52×49 **(ii)** 347×5 **(iv)** 127×7

   (v) 65×37 **(vi)** 789×4 **(vii)** 37×29

2. Multiply the following numbers by using standard method;

   (i) 72×29 **(ii)** 31×27 **(iii)** 93×42

   (iv) 124×6 **(v)** 206×8 **(vi)** 479×3

3. One box contains 25 apples. How many apples are there in 36 such boxes?

4. There are 28 pages in a daily newspaper. If Ajay buys newspapers for 45 days, how many pages will it contain?

5. A truck carries 125 bags of rice. If each bag has 9 kg of rice, how many kg of rice will there be in the truck.

6. If the cost of one chair is ₹ 857. What will be the cost of 6 chairs?

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Magic squares

Create magic square by using multiples of ten 10, 20, 30, 40, 50, 60, 70, 80 and 90

20	90	40	
70	50	30	150
60	10	80	
150			

Try This

1. Frame magic squares using multiples of nine.
2. Frame magic squares using multiples of hundred.

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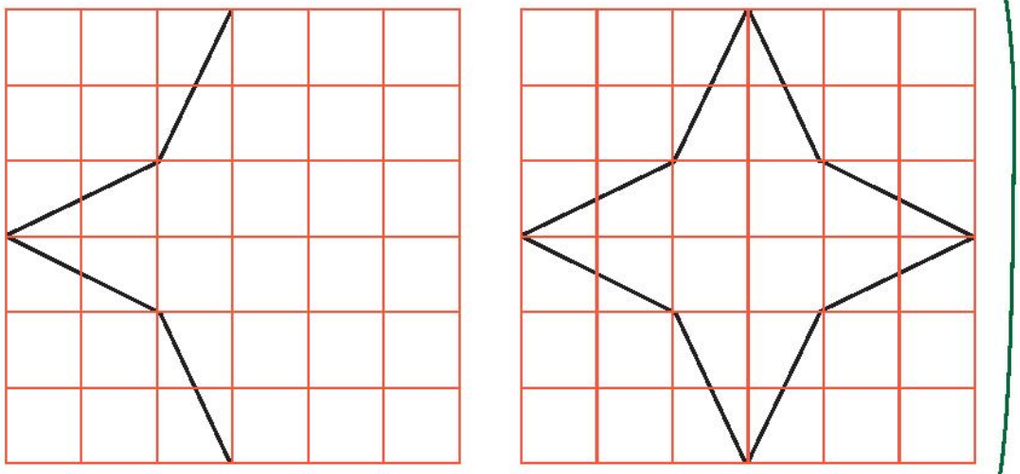
3.1 Patterns in Geometry

Able to identify symmetry in geometrical patterns.

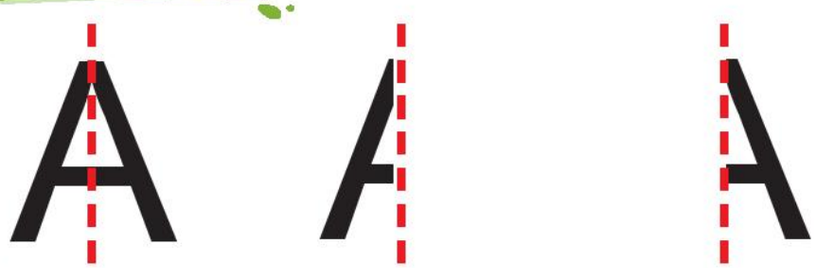
Symmetry

The figures which can be divided into two parts of equal shape and size are called symmetrical figures.

EXAMPLE 1



EXAMPLE 2



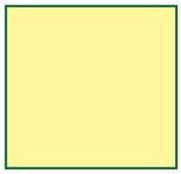
Activity

Write all the alphabets and then draw a symmetrical lines for each letters.

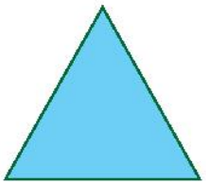
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Exercise 3.1

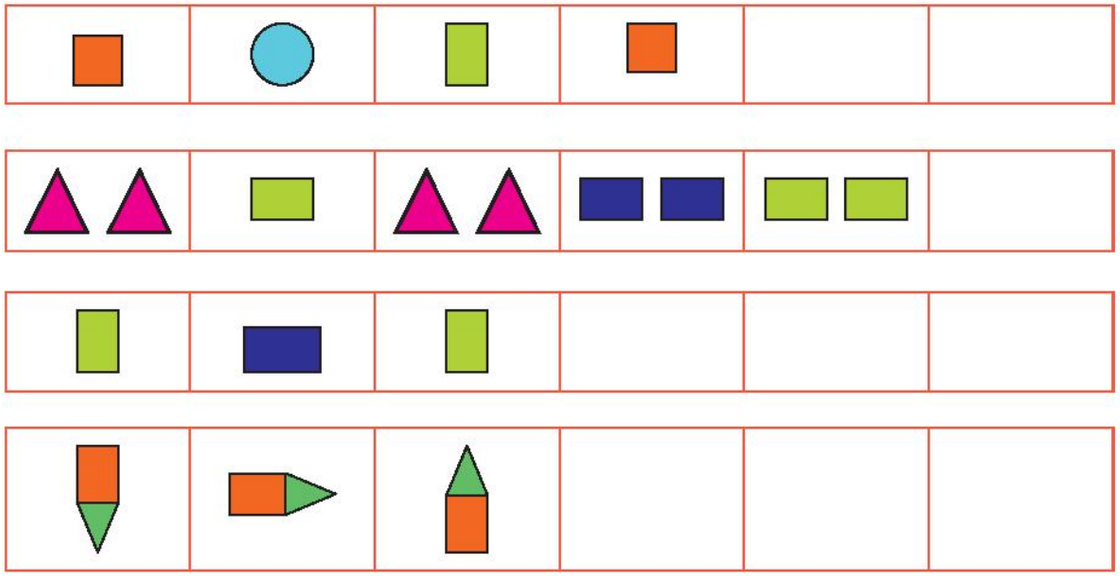
I. Draw symmetrical lines for the following shapes

1. 

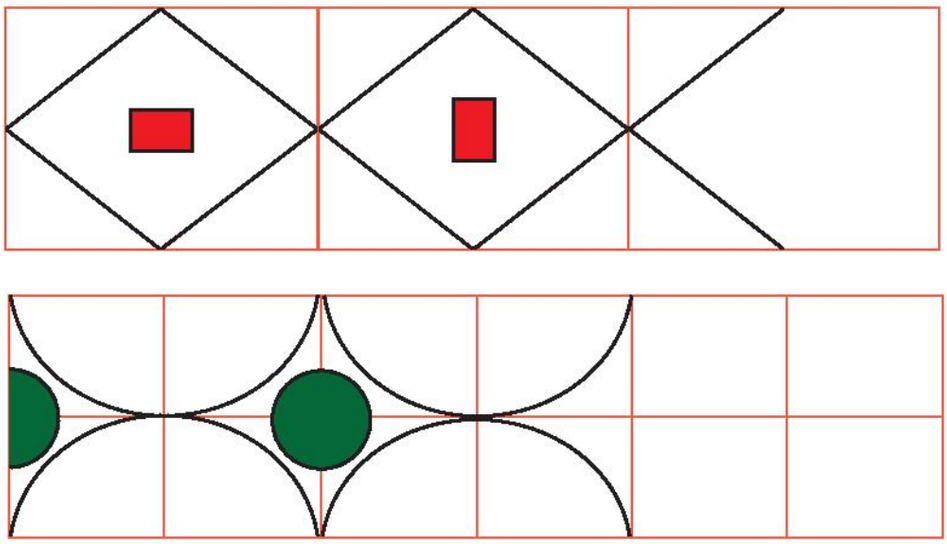
2. 

3. 

II. Fill in the Boxes



III. Complete the patterns



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Exercise 3.2

FQK7D

Fill in the blanks:

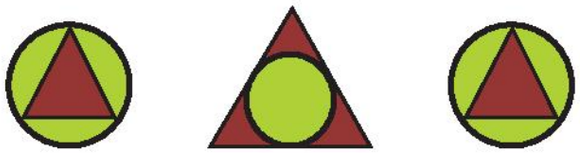
1. 1, 7, 13, 19, ___, ___, ___, ___

2.  ____ ____

3.  _____ _____

4. 5, 10, 15, 20, ___, ___, ___

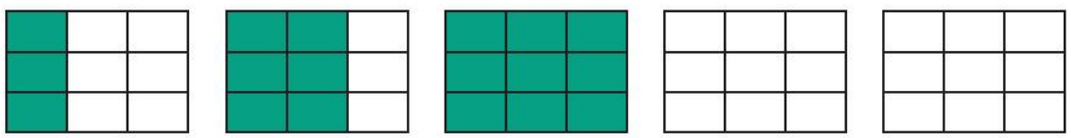
5. 12, 5, 11, 6, 10, 7, ____, ____, ____

6.  _____ _____

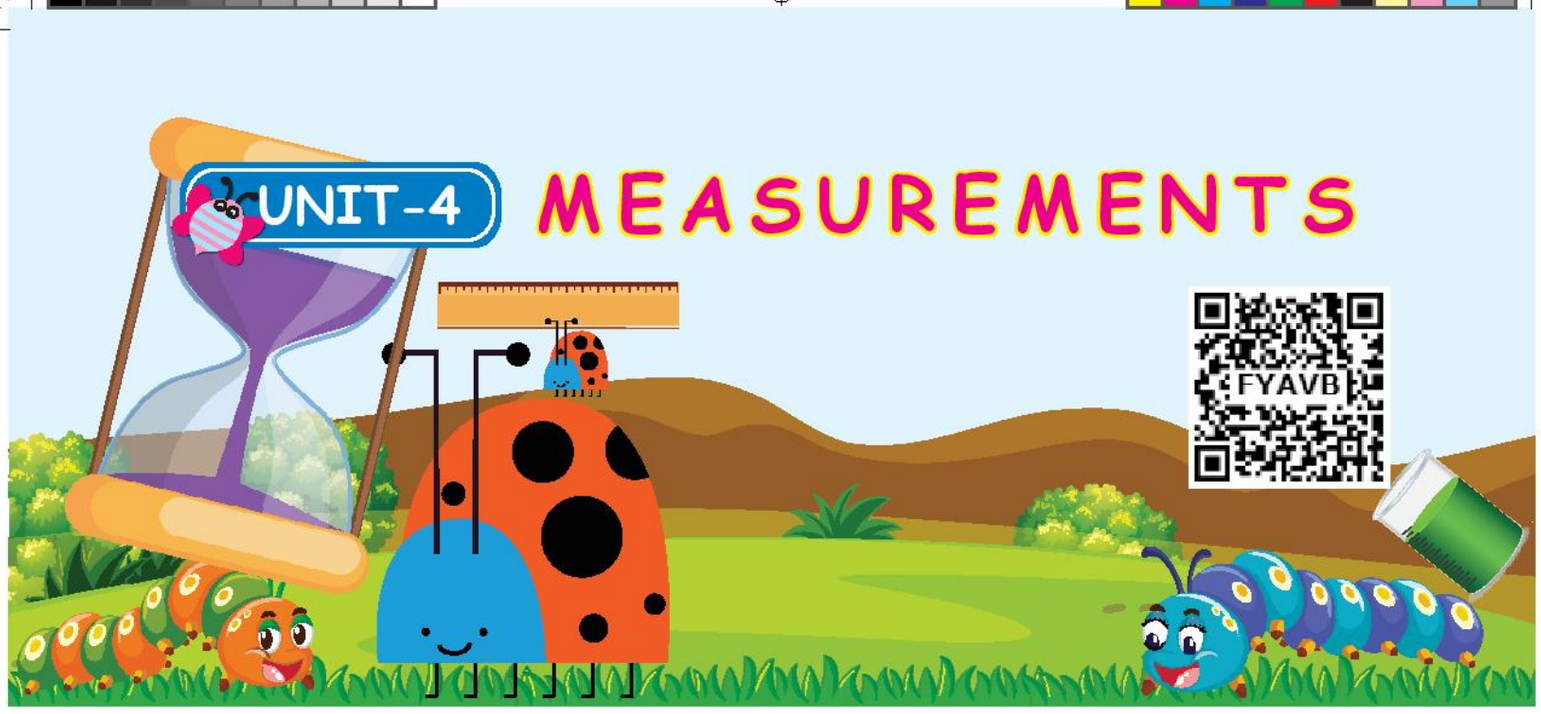
7.  _____ _____

8.  _____ _____

9.  _____ _____

10. 

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4.1 Introduction

Nisha and Joe were friends. Nisha had a pet animal. It was a dog. It was 25kilogram in weight. Joe had a pet animal. It was a cat. It was 15kilogram in weight.

Which animal is heavy?

Dog	Cat



Which is heavy?

Paper	Book



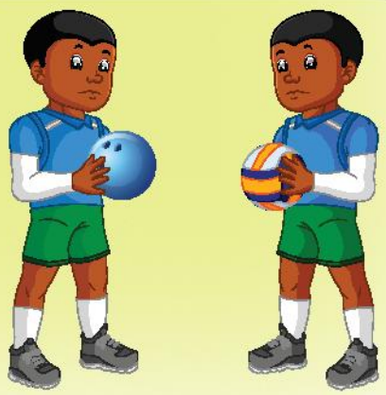
Which is heavy?

Balloon	Ball



Which is heavy?

Iron ball	Plastic ball

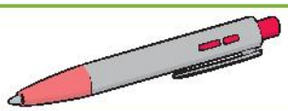


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Activity

Estimate and tick the correct option

Tick the appropriate unit (gram/ kilogram) to measure the weight of the following.

S. No	Objects	gram	kilogram
1.			
2.			
3.			
4.			
5.			
6.			

Different weighing instruments are used to measure weight.



Common balance



Digital balance



Weigh machine



Spring balance

Note:
Vegetables, fruits and rice are measured in kilogram (kg)

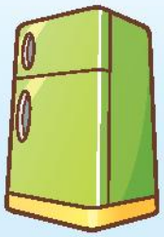
4th Maths Unit-4 Term 2 EM.indd 24 01-06-2024 12:05:34

Activity

Circle the estimated weight of the given images.



5 g	5 kg



160 g	160 kg



2000 g	2000 kg



1 g	1 kg



50 g	50 kg

Let us know the Weighing stones are in grams and kilograms



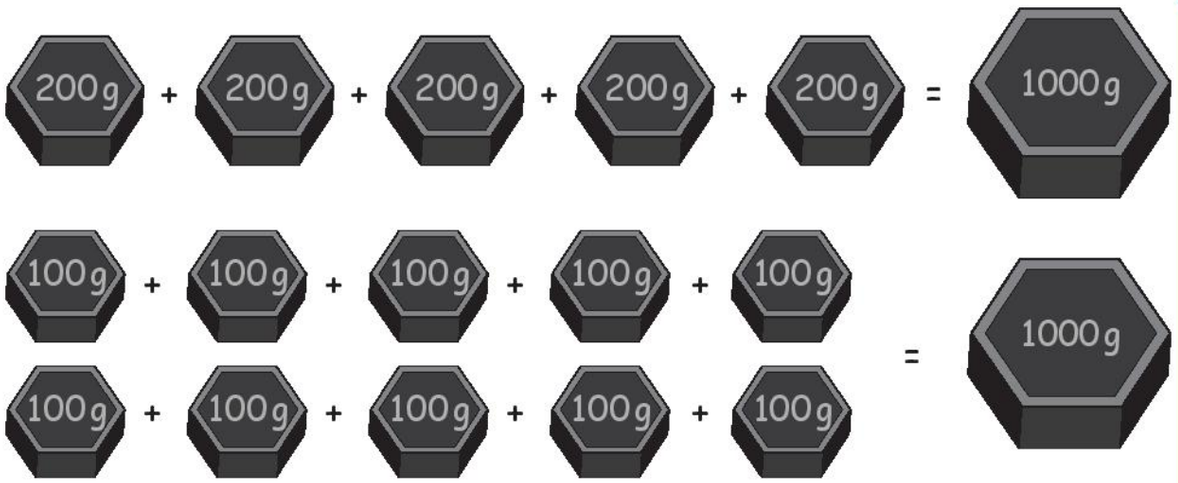
gram can be written as "g"



Note:

Gold, pepper, Tea powder, silver, Coffee powder etc. are measured by grams.

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1 kilogram = 1000 grams

Change into grams and kilogram

a) 1 kg = 1000 g

b) 2 kg = _____ g

c) _____ kg = 3000 g

d) 15 kg = 15000 g

e) 23 kg = _____ g

4.2 Addition and subtraction of measures of weights.

EXAMPLE 1

1. **Add** 4 kg 530 g and 3 kg 698 g.

kg	g
①	①
4	530
(+) 3	698
8	**228**

Answer: 8 kg 228 g

2. **Subtract** 23 kg 345 g from 55 kg 207 g

kg	g
④	⑪ ⑩
5~~5~~	2~~0~~7
(-) 23	345
31	**862**

Answer: 31 kg 862 g

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EXAMPLE 2

Kavitha bought 3 kg 435 g of apples, 1 kg 350 g of oranges and 2 kg 355 g of mangoes. What is the total weight of the fruits that she bought?

Solution:

Weight of apples = 3 kg 435 g

Weight of oranges = 1 kg 350 g

Weight of mangoes = 2 kg 355 g

Total weight = 7 kg 140 g

kg	g
①	①①
3	435
1	350
(+) 2	355
7	**140**

EXAMPLE 3

A box full of bottles weighs 12 kg 248 g. The weight of empty box is 2 kg 290 g. What is the weight of the bottles in the box?

Solution:

Weight of the box full of bottles = 12 kg 248 g

Weight of the empty box = 2 kg 290 g

Weight of the bottles in the box is **9 kg 958 g**.

kg	g
①	①①④
~~12~~	~~248~~
(-) 2	290
9	**958**

Exercise 4.1

1. **Add:**

kg	g
3	215
(+) 4	163

kg	g
6	525
(+) 2	363

kg	g
7	255
(+) 2	163

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2. **Subtract:**

kg	g
43	650
(-) 11	340

kg	g
26	754
(-) 20	330

kg	g
54	115
(-) 36	000

3. Raman bought 3 kg 250 g of tomatoes, 5 kg 110 g of potatoes and 3 kg 750 g of onions. What is the total weight of the vegetables?

4. Kannan bought some fruits and vegetables whose total weight is 3 kg 480 g. If the weight of fruits is 1 kg 657 g, find weight of the vegetables.

5. The weight of first bag is 1 kg 200 g more than the weight of the second bag. If the weight of the first bag is 3 kg 500 g. Find the weight of the second bag.

4.3 Estimate the weight of an object and verify using a balance.

Introduction

Sumathi went to the market along with her mother. In the market they kept the vegetables heap. She evaluates the vegetables.









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And then check through the balance.



1 kg 250g



750g



1 kg 500g



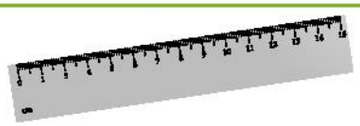
2 kg

Sumathi's approximate value is near to the correct weight. Potato's weight is exactly correct



Activity

Complete the table.

S. No	Objects	approximate value	correct value
1.			
2.			
3.			
4.			
5.			

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Exercise 4.2

1. Mohana bought 2 kg 600 g grapes and 1 kg 450 g guavas. How much more did Mohana buy grapes than guavas, by weight?

   1) 150 g
   2) 1 kg 150 g
   3) 1 kg 200 g
   4) 4 kg

2. Put >,< or = in the boxes provided below.

50 g	☐	340 g
640 g	☐	800 g
34 kg	☐	22 kg
1000 g	☐	1 kg

3. Add:

kg	g
2	326
(+) 6	123

kg	g
16	564
(+) 11	270

kg	g
4	433
(+) 9	264

4. Subtract:

kg	g
8	645
(-) 6	375

kg	g
7	900
(-) 2	950

kg	g
5	147
(-) 2	140

5. The weights of three babies are respectively 3 kg 650 g, 5 kg 420 g and 4 kg 750 g. Find their total weight?

6. A shopkeeper had 275 kg 450 g of coffee powder. He sold 80 kg 475 g. How much coffee powder will be left?

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5.1 Introduction to fractions

5.1.1 Able to observe items being a part or parts of a whole.

Raja bought a cake for his four children. He has to make it four equal parts. Then he took a knife and sliced it into four equal parts. Then he gave it to his children and they had eaten it happily.

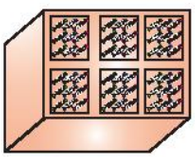


Look at the following pictures keenly

KGDNA



Number blocks



Chocolates



Label



Ice apple

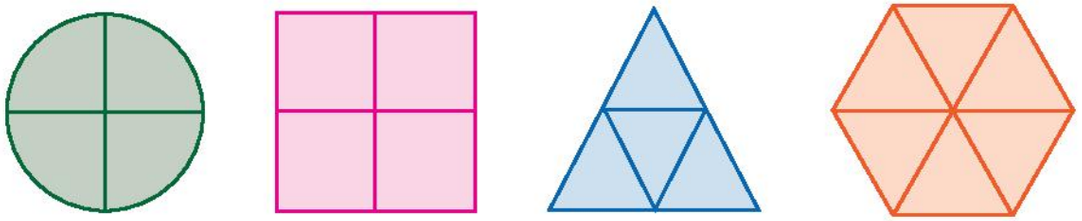
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The Pictures given above are divided into equal parts.

Complete the table?

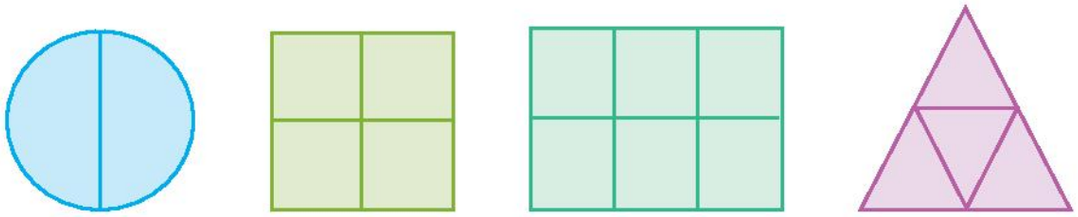
S.No	Name of the picture's	Number of equal parts
1		
2		
3		
4		

Following shapes are divided into equal parts.



Exercise 5.1

1. Observe the following pictures and write how many equal parts are they divided into.



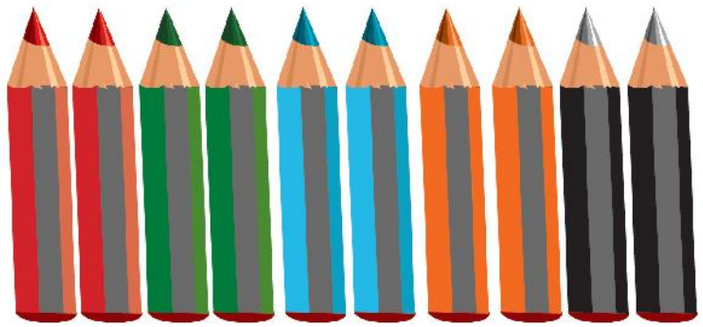
2. Draw square and circle. Make it into four equal parts.

3. Draw a rectangle and divide it into eight equal parts.

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5.1.2 Able to find the fractional part of a Collection

Bala's father bought a colour pencil box for him. The box had in 10 colour pencils such that 2 red, 2 green, 2 blue, 2 orange and 2 black colour pencils.



Fraction of orange coloured pencils

Represents two parts of whole i. e $= \frac{2}{10}$

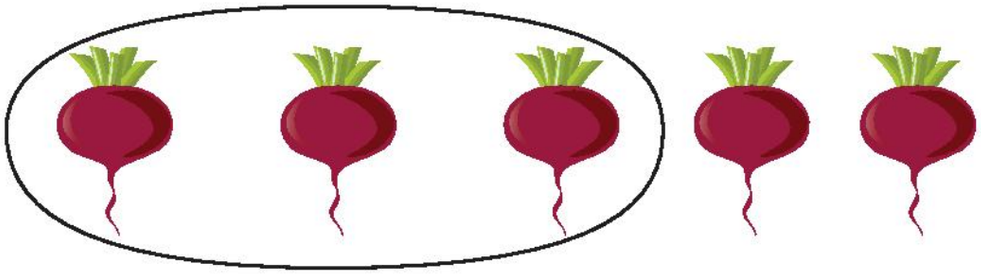
The fraction part of blue Colour pencils $= \frac{2}{10}$

The fraction part of black colour pencils $= \frac{2}{10}$

The fraction part of green colour pencils $= \frac{2}{10}$

EXAMPLE

Priya bought $\frac{1}{2}$ kg of beet root that counts to 5, that are given below. Find the fractional part of circled and uncircled beet roots.



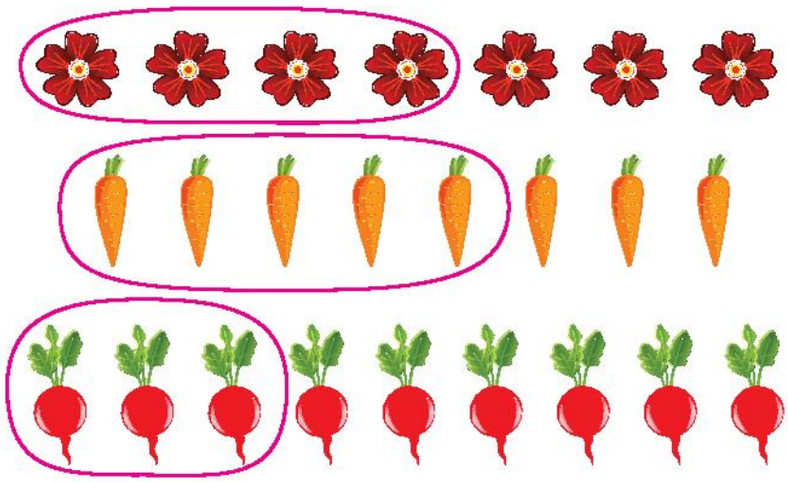
The fractional part of circled beet roots $= \frac{3}{5}$

The fractional part of uncircled beet roots $= \frac{2}{5}$

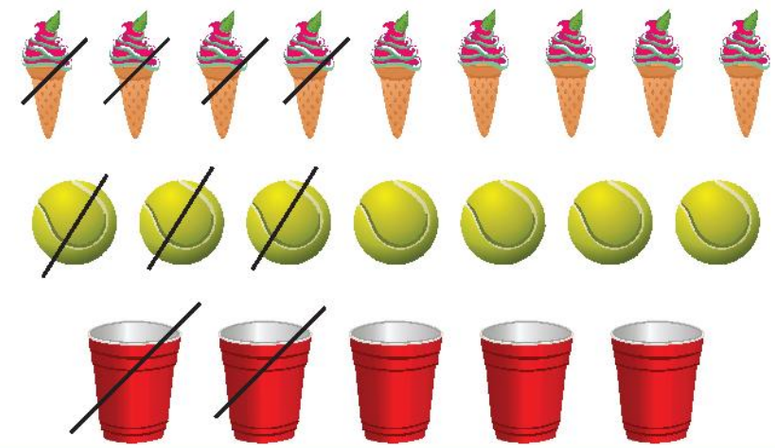
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Exercise 5.2

1. Write the fractional part for the pictures that is circled.



2. Match the following:



$\frac{3}{7}$

$\frac{2}{5}$

$\frac{4}{9}$

3. Mark the given pictures with the fractions given below.

1	$\frac{3}{8}$	
2	$\frac{2}{7}$	
3	$\frac{5}{9}$	

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5.1.3 Able to identify the notation of fractions:

Ramu and Akil playing with their friends Rangan and Thangam. Ramu's mother had an apple, so she called Ramu and Akil. She made it into two halves and gave it to them. She totally forgot Rangan and Thangam. So she recollected the two pieces of apple from (her son) them. Then she made it as four equal parts and gave it to them.



An apple fruit brought by Ramu's mother = 1

Here 1 means whole

Two equal parts of an apple.

First one half given to Ramu = $\frac{1}{2}$

Other half given to Akil = $\frac{1}{2}$

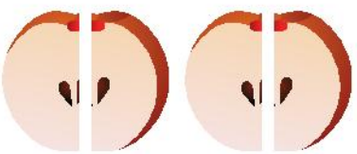
If a whole is divided into two parts then its denominator is 2.

A whole is divided into two equal parts.
The divided parts is denominator.



Here $\frac{1}{2}$ which means 2 is denominator and 1 is numerator.

When Ramu's mother collected the two equal parts of an apple from her sons and sliced it once again into four equal parts.



Four equal parts of an apple (the whole)

A part given to Ramu = $\frac{1}{4}$

A part given to Akil = $\frac{1}{4}$

A part given to Rangan = $\frac{1}{4}$

A part given to thangam = $\frac{1}{4}$

Denominator is the total number of parts that make up a whole.

Numerator represents the number of equal parts on a whole.

If a whole is divided into four equal parts then its denominator is 4.

In $\frac{1}{4}$, 4 is the denominator and 1 is the numerator.

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EXAMPLE

There are 10 guavas in a basket which are equal sized.

Here the 10 guavas makes a whole.



So it is the denominator (10 guavas = whole)

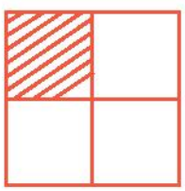
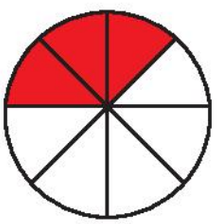
If we take 4 guavas = $\frac{4}{10}$	

Now 10 is the denominator and 4 is the numerator.

Remaining fruits in the basket = $\frac{6}{10}$	

Here 10 is the denominator and 6 is the numerator.

Numerator and Denominator of different Shapes.

	The square is divided into four equal parts 4 equal parts said to be denominator, in this four parts one portion (part) is coloured, so the coloured one portion is numerator. Now we can write this as $\frac{1}{4}$.
	This circle is divided into eight equal parts. So its denominator is 8. In the 8 parts coloured 3 parts are said to be numerator. so its numerator is 3. Now we can write it as $\frac{3}{8}$ $\frac{3}{8} = \frac{\text{Numerator}}{\text{Denominator}}$

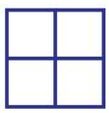
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Exercise 5.3

I. Write the numerator and denominator for the following Numbers.

1. $\frac{3}{7}$ 2. $\frac{4}{6}$ 3. $\frac{5}{10}$ 4. $\frac{1}{3}$

II. shade the parts according to the number and write the numerator and Denominator.

S.No	Fraction	Image	Numerator	Denominator
1	$\frac{2}{6}$			
2	$\frac{3}{4}$			
3	$\frac{5}{10}$			
4	$\frac{1}{4}$			
5	$\frac{3}{8}$			

5.1.4 Use the vocabulary as half, quarter, three fourth, semi, partial and whole.

2NKCT

Ravi had two Children. He bought a pencil for Kabilan and a pomegranate for Akilan. Akilan doesn't have pencil. Then Kabilan said "I will give you a pencil". So Kabilan cuts the new pencil into two halves gives to his brother Akilan and another half he kept himself.

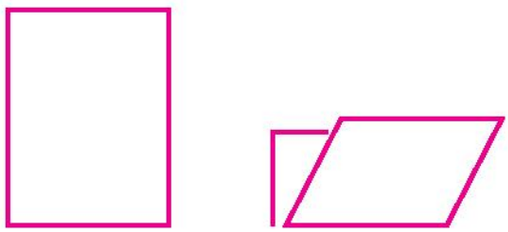
Akilan was very thankful to Kabilan. so he said that he will give him one fourth or quarter part of the pomegranate to him. Akilan cuts the fruit into two halves and he took one half and once again cuts into two equal parts as quarter (one – fourth). Now Akilan gave one fourth portion to Kabilan and he kept three fourth for himself.

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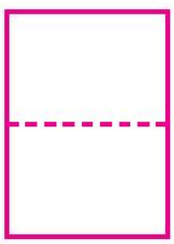
Activity

Take a sheet of paper. Fold it along the centre.

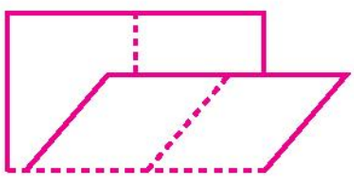
Observe the crease has divided the paper into two equal parts.



Open the paper to observe the two equal halves.



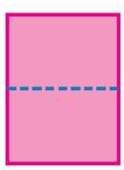
Fold the paper again as shown below.



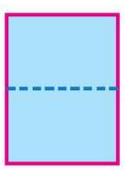
Observe the two crease lines has divided the paper into four parts.



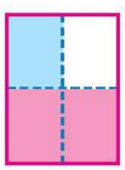
Whole



Two equal halves



Four equal quarters



One half and one quarter makes three fourth

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Activity

Ask the students to take a ribbon and cut it as half, half into one fourth, and join one half and one fourth to make three fourth. At last join all portion, its make whole.

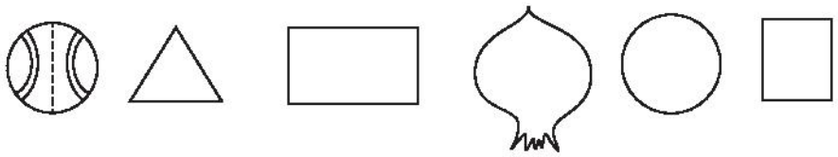
Complete the given pictures. One is done for you.



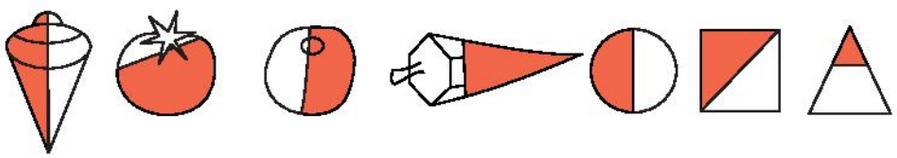
The above pictures are divided into two equal parts. Every parts represents half (or) semi. So we call it as half (or) semi.

Exercise 5.4

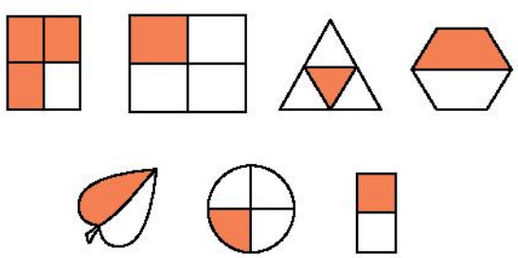
I. Colour or shade half portion of the following pictures:



II. Tick the picture that represent semi portion.



III. Write appropriately which represent half, quarter and three fourth.



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5.1.5 Able to Define fractions:

Swathi is studying fourth standard. Today she has won the chess championship. So, the class teacher has bought a cake for her. There are 19 students and a teacher in her class. So, she cuts the cake into 20 equal parts.

Teacher: students, I have bought a cake, the cake is a whole part. Swathi divided the whole into 20 equal parts, everybody had a piece that is 1 part.

A piece of cake given to one student is one out of twenty. We can write it as $\frac{1}{20}$

We have $\frac{1}{20}$. We call numbers like this as fraction.

In $\frac{1}{20}$, 1 is numerator, 20 is denominator.

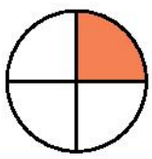
Thus the Combination of number as a numerator and denominator is called as a fraction.

Definition:

A fraction is a part or parts of a whole.

$$\text{Fraction} = \frac{\text{Numerator}}{\text{Denominator}}$$

Observe the following pictures:

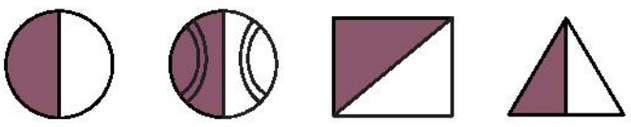


A circle is divided into four equal parts. In this four parts only one part is shaded.

The shaded portion is fraction = $\frac{1}{4}$ (or) one fourth

Division of the whole:

The whole portion is divided into two equal parts. In this two parts, one part is coloured or shaded. Fraction of the shaded part = $\frac{1}{2}$ (half).

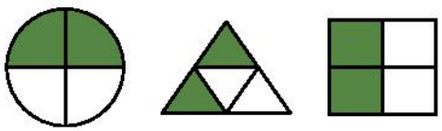


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The whole portion is divided into three equal parts. In that, two parts are shaded. Fraction of the shaded parts = $\frac{2}{3}$ (two third).

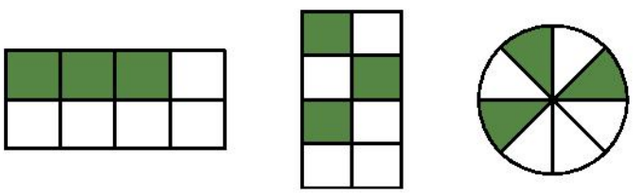


The whole portion is divided into four equal parts. In that, two parts are shaded. Fraction of the shaded parts = $\frac{2}{4}$ (two fourth).



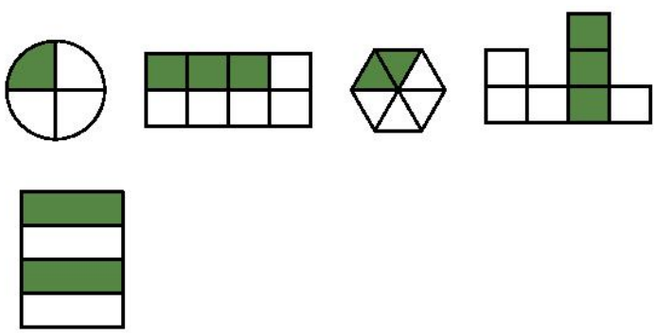
The whole portion is divided into eight equal parts. In that, three parts are shaded. Fraction of the shaded parts = $\frac{3}{8}$ (Three eighth)

numbers such as $\frac{1}{2}$, $\frac{2}{3}$, $\frac{2}{4}$, $\frac{3}{8}$ are examples of fraction.



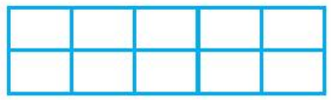
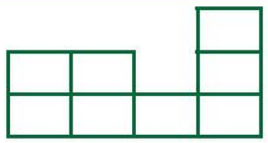
Exercise 5.5

I. Write the fraction for the shaded portions of the given figures.



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II. Shade the figure according to the fraction

1	$\frac{3}{4}$	
2	$\frac{5}{10}$	
3	$\frac{1}{8}$	
4	$\frac{2}{6}$	

5.1.6 Part and parts:

  Rani and Gowri wants equal share from 4 dosas. Could you please suggest an idea?

How many dosas are there?



How many people are there?

Two

So, how many shares have to be done for each?

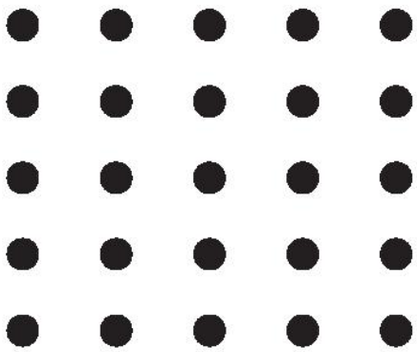
 

So, Rani will get 2 out of 4 dosas and Gowri will get 2 out of 4 dosas.

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Activity 1

Draw lines to join the dots given below. It could be vertical, horizontal or diagonal.



There are _____ equal parts.

Shade as many parts as you wish.

It can be written as _____ out of _____ parts are shaded.

Let us try

Divide the following figure into many equal parts. (either vertically or horizontally)



There are _____ equal parts.

Shade as many parts as you wish. It can be written as _____ out of _____ parts are shaded.

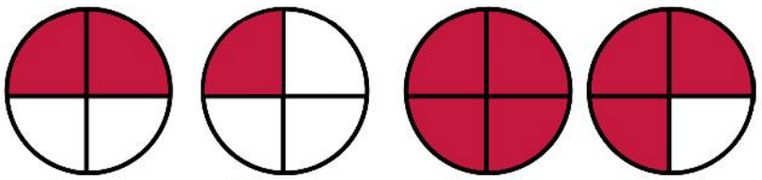
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Activity 2

The four equal parts of a circle

A Circle which is divided into four equal parts are given to Arun, Tharun, sankar and Gopi, to colour it.

They could complete the task of colouring in two minutes, which is given below.



In the above pictures one fourth (quarter) portion was coloured by tharun.

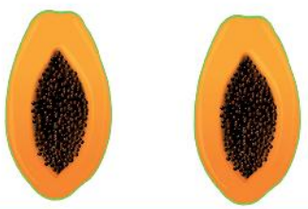
Half ($\frac{1}{2}$) portion was coloured by _____

Whole portion was coloured by _____

Three fourth ($\frac{3}{4}$)of the portion was coloured by _____

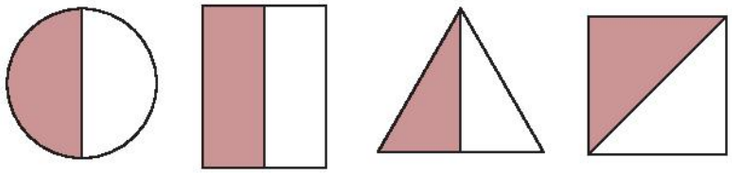
5.1.7 Able to identify half, one fourth, and three fourths of a whole.

Half

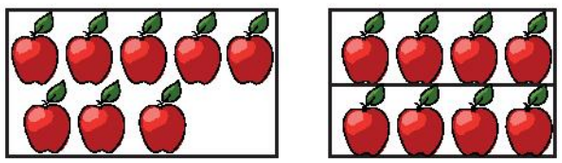
Whole	Two halves
	
	
	

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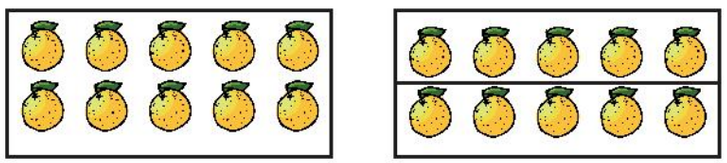
The above pictures were divided into two equal halves.



The above shapes are divided into two equal parts. In the two equal parts, one part is shaded. The shaded portion is one half and the unshaded part is another half.



Half of 8 is 4.

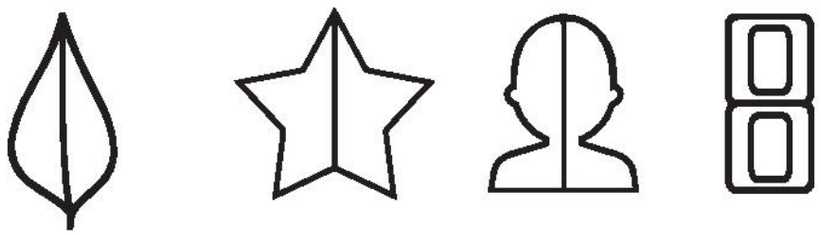


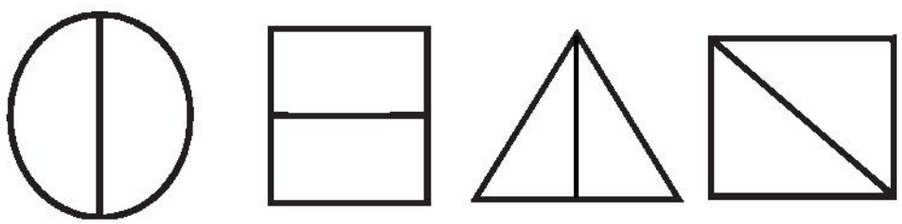
Half of 10 is 5.

The above collection of whole is divided into two equal parts.

Exercise 5.6

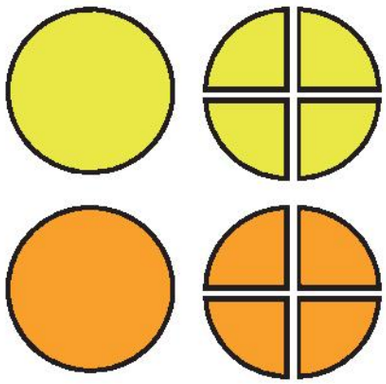
I. Shade the half portion of the given pictures



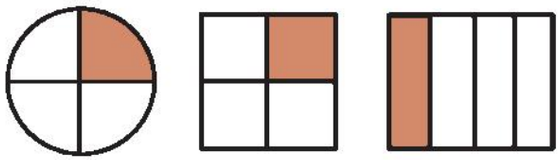


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One fourth (quarter)



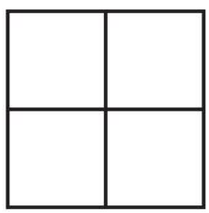
Each fruit is divided into four equal quarters.

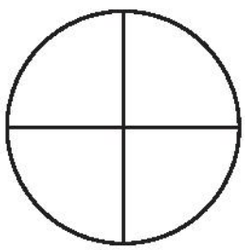


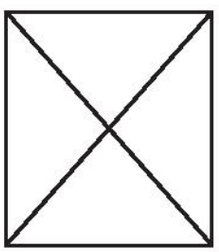
Every picture is divided into four equal parts and the shaded portion represents quarter or one fourth.

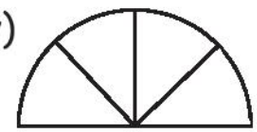
Exercise 5.7

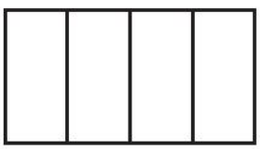
Shade the quarter portion in the following figures.

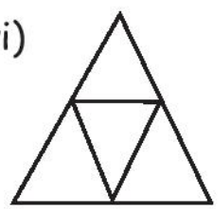
(i) 

(ii) 

(iii) 

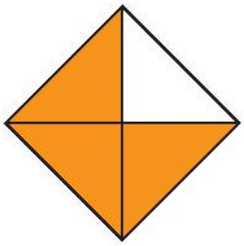
(iv) 

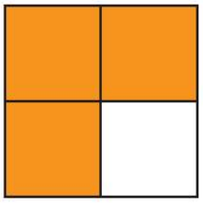
(v) 

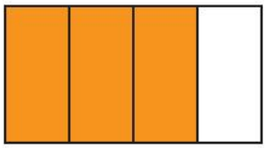
(vi) 

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Three Fourth

(i) 

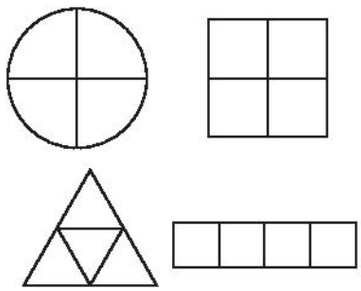
(ii) 

(iii) 

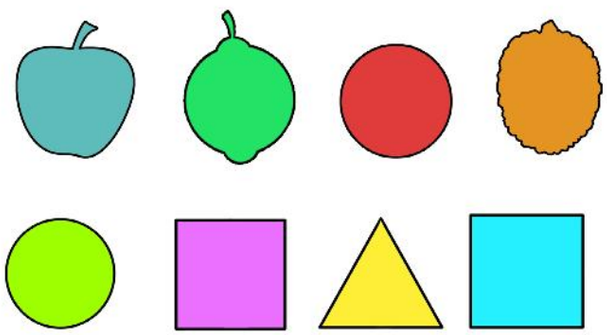
Each picture is divided into 4 parts. In this 3 parts are shaded.
Shaded portion is called as 'three fourth'.

Exercise 5.8

I. Colour three fourth of the following pictures



Whole



The shaded portion of the above pictures or things represents (1) whole, whole means complete portion of a thing or collection of similar things.

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5.1.8 Able to identify and explain the fractions $\frac{1}{4}$, $\frac{1}{2}$, $\frac{3}{4}$

Agriculture

Anitha had a vegetable garden which was rectangular shape. It was divided into four equal parts. In one part she planted brinjal, another part she planted pumpkin and in the remaning two parts she planted lady's finger.

She used all the 4 equal parts equal to 1 whole.

The portion of brinjal planted out of the whole = $\frac{1}{4}$, we call this as '**quarter**' or '**one-fourth**'.

The portion of Pumpkin planted out of the whole = $\frac{1}{4}$, we call this as '**quarter**' or '**one-fourth**'.

The portion of Pumpkin and brinjal planted out of the whole = $\frac{1}{2}$, we call this as '**half**'.

The portion of Ladys finger and Pumpkin planted out of the whole = $\frac{3}{4}$, this is called as **three fourth**

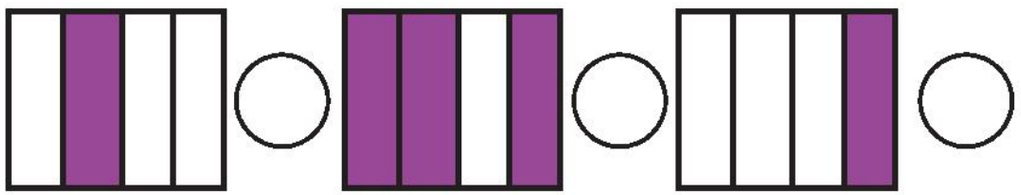
Can we try this:

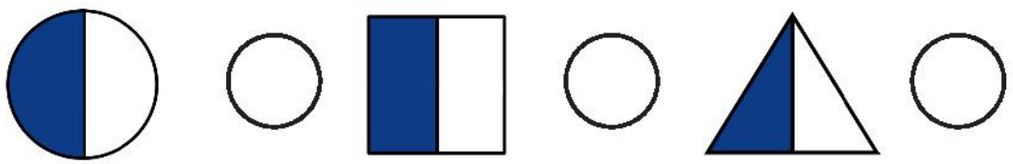
1. Anitha's rectangular garden was divided into _____ parts.
2. Portion of brinjal planted part = _____
3. Portion of Ladys finger planted part = _____
4. Portion of pumpkin planted part = _____

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Exercise 5.9

I. Write suitable fractions as $\frac{1}{4}$, $\frac{1}{2}$, $\frac{3}{4}$ for the shaded portion in the circle given against the pictures.







Activity 3

Take an old newspaper and spread it out. Try to occupy the full space thus formed without touching the floor. You can do so by sitting on it.

Fold it into half and try to occupy the space without touching the floor. You can do so by standing on it.

Fold it further into half and try to occupy the space without touching the floor. You can do so by standing on it with one leg.

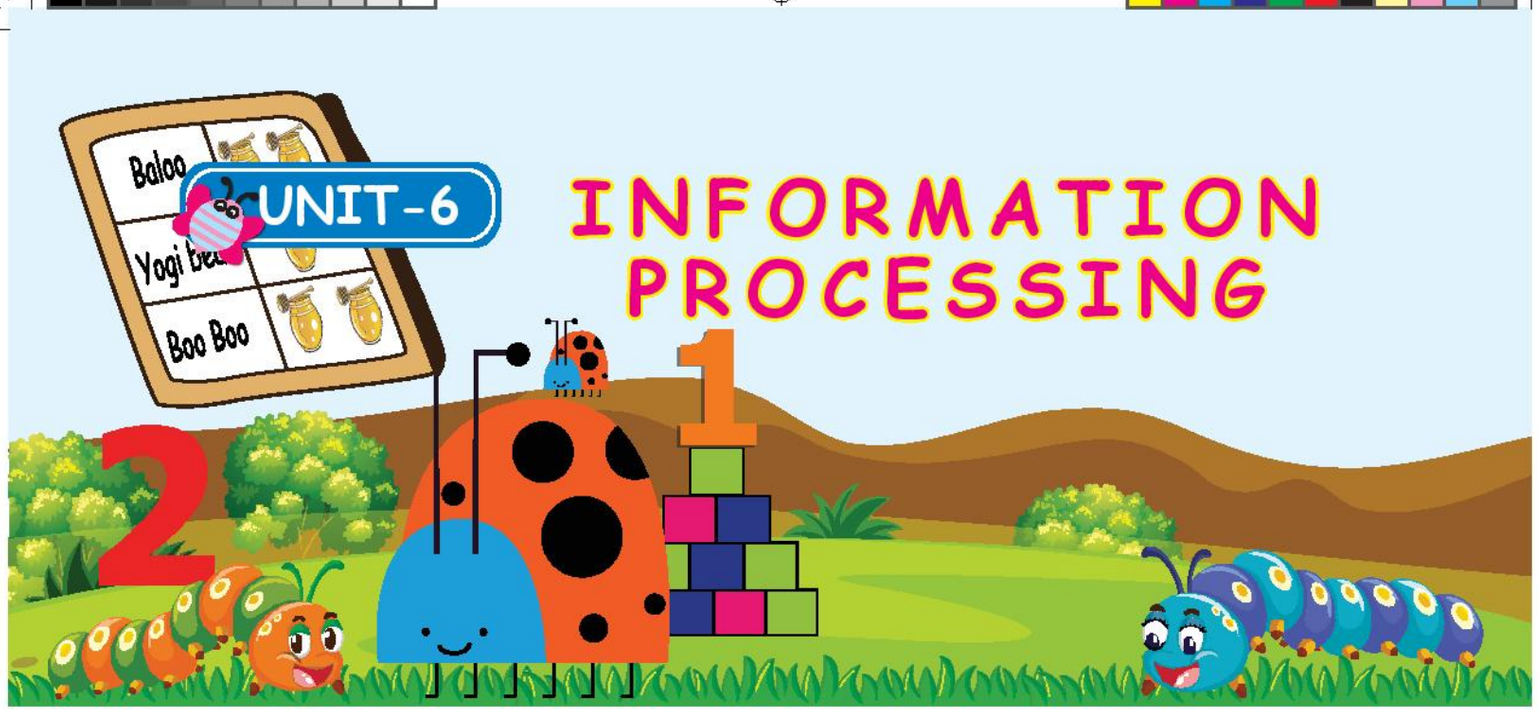
Fold it further into half. Can you occupy the space in the newspaper without touching the floor?

You can do so by standing on your toe.

Fold the newspaper into further half and try to occupy it now. Can you do so?

Draw the outline of the newspaper in every step. Observe and mark the fractions.

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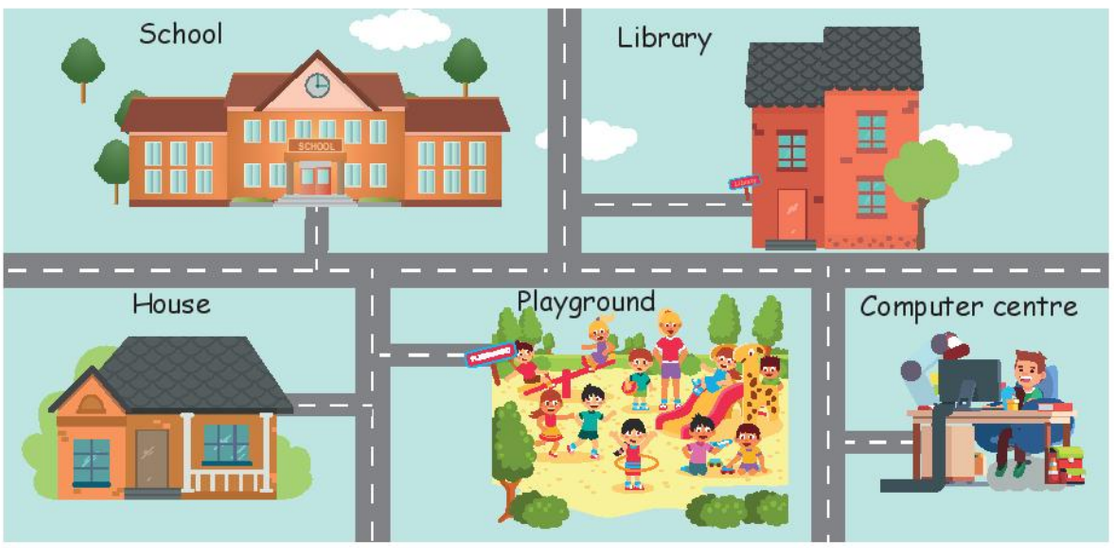
INFORMATION PROCESSING

6.1 Modelling

LOW34

1. Route Map

- Able to locate short and long paths.
- Able to find out and check for connectivity between places.



Shortest path : School → house.

School → play ground → house

Longest path :

School → library → computer centre → house

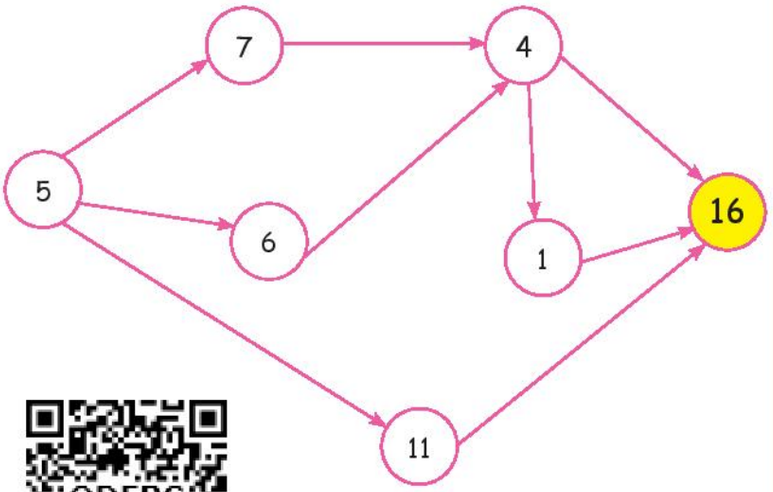
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Activity 1

- In how many ways you can go from your home to a hospital nearby.
- Draw a path and then identify shortest path and longest path.

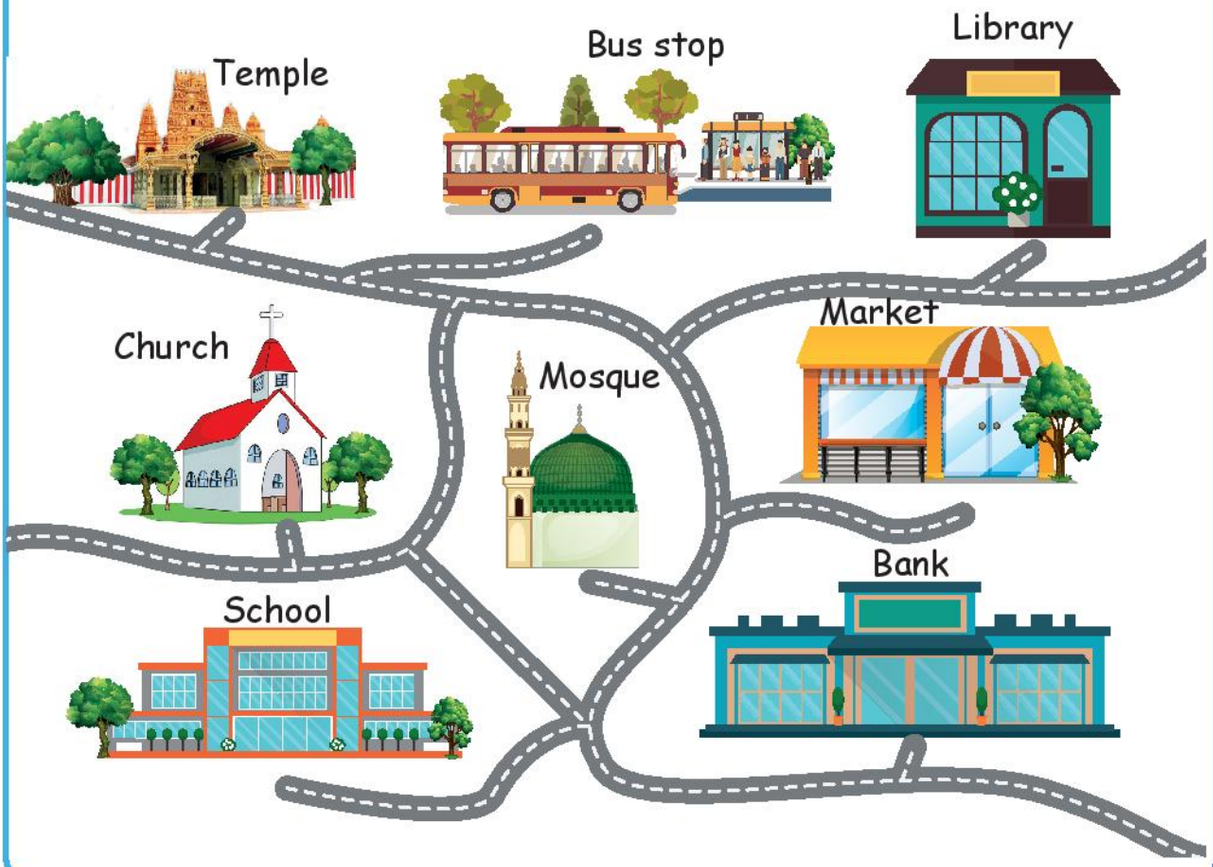
Activity 2

Write the shortest and longest path of addition of 16



Exercise 6.1

QDFRS



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(i) How many paths are there to reach temple from bus stop?

(ii) Which is the longest path and shortest path?

(iii) Specify the two places on the route from market to school?

(iv) _____ is the place found between temple and mosque

(a) Bank (b) Church (c) Library

EXAMPLE

Creating a plan to set – up a garden in the school.

Step 1 : Levelling the land.

Step 2 : Setting up fence.

Step 3 : Sowing seeds.

Step 4 : Removing the weeds.

Step5 : Watering once in five days.

Activity 1

List out the steps for the cleanliness programme in your school.



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Activity 2

One of the teams frame the rules. One team prepares to play and the other team monitor the game.

Water filling Competition



EXAMPLE

Group I : Making the students to stand in line.

Group II : Measuring the height of the students.

Group III : Taking notes.

Name	Height in cm
Guru	120
Selvi	124
Kumar	110
Ammu	108

Group IV : Arrange the students based on height.

Group V : Ask the students to sit down in their places.

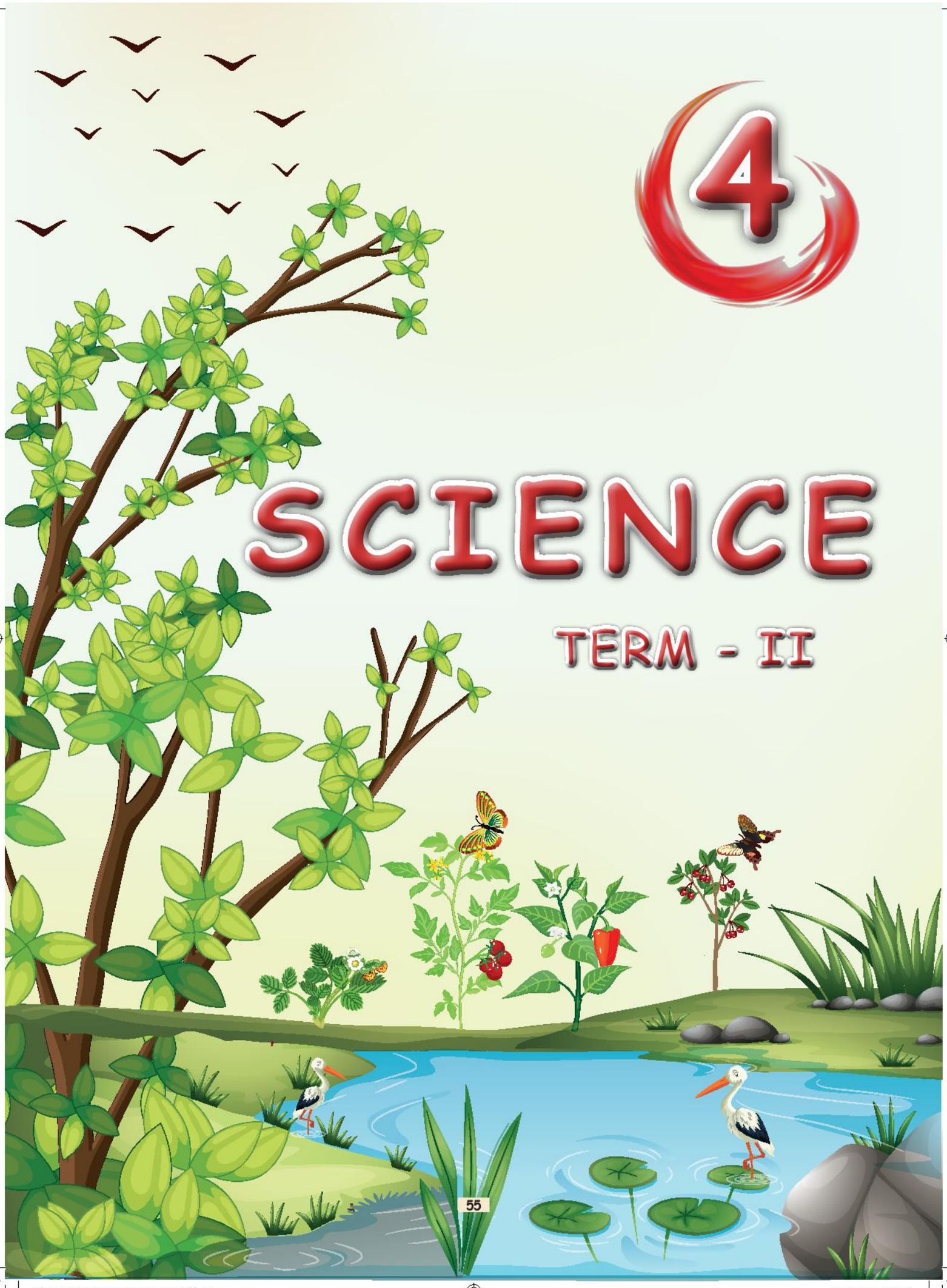
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Exercise 6.2

1. Prepare a plan to buy the necessary books for the school library.

2. Prepare a project on the school annual day function.

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KXZ6J

E-Book

OL8S9

Evaluation

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Food

Unit 1





Learning Objectives

After learning this lesson, students will be able to:

- differentiate between raw and cooked food items.
- understand different methods of cooking.
- describe different types of cooking utensils.
- identify hygienic food and food to be consumed during illness.
- insist the importance of not wasting food.

0CN9D

Introduction

Food is one of the basic needs of life. We get energy for all our activities from food. Food obtained from nature provides all the nutrients to our body. But seeing the advertisement, we are attracted towards junk food. In this lesson, we will study about food items that are good for our health, cooking methods and the importance of not wasting food.

I. Food

Let us Do

Classify the following food items.

(Carrot, Egg, Coconut oil, Milk, Raddish, Meat, Potato, Curd, Brinjal, Lady's finger, Fish, Drumstick, Butter, Onion, Buttermilk, Cucumber, Ghee)

Food items from plants	Food items from animals

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In our daily life, we depend on plants and animals for our food. Some can be eaten raw but most of them need to be cooked. Let's see which food items can be eaten raw and which one needs cooking.

1. Raw Food (Uncooked Food)

Think and answer

Which food you can eat without cooking?

Food that we can eat directly without cooking is called **raw food**.

We can eat fruits, some vegetables, tubers and nuts in the raw form. Some pulses and cereals are also eaten as raw food. All raw food must be washed with clean water before eating. Some of the raw food items are given below.



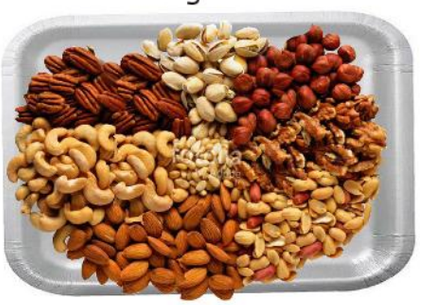
Fruits



Vegetables



Tubers



Nuts

Let us Do

Arrange some fruits, vegetables, nuts and tubers on the table and ask each student to pick one food item. Based on what food item they choose, ask them to join in the same kind of food item.

Let us Make

Shall we make some salad?

Collect some raw food items available in your locality. Clean them with fresh water, cut them into small pieces (keep the nuts whole), put them in a bowl then add salt and pepper and mix it well. Enjoy your tasty salad!



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2. Cooked Food

We cannot eat all the food items in raw form. Food that needs to be processed using heat before it can be eaten is called **cooked food**.

Why should we cook food?

- Cooked food is easy to digest.
- Cooking softens the food materials.
- Cooking kills germs.
- Cooking adds taste and flavour to food.

Do You Know?

Honey is the only food that does not spoil.





Try to Answer

Write any five raw and cooked food.

a. Raw food: ---------, ---------,---------,--------- and ---------.

b. Cooked food: ---------,---------,---------, --------- and ---------.

ZU10L

II. Cooking Methods and Habits

Think and Answer

Children, look at the menu card given here. You can see food items on this menu. Do you think all these items are cooked in the same way?



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Some of the cooking methods practiced commonly are given below.



Boiling: It is a method of cooking food by immersing in boiling water, so that the food becomes soft. *Example:* Rice, Egg.



Steaming: It is a method of cooking food using steam generated from boiling water in a pan. *Example:* Idli, Idiyappam.



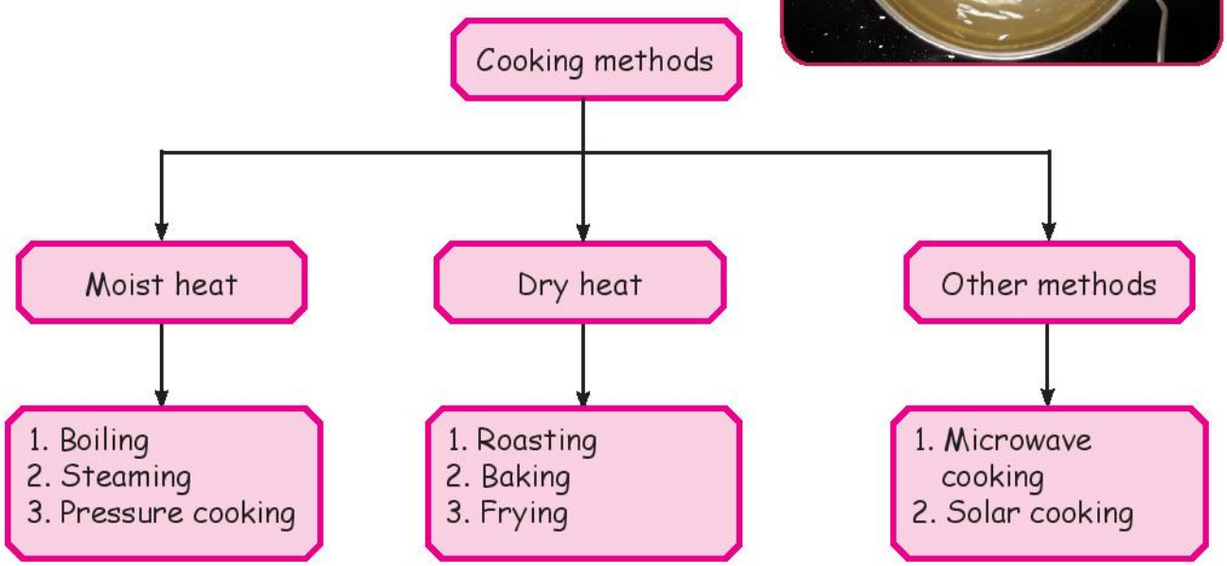
Pressure cooking: It is a method of cooking food in a pressure cooker. *Example:* Rice, Dhal.



Roasting: It is a method of cooking food by heating it on a tawa or frying pan without covering it. *Example:* Groundnuts, Cashewnut.



Frying: It is a method of cooking food in hot oil. *Example:* Chips, Poori.



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Cooking Habits



- Wash your hands with soap before cooking.
- Wash vegetables and fruits before cutting.
- Wash cooking vessels and knives.
- Don't cook food for a long time because it destroys the nutrients present in the food.
- Don't use the same oil many time for cooking food.
- Using the food items after their expiry date is not good for health.

Let us Do

Tabulate the given food items according to the cooking methods.

(Rice, Poori, Murukku, Pop-corn, Idli, Milk, Fish, Puttu, Dhal, Idiyappam, Groundnut)

Boiling	Steaming	Roasting	Frying

Try to Answer

1. Write any two cooking methods that your mother follows.
   ----------, ----------
2. Say True or False.
   a. You should wash your hands before cooking. ----------
   b. Vegetables and fruits should be washed after cutting. ----------

III. Cooking Utensils

Utensils are in different shapes and sizes. We use specific utensils for each cooking method. Clay pots were used earlier. Stainless steel and aluminum vessels are now generally used for cooking.







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Cooking in Clay Pot

Clay pots are well-suited for all types of cooking. Cooking in clay pots improves the quality and taste of food and also retains the nutrients. The natural insulation properties of clay cause heat and moisture to balance and circulate throughout the pot and keep the nutrients unharmed and prevent the dish from burning.

Benefits of claypot cooking



- Easy to digest.
- Preserves the nutrients.
- Needs less oil for cooking.
- Adds flavour to the dish.
- Keeps the food warm for a long time.
- Keeps the food from becoming stale soon.
- Alkaline property in the pot neutralizes the acidic property in the food.



Solar Cooker

It is an appliance which is used to cook food using sunlight. It saves fuel and reduces air pollution.



Let us Do

Write the cooking utensils used for preparing given food items.

(Pan, Pot, Rice cooker, Tawa, Idli cooker)

S No.	Food items	Name of the cooking utensils
1.	Rice	
2.	Idiyappam, Puttu	
3.	Vada	
4.	Sambar	
5.	Dosa	

Try to Answer

Write True or False.

1. Earlier people cooked their food in pressure cooker. _____
2. Solar cooker reduces the use of fuel. _____
3. Pressure cooker is not a cooking utensil. _____

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IV. Meal-time Hygiene

Think and Answer

Look at the pictures given below. Which one is good for health? Why?





Meal-time hygiene includes ways to make sure that we do not get sick because of the way we eat or make food. Some of the hygienic ways of taking food are given below.

- Always cover food to protect them from dust and insects.
- Eat fresh food always.
- Avoid taking food that is too cold or too hot.
- Avoid fast food and fried food.
- Always wash your hands with soap before and after eating.

Healthy foods



Unhealthy foods



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Let us Do

Tick (✓) the appropriate one.

Food	Hygienic food	Junk Food
Fresh fruits		
Samosa		
Nuts		
Panipoori		
Vegetable salad		

Try to Answer

Write Yes or No.

1. Junk food is good for health. _____
2. You should wash your hands before and after eating. _____

Let us Discuss

Here is Nandini's lunch box.



a. Are all the items in the box healthy?

b. Suggest her to remove one food which is not healthy and add one food which is healthy. Give reasons for change.

V. Food during Illness

Think and Answer

When you are sick, what kind of food your mother serves you?

When we are sick, we should avoid food items that are fried in oil. We should take energy-giving, easily digestible food. Some of them are given below.

- Porridge of rice or cereals.
- Fruit juice, tender coconut.
- Steamed foods like idly.

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Let us Do

Note to the teacher

Make small paper rolls, each having a food item's name written on it. Put all of them on a table. Make two big circles on the floor. Name one circle '**MUST AVOID DURING ILLNESS**' and another circle '**MUST TAKE DURING ILLNESS**'. Ask children to take one roll each and stand in the appropriate circle after reading the name on the roll.

Try to Answer

Fill in the blanks.

1. _____ is an easily digestible food. (Idly / Biriyani)
2. We should avoid eating _____food. (junk/ fresh)

VI. Food Wastage

Think and Answer

- Do you usually eat your lunch without wasting anything? If you say no, why do you waste?
- Can you suggest a few ways to reduce wasting food in your school and house?

We should not waste food. Food that is not eaten is called leftover food. This food is discarded as waste. Following are the simple ways to avoid food wastage.

- Take what you can eat and eat what you take.
- Share the excess food.
- Give the excess food to the needy.



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Do you know?

One third of the food produced in the world is wasted. It is a total of 1.2 lakh crore tonnes per year. (1 ton = 1000kg)

Food Preservation

We can preserve the food for long time by using the following methods.



Pickling - Mixing fruits and vegetables with oil and salt.
Example- Pickle



Refrigerating - Keeping food in the refrigerators (fridge) to preserve them for a short time.
Example-Fruits,Vegetables



Drying - Removing the water content of the food.
Example- Fish, Red chillies



Canning - Storing food in airtight containers.
Example-Jam

Do you know?

World Hunger Day - May 28

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Try to Answer

Fill in the blanks.

1. World Hunger Day is observed on _____.
2. We can preserve pickle by_____.

Let us Do

Make students list out all the food items wasted in their home for one week. Make them discuss what they saw and what they can do to reduce waste.

Evaluation

F51E3

I. Choose the best answer.

1. Which one can be eaten as raw food?
   a) Meat b) Carrot c) Fish d) Potato
2. Uncooked food is called _____.
   a) junk food b) hygienic food c) raw food d) cooked food
3. Solar cooker reduces _____.
   a) air pollution b) water pollution c) land pollution d) noise pollution
4. Which one of the following cannot be preserved by drying method?
   a) Rice b) Cereals c) Fish d) Fruits
5. We can avoid food wastage by
   a) giving them to the needy b) eating more than we need
   c) buying extra food d) throwing them in a dust bin

II. Fill in the blanks.

1. _____ gives us energy to work and play. (Raw food / Junk food)
2. Cooked food is easily_____. (digested / undigested)
3. Pressure cooker is one of the _____ utensils. (modern / ancient)
4. We need pure air, protected water and _____food for our healthy life. (junk / hygienic)
5. We make Idiyappam by _____ method. (boiling / steaming)

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III. Match the following.

1. Grapes	-	Modern utensils
2. Mixture of vegetables	-	Food during illness
3. Electric rice cooker	-	ancient utensils
4. Earthen pot	-	Raw food
5. Less fatty food	-	Salad

IV. Write Yes or No.

1. Biriyani is a raw food.
2. Frying is a method of cooking.
3. We can cook rice on a tawa.
4. Cooking in a solar oven needs sunlight.
5. Consuming too much oily food is bad for our health.

V. Answer briefly.

1. Name any three cooking methods.
2. Write any two food items you should eat when you are sick.
3. Draw the picture of one of your favourite raw foods and colour it.
4. Write about any two food preservation methods.
5. How can you reduce wastage of food in your home?

VI. Answer in detail.

1. Explain any four food preservation methods.
2. Explain any four cooking methods.
3. What are the hygienic ways of cooking food?

VII. Project.

Make a cardboard plate. Make your favourite fruits and vegetables from clay and fix them on the plate.

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Water



Unit 2



Learning Objectives

After learning this lesson, students will be able to:

- understand the change of states in water.
- describe water cycle.
- explain the importance of water cycle.
- summarise rainwater harvesting and its uses.

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Introduction

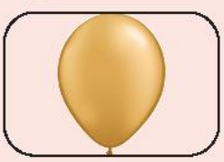
Water is the most abundant and precious resource on the Earth. It is found in oceans, seas, rivers, streams, lakes, ponds and under the ground. All living things need water to live and to do many other activities. We have already learnt about this in your previous class. Let us learn more about water in this lesson.

I. Change of States in Water

Let us Do

See the given pictures and write down the state of each objects.(Solid, Liquid, Gas)







_____ _____ _____ _____ _____







_____ _____ _____ _____ _____

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Water occurs naturally in three forms: ice, water and water vapour.

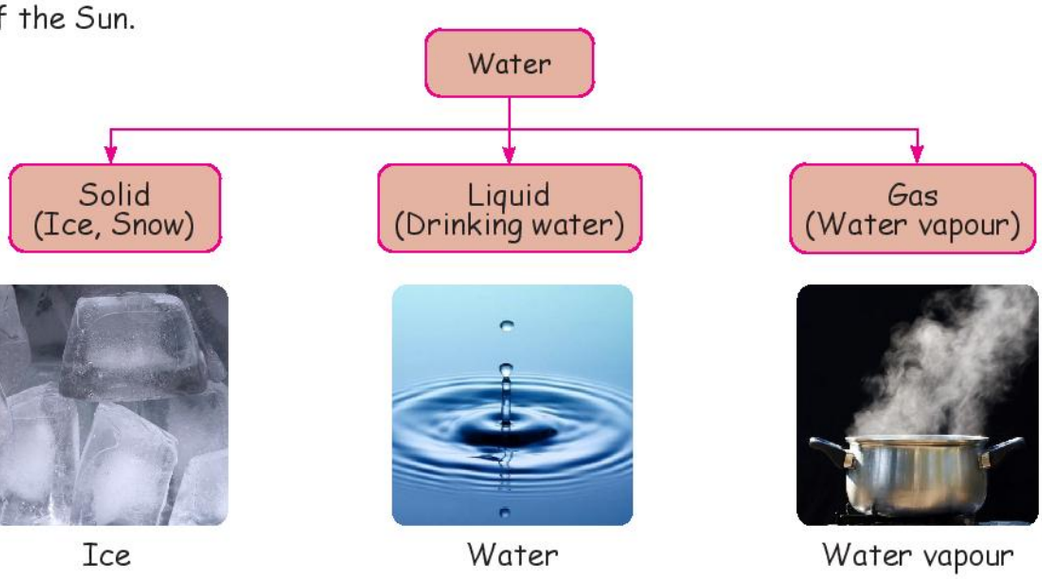
These forms are also called states of water. Ice is in solid form, water is in liquid form and water vapour is in gaseous form.



More to know

Human body consists of 75% of water by mass.

These states occur naturally because of temperature changes. Water becomes ice in cold regions, remains as water in oceans/rivers and becomes water vapour due to the heat of the Sun.



Ice

Water

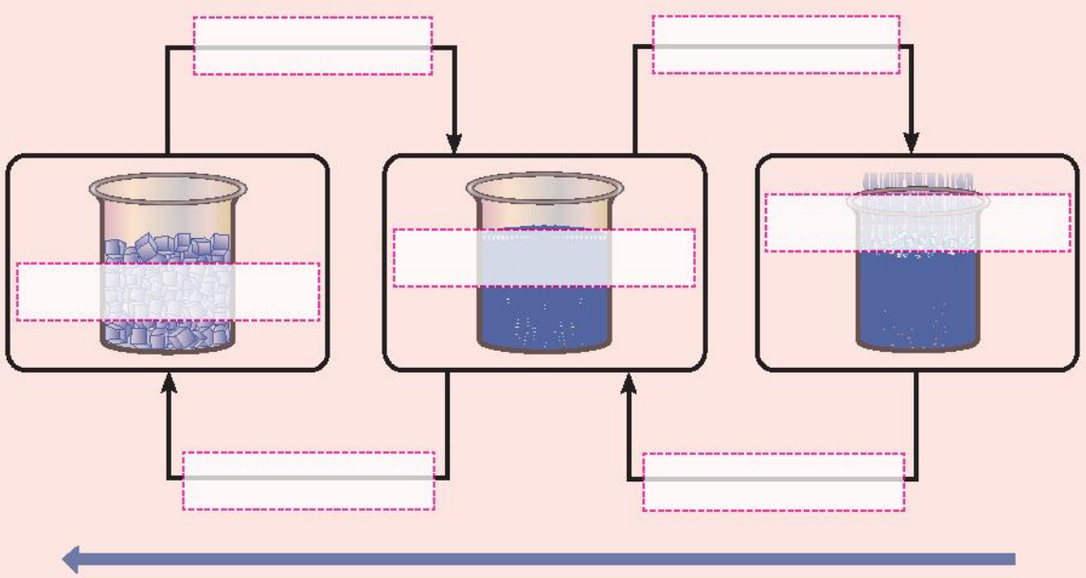
Water vapour

Let us Do

Fill in the boxes given below with correct answers.

(Liquid, Solid, Melting, Freezing, Cooling, Heating, Gas)

Change of States in water



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SOLID STATE (Ice)

Ice is a solid form of water. At temperature below 0°C water becomes ice. This process is called freezing.

$$\text{Water} \xrightarrow[\text{below } 0^{\circ}C]{\text{Cooling}} \text{Ice}$$

LIQUID STATE (Water)

Water in liquid state is available in water bodies such as oceans, river, waterfalls etc.

Write any two water bodies in your area. _____, _____.

GASEOUS STATE (Water vapour)

Water becomes water vapour as the temperature increases due to heat. Heating forms a white mist of extremely small water droplets in the air known as water vapour.

$$\text{Water} \xrightarrow[100^{\circ}C]{\text{Heating}} \text{Water vapour}$$

Try to Answer

1. Why water is a good example for all states of matter?
2. Which of the following is in liquid state? Rain/Ice/Snow

Let us Do

- Fill water in an ice tray and keep it in the freezer. After few hours, take it out. What has happened to the water?

_____.

- Now keep this ice tray on a table for some time. What happens to the ice?

_____.

- Pour water from the ice tray into a kettle. Ask an elder in your home to heat the kettle and observe the mouth of the kettle when the water starts boiling. What do you see?

_____.

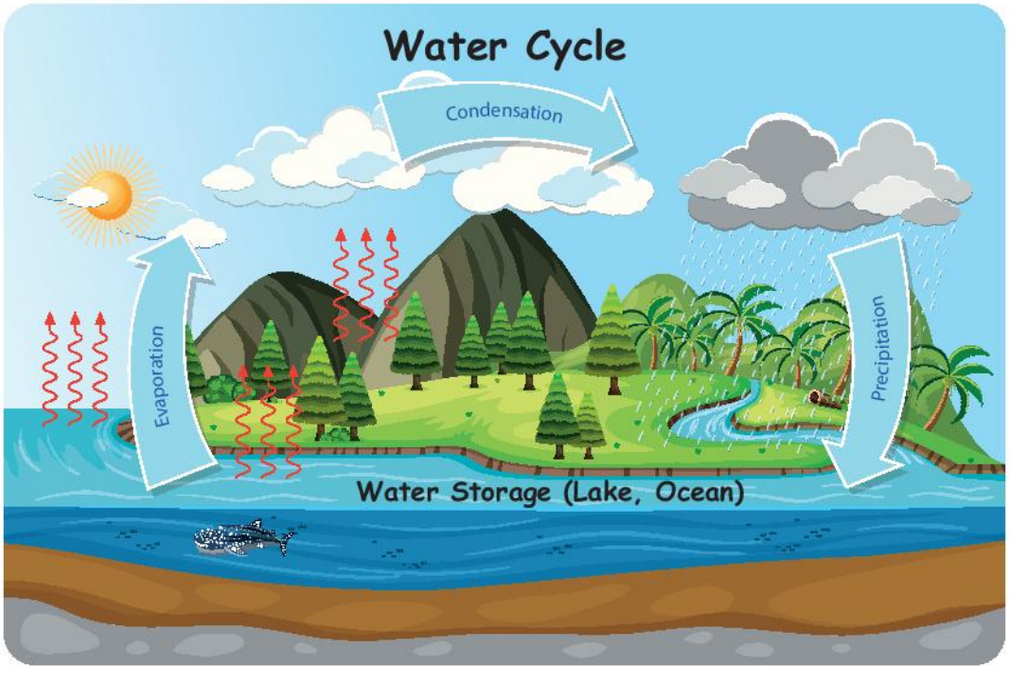
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II. Water Cycle

In nature, water keeps changing its state. Let us see how this happens. Due to the Sun's heat, water in oceans and rivers changes into water vapour and rises up.

Water changing into water vapour on heating is called **evaporation**. The water vapour, when comes into contact with cool air, becomes water droplets. This is called **condensation**. The water droplets combine to form clouds. The water droplets continue to combine, and they become big and heavy. These water droplets then fall down as rain. This is called **precipitation**. In colder places, combined water droplets come down as snow, sleet or hail. This continuous change of water from one state to another in nature is called water cycle.

The continuous cycle through which water is circulated by different processes like evaporation, condensation and precipitation is called water cycle.





More to Know

Each day, we lose a little more than a cup of water when we exhale.



Think and Answer

What happen to the water in a wet cloth, when we dry it?

Try to Answer

Choose the correct answer.

In the water cycle _____

a. only evaporation is involved

b. only condensation is involved

c. evaporation, condensation and precipitation are involved

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Importance of Water Cycle

- To improve the availability of ground water.
- To control the Earth's temperature.
- To provide water to plants and animals especially humans.
- To recycle the Earth's supply of water constantly.

Try to Answer

1. Unscramble the words and fill in the blanks.

   ondencsaonti, vaeionorpat, ecippitatrino

   _____, _____, _____.

2. Is water cycle important for farming? _____
3. Why is water cycle important to human? _____
4. Name the process which is responsible for the formation of droplets on the surface of a glass having cold water _____



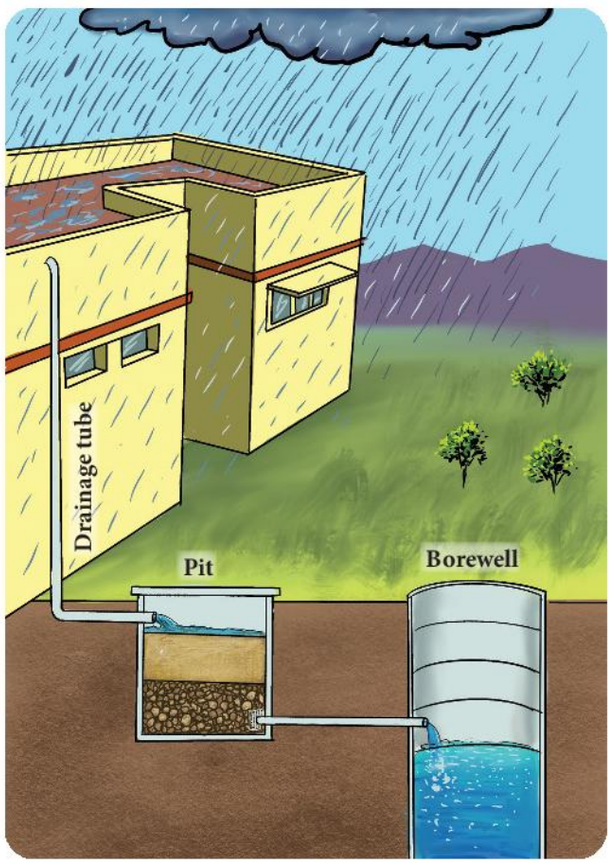
73% of our brain's mass consists of water.

The Antartic region has about 70% of the worlds fresh water.

MERKN

III. Rainwater Harvesting

'Rainwater harvesting' is the process of collecting and storing rainwater for future use. Rainwater can be collected in natural reservoirs or artificial tanks. Roof top harvesting is also a type of rainwater harvesting. The rainwater on the top of the building is collected and passed into the ground through pipes. Water passing through the pipes enters the pit which consists of gravels and coarse sand. As it passes impurities are filtered and it is stored as ground water.





More to Know

H_2O is the chemical formula of water.

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One inch of rainfall on a 2,000 sq.ft. roof is equal to 4,800 litres of water.

Benefits of Rainwater Harvesting

- It increases the ground water level.
- It can be used for agriculture.
- It increases the availability of water for living things.

Rain water harvesting is the only way to conserve rain water.

More to Know

- Rainwater harvesting was launched in the year 2001 by the Tamil Nadu government.
- Tamil Nadu is the first Indian state which made rainwater harvesting mandatory.

Try to Answer

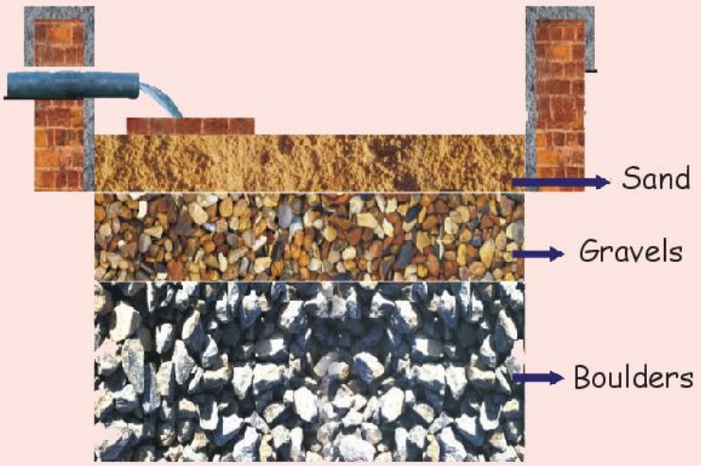
1. List out some other benefits of rainwater harvesting.
2. Suggest some ideas to save rainwater in your school.

Let us Do

Tips to construct a rainwater harvesting pit at school/home.

Construct a pit of any shape or size. It may be generally constructed, 1-2 metre wide and 2-3 metre depth. The pits can be filled with boulders, gravels and coarse sand.

Put the boulders in the bottom, sand in the top and gravels in the middle.



Let us Do

Discuss with your friends.

Rainwater harvesting has an important role to protect our environment.

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Evaluation



9AFIK6

I. Choose the correct answer.

1. Water is the most _____ resource on the Earth.
   (a) precious (b) solid (c) gas

2. Water exists in _____ states.
   (a) two (b) three (c) four

3. At temperature below _____ water freezes to form ice.
   (a) 10° C (b) 100° C (c) 0° C

4. _____ is the process by which water becomes water vapour.
   (a) Condensation (b) Evaporation (c) Freezing

5. Which of the following controls the ecological functions of life?
   (a) Bicycle (b) Water cycle (c) Recycle water

II. Fill in the blanks with suitable answer.

1. Water is converted into _____ when it is heated (ice cube / water vapour).
2. Water becomes ice on _____ (heating / freezing).
3. Water droplets combines to form _____ (rain /clouds).
4. Water cycle increases the availability of _____ (water tank / ground water).
5. _____ is a type of rainwater harvesting (Roof top harvesting / Watercycle).

III. Write True or False.

1. Water is a good example for all states of matter.
2. Water cycle controls Earth's temperature.
3. Water becoming water vapour on heating is called evaporation.
4. 37% of our brain's mass consists of water.
5. Roof top harvesting method is used in agriculture field.

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IV. Answer briefly.

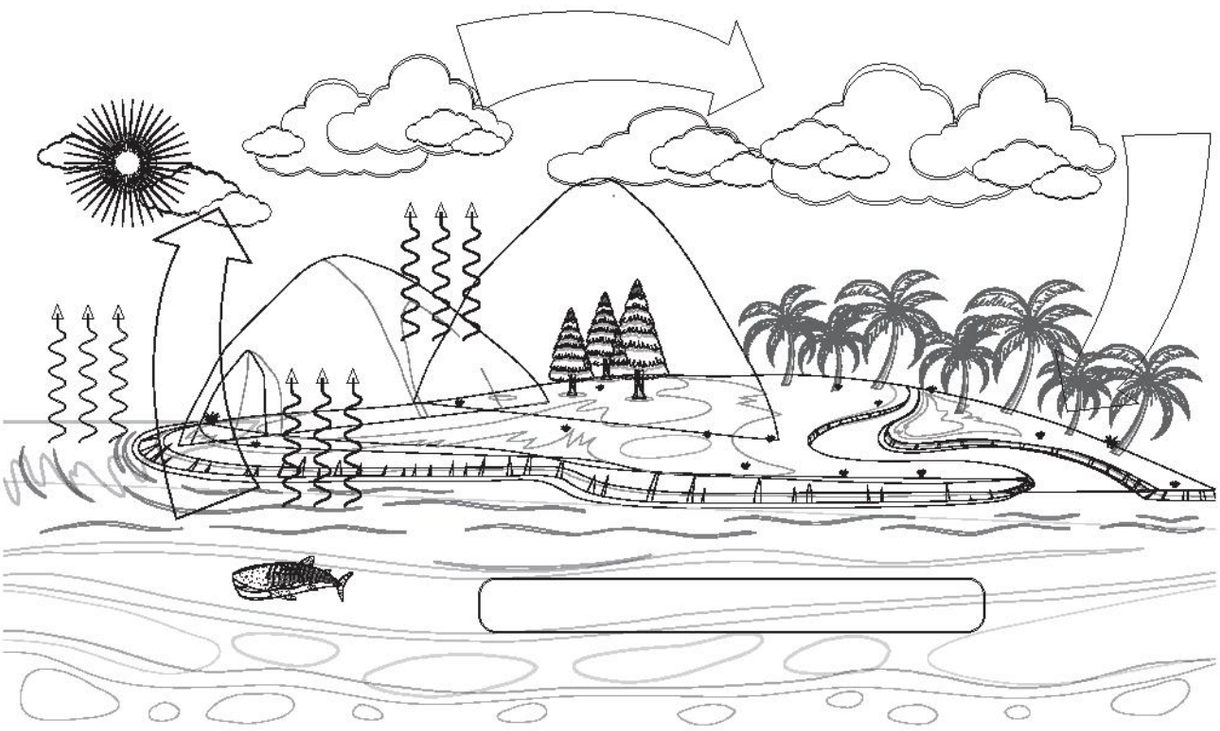
1. Write the states of water.
2. What is freezing?
3. Name the processes involved in water cycle.
4. Which state government made rain water harvesting mandatory in the year 2001?
5. What is needed to construct a rain water harvesting pit?

V. Answer in detail.

1. What is water cycle? Write any three importances of water cycle.
2. What is rain water harvesting? List out the advantages of rain water harvesting.

VI. Colour the given picture and write the correct name in the given blanks.

(Precipitation, Evaporation, Condensation, Water storage)



VII. Project.

Make a model of house with roof top rainwater harvesting system.

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Plants

Unit 3





Learning Objectives

After learning this lesson, students will be able to:

- list out the parts of leaf and their functions.
- explain the process of photosynthesis.
- describe the role of plants as a primary producer.
- know about green and non green plants.
- describe the features of flower.
- list out the exotic plants and their role.
- identify the edible part of different plants.

IAYVL

Introduction

All living things need food. Food helps them grow and perform daily activities. We have seen animals eating their food. But, have you ever wondered how plants get their food? Plants produce their own food with the help of chlorophyll, a pigment present in leaves. Humans and animals depend on plants for their food either directly or indirectly. Let us learn more about plants in this lesson.

I. Parts of Leaf

Leaves are of different shapes and sizes and have different parts. However, there are some basic parts that are common in most of the leaves.

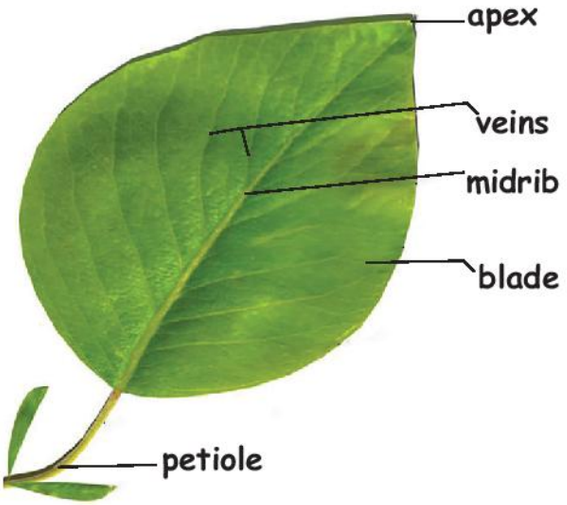
Blade : The broad flat part of the leaf (Lamina).

Apex : The tip of the leaf.

Midrib : The midrib runs along the centre of the leaf.

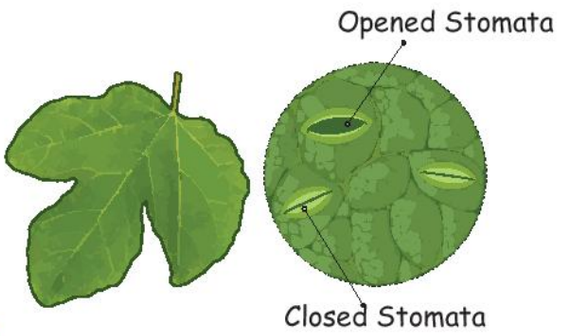
Veins : Veins branch out from the midrib. They are the framework of hollow tubes that carry water and minerals.

Petiole : This part joins the leaf to the main stem.



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Stomata : Stomata are tiny openings or pores mostly found at the base of the leaves. Air enters and leaves the plant through these openings. Stomata helps the plants to breathe. Stomata are used to **exchange gases**.



1. Leaf as food factory

Plants need food but they never depend on people or animals to get their food. Most of the plants are able to make their own food through a process called **photosynthesis**.

Photosynthesis = Photo (light) + synthesis (make)

Photosynthesis is a process by which plants make their food using chlorophyll water and carbon dioxide in the presence of sunlight. Let us see how this process is organized within the plants.

Think and Answer

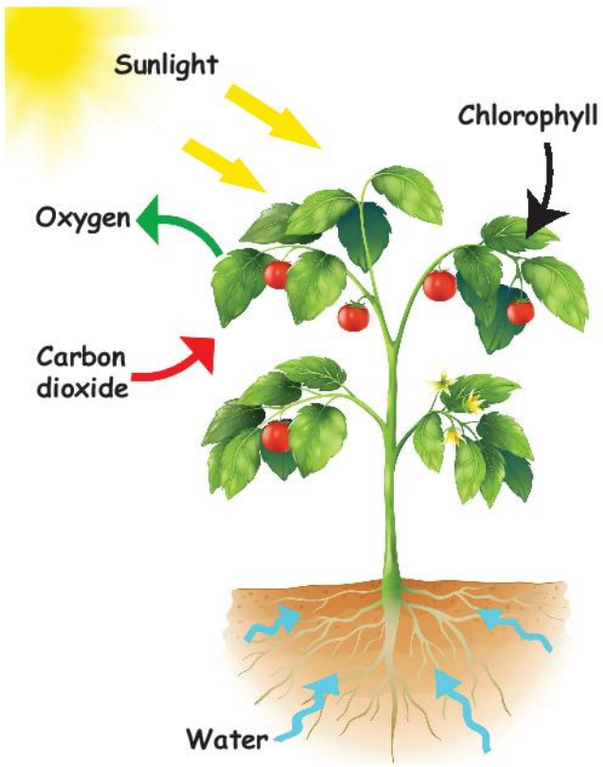
- Through which part of the leaf carbon dioxide enters into it?
- Which part of the leaf transports water?

Water: Water is absorbed by the roots and is transported to the leaves through the tubes.

Carbon dioxide: Carbon dioxide in the air passes through **stomata** in the leaves.

Sunlight: A green pigment in the leaves help them to trap sunlight. This pigment is called **chlorophyll.** Most leaves are green in colour because of this green pigment.

Through photosynthesis plants produce the food and release oxygen into the air.



$$\text{Water} + \text{Carbon dioxide} \xrightarrow[\text{Chlorophyll}]{\text{Sun light}} \text{Food} + \text{Oxygen}$$

As plants prepare food for themselves and also for other living things, they are called **primary producers**.

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Without primary producers, living things are not capable of producing their own food and will not be able to live.



Think and Answer

Why would living things not be able to live without plants?

Try to Answer

Fill in the blanks by rearranging the letters in the bracket.

1. During photosynthesis plants release _____ (egxyno).
2. _____ is a primary producer (tanpl).
3. Stomata are seen in the _____ (owler) surface of the leaf.
4. Pigment involved in the food synthesis is _____ (phllylochor).



More to Know

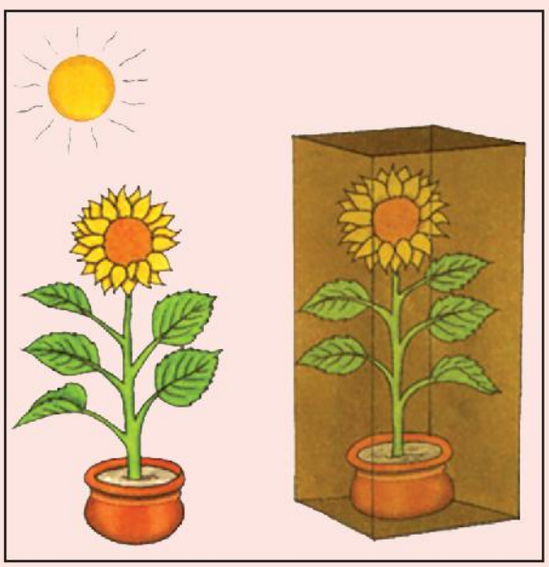
In plants like cactus, leaves are modified into thorns. Their food is produced in the green stems.



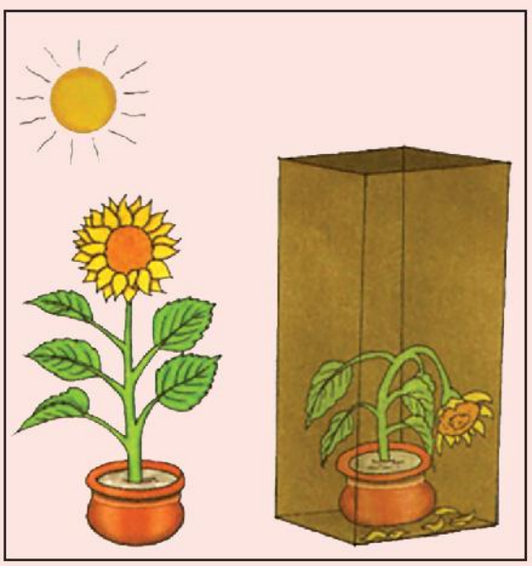
Let us Do

Take two potted plants. Keep one in sunlight and other in a fully covered box. Water them regularly. After a week observe the plants.

Before a week



After a week

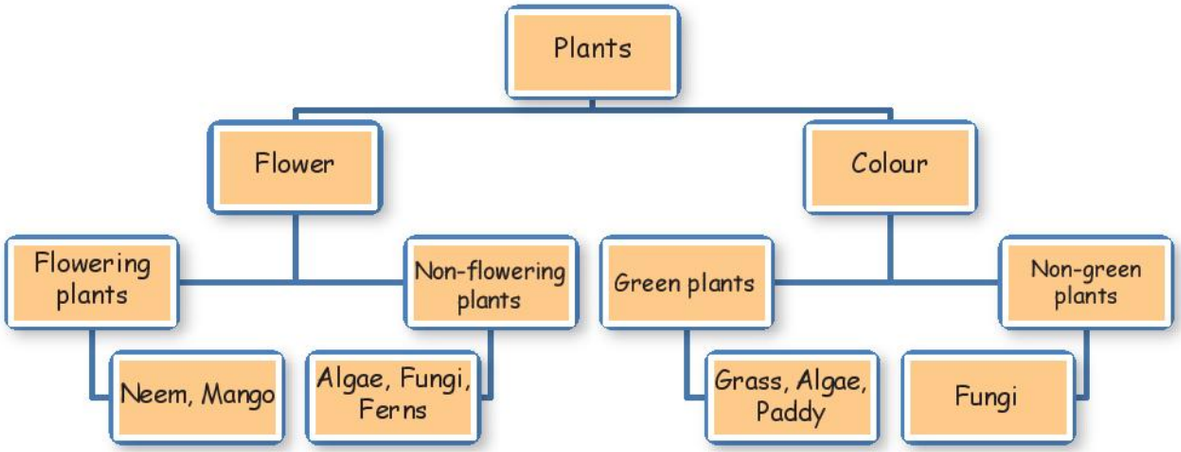


What did you observe?	Plant in sunlight	Plant in box

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II. Classification of Plants

Plants are classified in many ways based on stems, life span, seeds, flower and colour. In this section we will study about the classification of plants based on flower and colour (pigment).



1. Flowering and Non-flowering plants

Flower is the most important part of many plants, because it is involved in reproduction. But some of the plants are not having flower. These plants reproduce in different modes. Based on this, plants can be classified into two types.

- Flowering plants
- Non-flowering plants.

Flowering plants

Plants bearing flowers are called flowering plants. Some of them reproduce by sex cells or gametes and produce seeds. Seeds produce new plants. Eg - Mango, Neem, Groundnut, Paddy etc.



Neem



Paddy



Mango

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Non-flowering plants

Plants that can reproduce without flower are called non-flowering plants. These plants do not produce seeds. They reproduce by a special structure called spores. E.g. Algae, Fungi, Fern.



Algae



Fungi



Fern

Let us Do

List out the flowering and non-flowering plants in your surrounding.

Flowering plants	Non-flowering plants

2. Green and Non-green plants

The most important pigment present in plants are called chlorophyll. Based on the colour present in the plant, they are divided into two groups. They are green and non-green plants.

Green plants

Plants containing green pigments are called green plants. It looks green in colour. They prepare their own food with the help of them. It depends on atmosphere, light and pigment for food preparation. Green plants are commonly called autotrophs.

E.g. Grass, Paddy, Algae etc.



Grass



Paddy



Algae

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Non-green plants

Plants that do not contain chlorophyll pigment and do not look green are called non-green plants. They cannot prepare their food. These plants depend on other organism for their food and living place. These are commonly called heterotrophs.



Mushroom



Bread moulds



Bracket Fungi

Let us Do

List out the places where you see the non-green plants

_____ _____

_____ _____

Try to Answer

Fill in the blanks.

1. _____ is an example for non flowering plants.
2. Plants are classified based on pigment and _____ of the plant.
3. _____ depend on other organisms to live and get their food.
4. Autotrophs use _____ , _____ and chlorophyll to prepare their own food.

III. Parts of Flower

VMUAX

Have you seen flowers? Try to answer the questions given below

a) Which is your favourite flower? _____

b) What is the colour of that flower? _____

c) How does that flower smell? _____

The four visible parts of a flower are explained below.

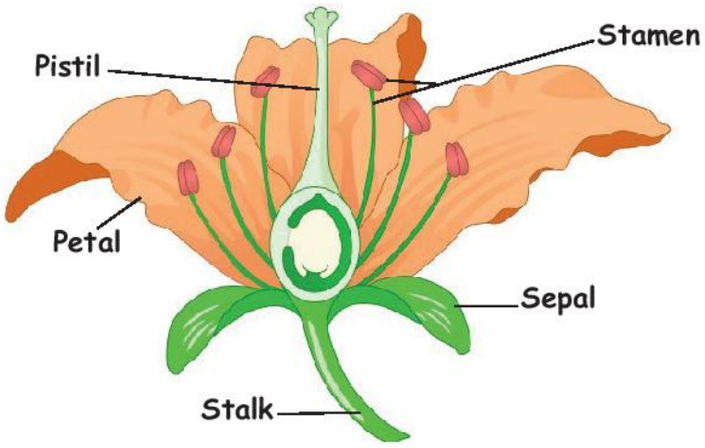
Sepal: Sepals are leaves that protect the flower while it is still a bud. Sepals are usually green or brown.

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Petal: Petals are often bright coloured. Their main job is to attract insects such as bees or butterflies, to the flower. The insects help the flowers in the transfer of pollen grains.

Stamen: Stamen can be seen at the centre of a flower. They contain pollen grains that help the plants to multiply. It is the male part of a flower.

Pistil: Pistil is also seen at the centre of the flower. The pistil uses the pollen to help the flower to become fruit. It is the female part of a flower.





More to Know

The largest flower in the world is Rafflesia. This rare flower is found in the rainforests of Indonesia.



Try to Answer

Fill in the blanks.

1. Sepals _____ the flower while it is still a bud.
2. Stamen contains _____ grains.
3. Pistil is _____ part of a flower.

Let us Do

Bring few hibiscus flowers to the classroom. Distribute the flowers to the children. Introduce the parts of a flower to them. Then, ask them to observe and feel the different parts of the flower and tell them to record their observation.

Parts of flower	What is its colour?
Petal	
Sepal	
Pistil	
Stamen	

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Seasonal Flowers

Think and Answer

Can you name the four seasons?

The change in climate that occurs periodically is called **seasons**.

There are four general seasons - **Spring, Summer, Autumn** and **Winter**.

Most flowers bloom in a specific season. Hence, they are called **seasonal flowers**.

Flowers that bloom in winter



December



Flame Lily



Tuberose

Flowers that bloom in summer



Jasmine



Sunflower



Rose

Flowers that bloom in autumn and spring



Dahlia



Saffron



Tulip

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More to Know

Firecracker flowers bloom in all seasons



Kurinji flower blooms once in 12 years



IV. Exotic Plants

The plants that grow outside their native area either purposefully or accidentally are called exotic plants.

Most of these plants are brought to new areas for decoration purposes. Some of them are given below.



Sago palm (Cycas)



Fern



Crotons



Travelers palm



Boat lily

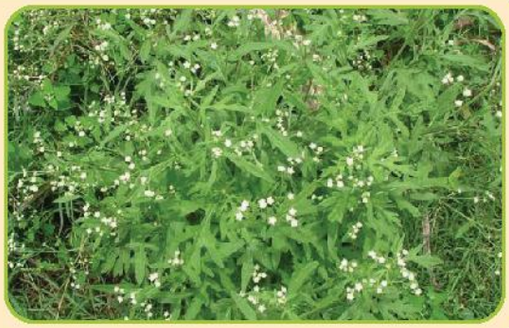


Aloevera

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More to Know

Parthenium plant accidentally grow in a new native. This plant expands its range and disturbs the cultivation areas. The pollen of this plant is allergic in nature. So, **do not touch this plant** wherever you see.



Try to Answer

1. Find the odd one.

   i. December, Tuberose, Tulip.
   ii. Saffron, Tulip, Rose.
   iii. Crotons, Boat lily, Rose.

Let us Do

Collect various ornamental plants and plant them in your school garden or at home.

V. Plants as Food

Humans and other animals often use plants as food. Plants which we eat are edible. Edible parts of some plants include leaves, stems and roots. We also eat fruits produced by plants.

Edible parts of plants

All the parts of different plants are edible, that is, we can eat them as food.

Roots as food

Many plants store excess food in their roots. They have thick and swollen roots. These roots are used as food. Some of them are given below.



Carrot



Beetroot



Tapioca

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Stems as food

In some plants the stem stores the excess food in it. Potato, onion and ginger are the underground stems that we eat. Some of them are given below.


Onion


Turmeric


Sugarcane

Leaves as food

Leaves of some plants are used as food. In some plants extra food is stored in leaves. We eat the leaves of some plants like cabbage. Some of the leaves used as food are given below.


Coriander


Cabbage


Moringa

Flowers as food

Flowers are the part of a plant. Many flowers are used as food. Some of them are given below.


Banana flower


Cauliflower


Clove

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Fruits as food

Many fruits are used as food. Fruits are rich in vitamins and minerals. They keep us healthy. All fruits can be eaten raw.



Banana



Mango



Jack fruit

Grains as food

Grains of pulses, cereals and pods are the commonly eaten seeds. They are the rich sources of carbohydrates and proteins.



Rice



Pulses



Fenugreek

Try to Answer

Fill in the blanks.

1. _____ flower is used as food.
2. _____ part of the potato plant is used as food.
3. Stem of the _____ stores food in it.
4. Seeds are rich in_____ and _____.



More to Know

Trees are the longest living organism on earth. Bamboo plants can grow upto 90 cm in a day.



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Let us Do

Complete the table to show the parts of the plant we eat.

Food items	Parts of the plant eaten
Carrot	
Banana	
Mango	
Cauliflower	
Rice	
Dhal	
Moringa	
Turmeric	
Onion	
Cabbage	
Jackfruit	
Beetroot	

Evaluation



87NKV

I. Choose the correct answer.

1. The tip of the leaf is
   a. blade b. apex c. midrib d. veins
2. Which one of the following is the primary producer?
   a. Plant b. Animal c. Human d. None of the above
3. Which flower blooms during winter?
   a. Jasmine b. Tulip c. December d. Fire cracker
4. Choose the ornamental plant from the list.
   a. Parthenium b. Mango c. Travellars palm d. Groundnut
5. Which plant flower is edible?
   a. Cauliflower b. Potato c. Mint d. Cabbage

II. Fill in the blanks.

1. During photosynthesis _____ is produced and stored in the leaf.
2. Green plants have _____ pigment.

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3. Onion is a _____ part of a plant.
4. The male part of a flower is _____.
5. An example for edible seed is _____.

III. Answer the following in one or two words.

1. Which is the female part of a plant?
2. Write the name of any one of the leaf that is used as food.
3. Which flower bud is used as spices in food?
4. What are the nutrients present in the seeds?
5. Write any one of the flower that blooms in summer.

IV. Answer briefly.

1. Write the parts of a leaf.
2. Define – Photosynthesis.
3. Name any five exotic plants.
4. Write the names of any two underground stem plant.
5. Why should we not touch parthenium plant?

V. Answer in detail.

1. Mark any four parts of the leaf in the picture and describe them.



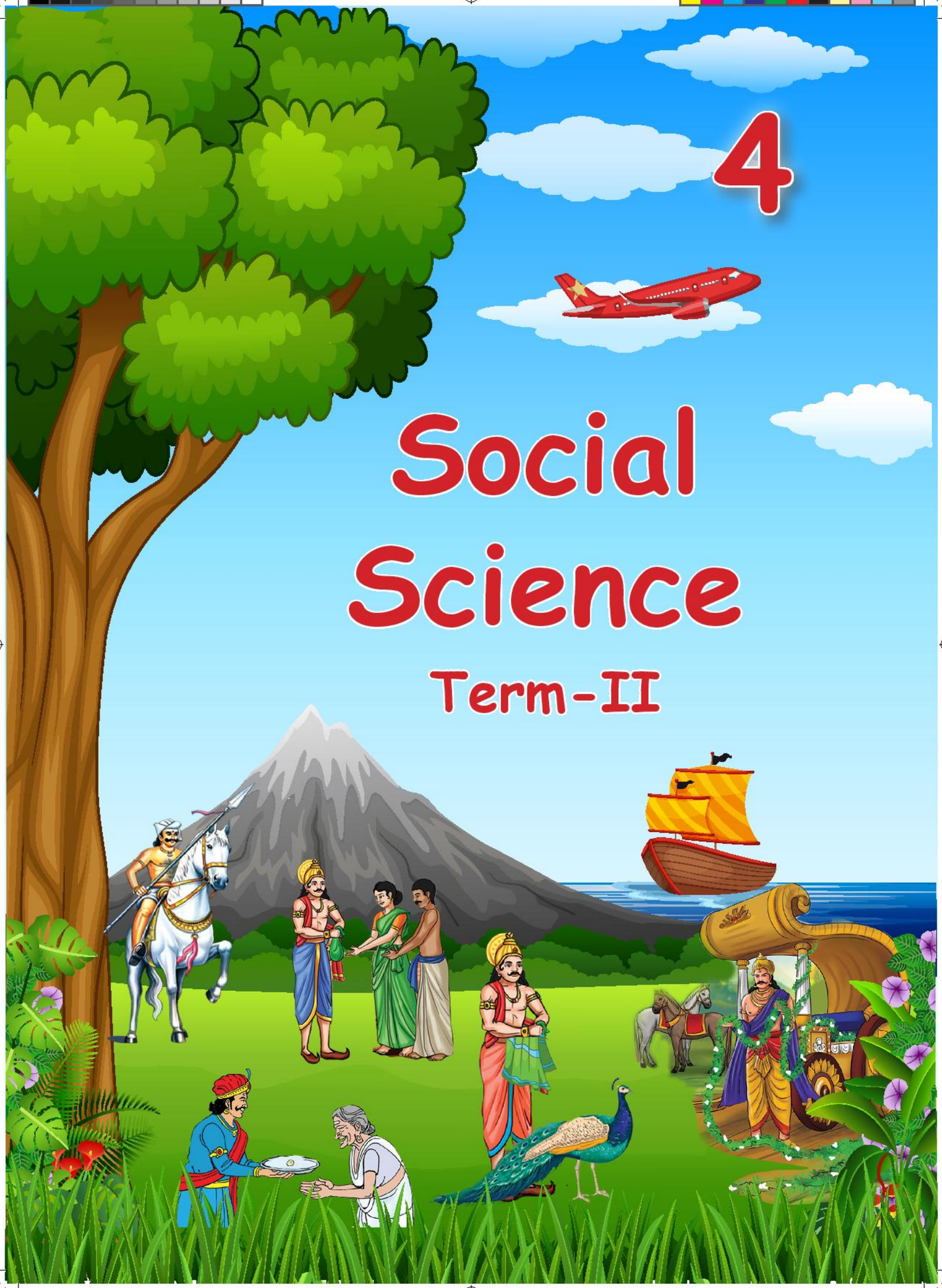
2. Draw the diagram of a flower and explain the parts of a flower .

VI. Project.

1. Collect the edible parts of different plants used in your home and display them in your class room.

2.Collect some flowers and discuss about the parts of flower with your friends.

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GLI4Z

E-book

ISCK6

Assessment



Unit 1 Philanthropists of Sangam Age

H2E7G

Learning Objectives

Children can:

- name the philanthropists and the regions they ruled.
- understand the significance of human qualities like honesty and kindness.
- understand how the philanthropists ruled their region.

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Geetha and her Grandpa are on a trip during summer holidays. They are on their way to Kodaikanal the hill station in Tamil Nadu.This is the first time that Geetha is travelling up a steep hill in a bus.



Grandpa, Why are more trees in the hills than in Chennai?



Hills usually have lot of trees. It is important for people to take care of them.



Grandpa, how did people come to these hills before buses and cars were used?



They used horses and donkeys to climb up the hill.



Grandpa, Who ruled these hilly regions?



In the Sangam Age, many philanthropists ruled the hilly regions. But seven philanthropists were very famous among them. They were the chieftains under Chera, Cholas and Pandiyas.



Why were only seven philanthropists famous? Who were they?

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Sangam literature, consisting of several classical poetry is the main sources of the Sangam Age.



Those seven philanthropists were Pegan, Pari, Nedumudikari, Aay Andiran, Adhiyaman, Nalli and Valvil Ori. They ruled different hilly regions at different periods during the Sangam Age. They were all powerful, kind and cared for nature and the people. Shall I tell you a few stories about how those philanthropists and the people protected nature and how in turn nature protected them?

Grandpa, I would like to listen to the stories very much!





Try to Answer

1. Name any three among the seven great philanthropists.
2. During which age did the seven famous philanthropists rule the hilly regions?



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Pegan



Are you ready to listen to the first story?

Yes, Grandpa.

Okay. This story is about Pegan. Pegan ruled Palani hills (Dindigul district). It is a very small hilly region that we are visiting today. It is cold here. Isn't it?

Yes, grandpa. That's why Amma has packed sweaters for us.

Correct. One day, while Pegan was on his walk, he saw a peacock shivering. He assumed that the peacock was shivering due to cold and therefore he covered the peacock with shawl.

Grandpa, How could a peacock use a shawl?

Perhaps, it might not use the shawl. The point was that Pegan treated the peacock just like his own child. How many people now a days show such kindness towards the animals?

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Grandpa, one day I saw a boy throwing stones at a dog. I stopped him. If he had known about Pegan, he would have found a way to love animals.





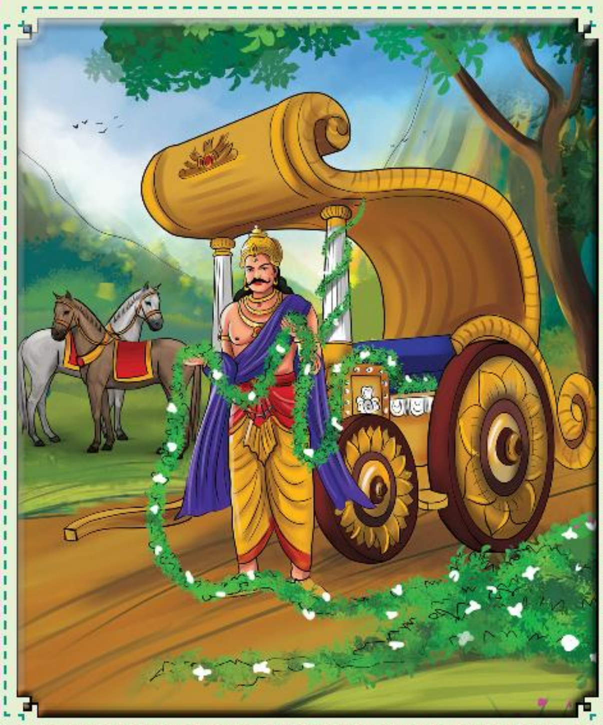
True. It's not only showing just kindness towards the trees and the animals but also about valuing people. We should treat all living things equally.



Try to Answer

1. Which hilly region did Pegan rule?
2. What did Pegan see while he was walking?
3. What did Pegan do when he saw the shivering peacock?





Pari



Okay, the next story is about 2,000 years old. A wise and kind philanthropist called Pari ruled Parambu Nadu. This was located in Parambu malai, a hill range that extends fro in Sivaganga district in Tamil Nadu and extends all the way to Palakkad in Kerala.

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The Moovendhars - the Cheras, Cholas and Pandyas - wanted to make Parambu Nadu a part of their kingdom. They were not able to win the battles against Pari and his army individually. So, they attacked Parambu Nadu together.

They were not able to defeat the Pari's army in the thick forest which was surrounded by the hills. Therefore, they prevented the supply of water and food from the foothills of Parambu Nadu. They thought that Pari would surrender when he comes out of the hill for food and water.



Grandpa, did Pari surrender?



No, Pari did not surrender. Few months passed, the Moovendhars later realised that the forests in Parambu malai were so rich and they provided people with a lot of jackfruit, edible bamboo and other wild nuts. The hill also had a lot of streams that provided them with fresh, clean water.



So they didn't need food or water from any other place?



Yes, their forests took care of them, just like how Pari and the people in his region took care of nature. There is a famous story that tells about his generosity. One day Pari was passing a young jasmine climber. He felt that there was no tree to help the climber to grow. He offered his golden chariot to give support for the climber.

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This is so interesting. Could I tell you an interesting matter? We have also planted a few trees, climbers, shrubs etc., in our school. I make sure that they grow well.



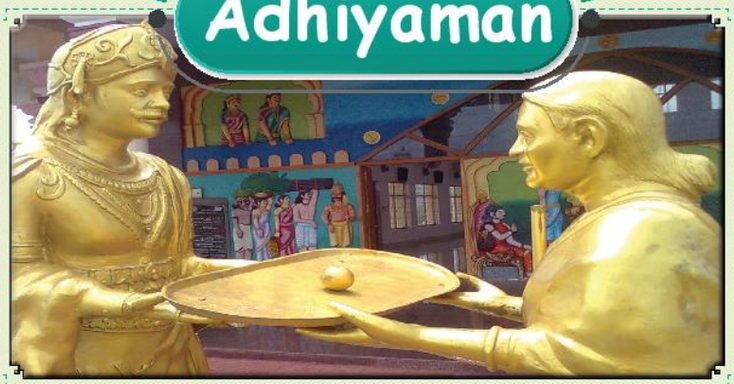
Would you like to listen to more stories about some of the other philanthropists?

Yes, Grandpa.

Try to Answer

1. Which was the region ruled by Pari?
2. What were stopped going from the foot hills to Parambu Nadu?
3. What did Pari give to support jasmine climber?

Adhiyaman





There was another philanthropist called Adhiyaman. He ruled a hilly region Thagadur in Dharmapuri district. One day he was presented with a very rare type of gooseberry. He was told that one who ate that rare fruit, would be immortal. Do you know what did he do?

He offered that fruit to an old Tamil poetess Avvaiyar.

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Is that the same Avvaiyar whom I read in my Tamil textbook?



Yes, Geetha. Avvaiyar wondered and asked Adhiyaman why he was offering her the gooseberry. Further, she said that he should eat this fruit as he was the chieftain. Adhiyaman told her that there would be many chieftains after him, but there would not be many poets, to teach people how to make life better, like her.

Can you imagine a powerful chieftain offering such a valuable gift to a poetess? This shows how people valued each other in the Sangam Age. Do you agree?

Yes, grandpa. We should always value people around us.



Try to Answer

1. What did Adhiyaman receive as a present?
2. Who was Avvaiyar?
3. Why did Adhiyaman give the gooseberry to Avvaiyar?



List out the things given by these philanthropists.

Pari: _____

Pegan: _____

Adhiyaman: _____

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Let me tell you a story of another chieftain Valvil Ori who ruled a hilly region, part of Kolli hills in Namakkal district.

What does the word 'Valvil' mean?





'Val' means powerful and 'Vil' means bow. He got his name as he was an expert archer.

Amazing! what did he do for the people?



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Ori was not only known for his skill in archery, but also hailed as a kind ruler. He used to reward bards, musicians, dancers and other artisans for their skills.

Grandpa, I like Valvil Ori. What about the other three philanthropists?

WGNZX

Aai Andiran also ruled a hilly region in the Pothigai hills, situated in South of Madurai. It is said that he offered Lord Shiva a rare, glowing, blue clothing given by a cobra.

Nedumudi kari ruled the region of Thondaimandalam at Tirukkoyilur. He patronised the needy people who approached him, by offering them generously.

Nalli ruled the region of Thottimalai under the king Cheran. He helped the poor who approached him without exposing himself.

They were all known for their kindness. That's why even after so many years, they are still fondly remembered by us.



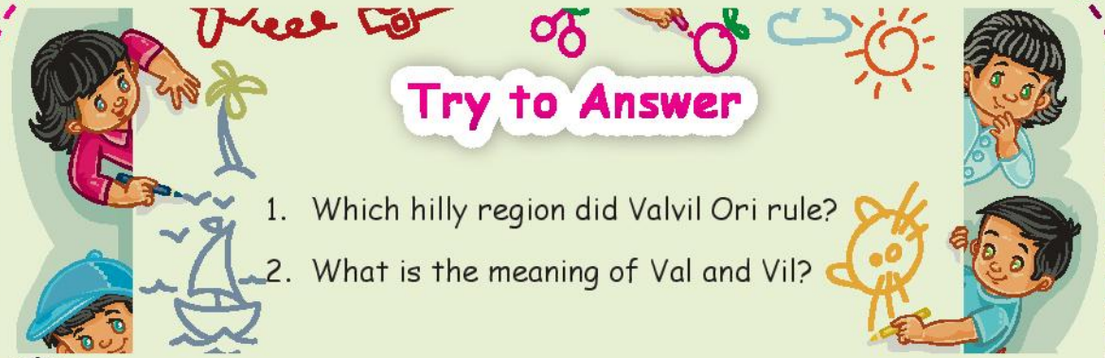
Thank you for the interesting stories. I will share these with all my friends.

Activity

Match the following.

1. Pari	-	kind towards animals
2. Pegan	-	reward skilled people
3. Adhiyaman	-	kind towards nature
4. Valvil Ori	-	valued people

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Try to Answer

1. Which hilly region did Valvil Ori rule?
2. What is the meaning of Val and Vil?



Listout the name of the seven Philanthropists and their regions.

Philanthropists	Regions

Glossary

Sangam Age - A period in the history of ancient Tamil Nadu.
Philanthropist - A person who seeks to promote the welfare of others.
Steep hill - A very tall hill.
Immortal - Living forever.
Bards - A poet.
Artisan - A worker in a skilled profession.

Recap

- There were many philanthropists in Sangam Age. Seven of them were famous.
- The Moovendhars were the Cheras, Cholas and Pandyas.
- Philanthropists were known for the kindness towards the people and nature.
- The seven philanthropists were Pegan, Pari, Nedumudi kari, Aai Andiran, Adhiyaman, Nalli and Valvil Ori.

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BNTF3



Evaluation

I. Choose the correct answer

1. _____ is one among the Moovendhars.

   a. Aay b. Pari
   c. Cheran d. Nalli

2. The seven philanthropists ruled in the _____.

   a. plains b. deserts
   c. rivers d. hilly regions

3. Parambu Nadu was located in _____ district.

   a. Dharmapuri b. Dindigul
   c. Sivaganga d. Namakkal

4. Pegan ruled a hilly region in the _____ hills.

   a. Palani b. Kodaikanal
   c. Pothigai d. Kolli

5. Adhiyaman gave a _____ to Avvaiyar.

   a. shawl b. gooseberry
   c. gift d. chariot

II. Match the following.

1. Aai Andiran - Thagadur hills
2. Adhiyaman - Pothigai hills
3. Valvil Ori - Parambu hills
4. Pari - Kolli hills

III. True or False.

1. Pari did not care for nature at all.
2. Sangam Age had seven famous philanthropists.
3. We should value the people and animals.
4. Nedumudi kari ruled the region of Thottimalai.

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IV. Answer the following questions in one or two sentences.

1. Write about Sangam literature?
2. What did the Moovendhars do when they couldn't win battles against Pari?
3. Why did Adhiyaman give the gooseberry to Avvaiyar?
4. What was Valvil Ori famous for?

Project

Stick a picture of any one of the philanthropists and write a few lines about him.



Stick the picture here

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Unit 2 Physical Features of Tamil Nadu





L1AEH



Children can:

- understand the physical features of Tamil Nadu.
- locate mountains, plateaus, plains and coastal regions in Tamil Nadu.
- describe the features of mountains, plateaus, plains and coastal regions.
- know about the types of forests found in Tamil Nadu.



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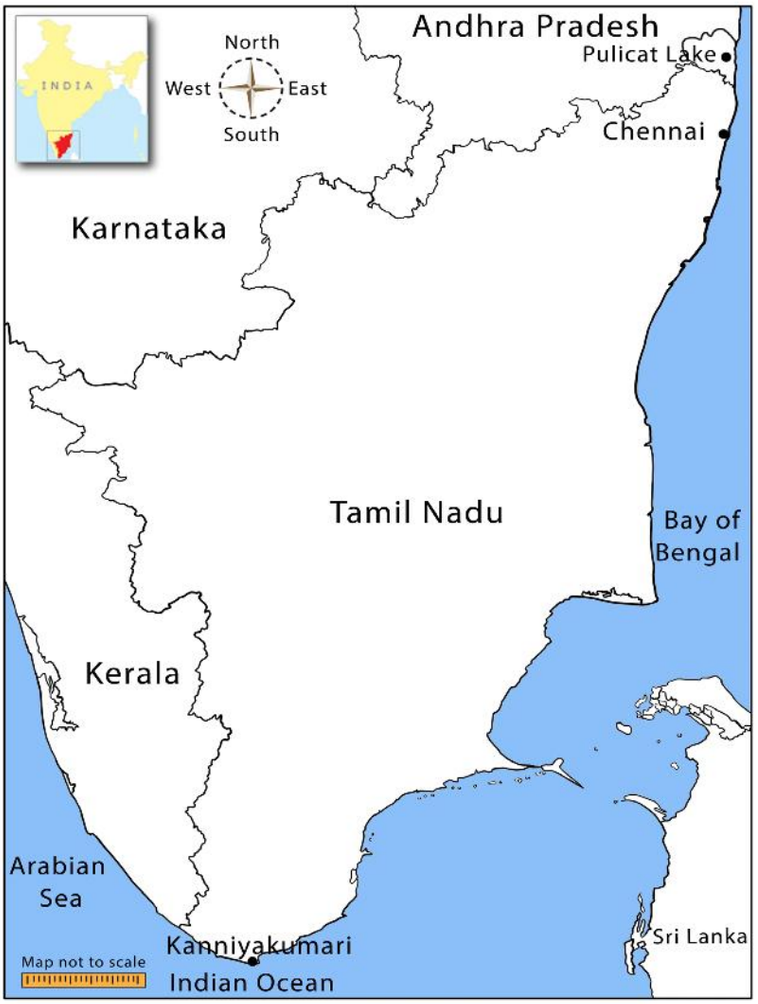
Our state

Tamil Nadu is located in the South of India. It is the Tenth largest state in India. It shares boundaries with

- Andhra Pradesh to the North
- Karnataka to the North west
- Indian Ocean to the South
- Kerala to the West
- Bay of Bengal to the East

Tamil Nadu extends upto Kanniyakumari, the so called southernmost tip of India. It is the meeting point of Arabian Sea, Indian Ocean and Bay of Bengal.

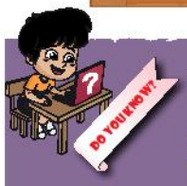
The Pulicat lake is situated at the northern boundary of Tamil Nadu near chennai.



Tamil Nadu and its neighbours



On the political map of India identify any two neighbouring States of Tamil Nadu.



Tamil Nadu had 32 districts. In 2019, government announced 6 more districts namely Tenkasi, Kallakurichi, Ranipet, Tirupattur, Chengalpattu and Mayiladuthurai At present there are 38 districts.



During the British rule Tamilnadu, Andhra Pradesh, Karnataka, Kerala, Odisha and Lakshwadeep together known as Madras Presidency. Later in 1953, Telugu speaking region formed as Andhra Pradesh. Similarly, in 1956, Malayalam and Kannada speaking regions also formed as Kerala and Karnataka.

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Landscape of Tamil Nadu

The landscape of Tamil Nadu is divided into four forms namely:

1. Mountains 2. Plateaus 3. Plains 4. Coast

1. Mountains

Mountains are raised part of the earth's surface much larger than hills.

Tamil Nadu which is the only state in India, has both the Western ghats and Eastern ghats. They meet at the Nilgiri hills in Tamil Nadu. Doddabetta is the highest peak in Nilgiri hills. Tamil Nadu has various hill stations like Ooty, Kodaikkanal, Kolli hills, Kothagiri and Yercaud.

The Eastern ghats do not get enough rainfall whereas the Western ghats which receives lot of rainfall. The plantations grown in these ghats include tea, coffee and spices.



Ghats of South India

Tamil Nadu has rich flora and fauna. Mudumalai wildlife sanctuary, Indira Gandhi wildlife sanctuary and Anaimalai National park are in the Western ghats of the state. There are a variety of plant species found in them. The Kurunji shrub is the most special of them all. Kurunji flowers blossom once in 12 years.



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2. Plateaus

Plateau is a large flat area of land that is high above sea level.

There are three plateaus in Tamil Nadu namely Bharamahal plateau, Coimbatore plateau and Madurai plateau. There are many small hills between these plateaus. Chennimalai in Erode, is one among those hills.

3. Plains

A plain is a broad area of flat land. Plains in Tamil Nadu are divided into river plains and coastal plains.

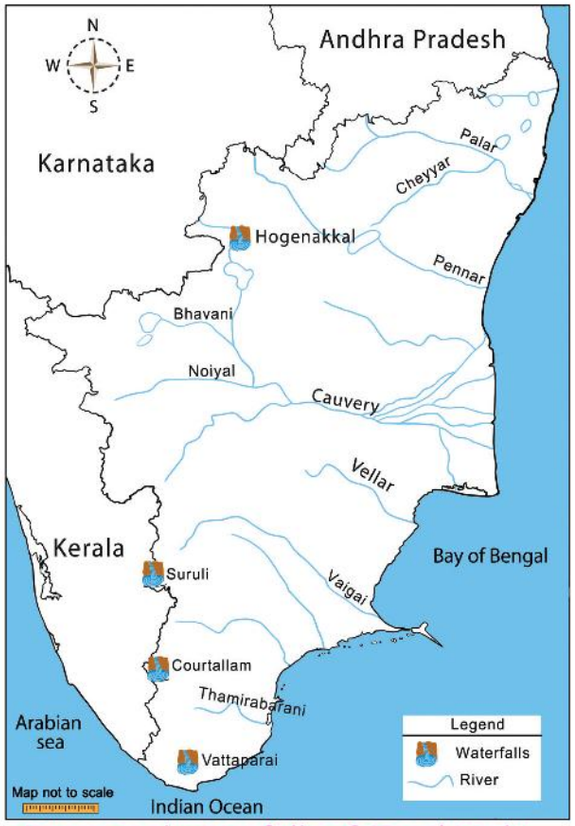
a) River plains

Rivers Palar, Cheyyar, South Pennar and Vellar form the Northern plains. The middle river plain is formed by Cauvery and its tributaries. River Vaigai and Thamirabarani form the Southern plains.

River Cheyyar is a tributary of River Palar. It is a seasonal river that flows through the district of Tiruvannamalai.

b) Coastal plains

Coastal plains of Tamil Nadu are also called Coromandal coastal plains which extend from Chennai to Kanniyakumari.



Rivers and waterfalls of Tamil Nadu

4. Coasts

Coast is the land next to or close to the sea or ocean.

Tamil Nadu has the third longest coastline in India. The coastal region extends from Chennai to Kanniyakumari. Pamban island forms a part of Ramanathapuram. It separates Gulf of Mannar and Palk strait. 14 districts share the coastline.

The notable beaches of Tamil Nadu are:

a) Marina Beach, the second longest urban beach in the world.

b) Rameswaram beach is famous for its beautiful view.

c) Kanniyakumari beach is famous for its beautiful views of sunrise and sunset over the water.



Coastal districts of Tamil Nadu

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d) Silver Beach is located 2kms from cuddalore. It is the second longest beach on the Coromandal coast.



Pamban bridge in Rameswaram is India's first sea bridge opened in the year 1914.



Waterfalls of Tamil Nadu

Waterfalls is an area where the river water flows down from a mountain. Tamil Nadu has 27 waterfalls. Some of them are:

a) Thalaiyar waterfalls is situated at Devadanapatti in Theni district, is the highest waterfalls in Tamilnadu and 6th highest in India.

b) Courtallam waterfalls is located in Tenkasi. It is in the Western ghats on the river Chittar. There are a total of nine falls of which Peraruvi, Aintharuvi and Puli Aruvi are the most prominent.

c) Suruli waterfalls is located in Theni. Here the water falls from a series of rock steps.

d) Vattaparai waterfalls is located in Kanniyakumari. The falls is surrounded by forest on all sides. People are allowed to take a natural bath here.

e) Hogenakkal waterfalls is located in Dharmapuri on the River Cauvery. It is known for bathing areas, boat rides and attracts many tourists throughout the year.



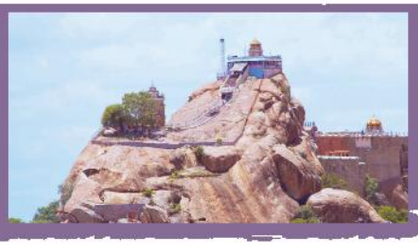
Courtallam - Aintharuvi



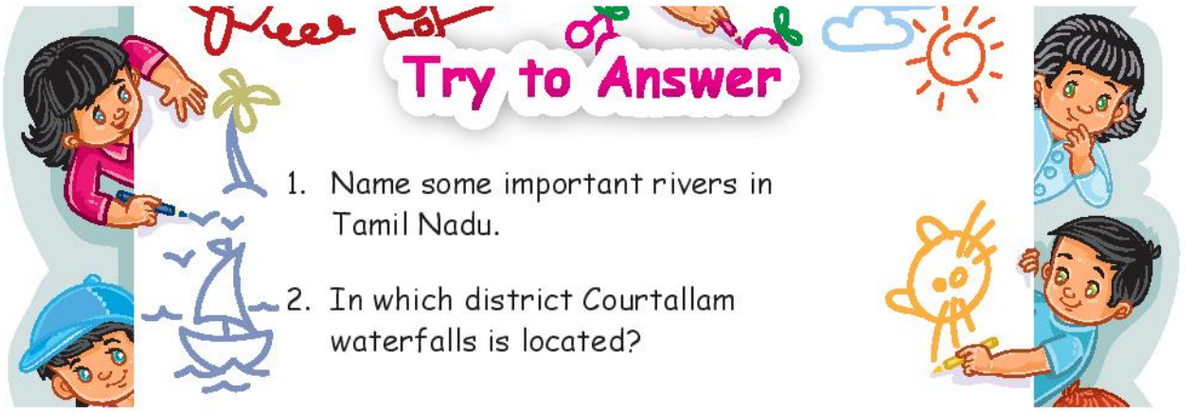
Hogenakkal falls



Droogs are steep rocks. Rock fort is a famous droog in Tiruchirapalli (Tamil Nadu).



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Try to Answer

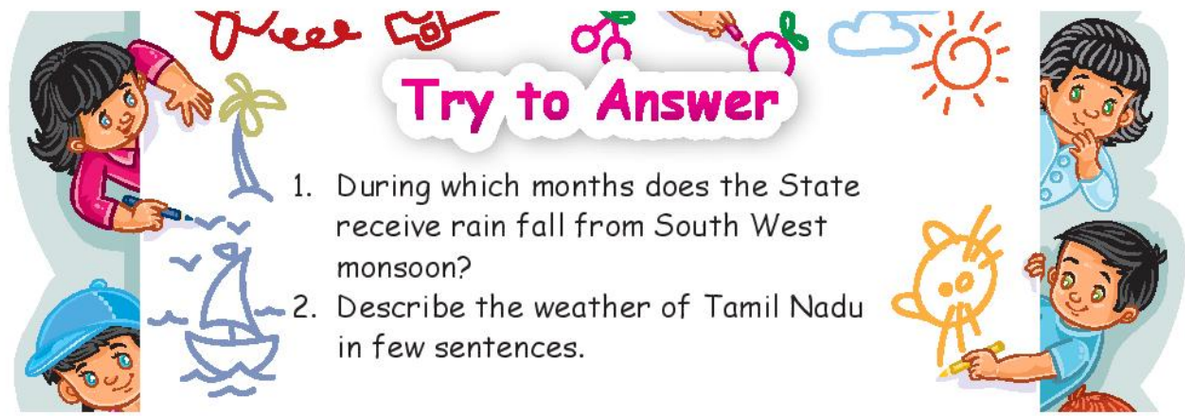
1. Name some important rivers in Tamil Nadu.
2. In which district Courtallam waterfalls is located?

Climate of Tamil Nadu

Tamil Nadu experiences tropical climate and there is very little difference between summer and winter. The temperature during summer can rise up to 40°C (40 degree celsius). Due to its location, Tamil Nadu experiences hot and humid weather almost throughout the year with mild winter. As Tamil Nadu is dependent on monsoon rains, it often faces droughts when monsoon fails.

Seasons of Tamil Nadu:

1. Winter season (January - February)
2. Summer season (March - May)
3. South West monsoon (June - September)
4. North East monsoon (October - December)



Try to Answer

1. During which months does the State receive rain fall from South West monsoon?
2. Describe the weather of Tamil Nadu in few sentences.



Thiruthani recorded the highest temperature of 48.6°C on 29th May 2003.

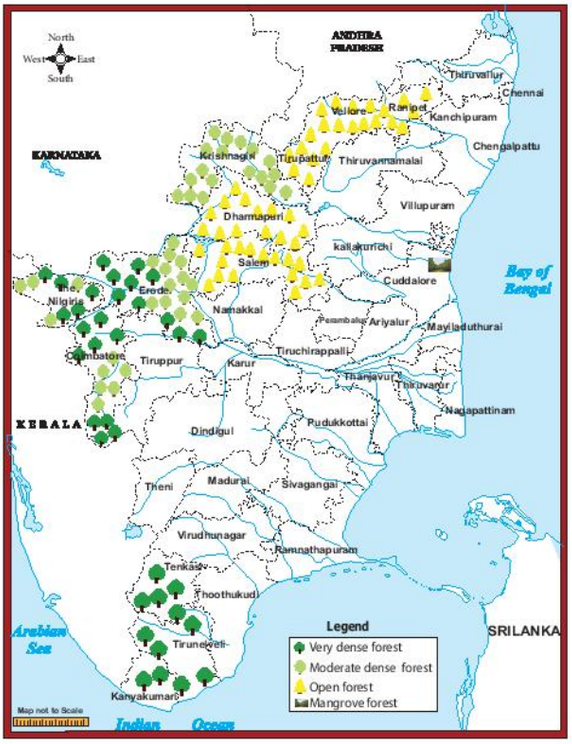
Source: Indian Meteorological Department (IMD).

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Forests

There are many types of forests across Tamil Nadu. Most of these forests are found in the areas near the ghats. These forests have so many types of trees. The topmost branches of the trees form like a continuous chain that prevents the sunlight from falling on the ground is called the canopy. The forests are divided based on the canopy cover:

Very Dense Forest	The Nilgiris, Coimbatore, Tirunelveli, Tenkasi Erode,
Moderate Dense Forest	The Nilgiris, Coimbatore, Erode, Krishnagiri
Open Forest	Salem, Vellore, Tirupattur, Ranipet Dharmapuri



Forests in Tamil Nadu

The forests can also be grouped as:

a) Evergreen forests:

The word evergreen means:

Ever (always) + green = Always green

The trees in these forests have leaves that are always green. In Tamil Nadu we find evergreen forests in the Western ghats of Tirunelveli, Kanniyakumari, The Nilgiris and Coimbatore.



Deciduous forest

b) Deciduous forests:

The trees in these forests shed their leaves during the dry season (winter).

These forests are usually found near the evergreen forests. They generally grow in the lower regions of the hills.

c) Swamp (Mangrove) forests:

The word swamp means an area of soft wet land. These forests are usually found near the beaches and river beds.



Mangrove forest

The Pichavaram mangrove forest is located near Chidambaram in Tamil Nadu.

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Glossary

1. Flora and fauna - The plants and the animals of an environment.
2. Ghat - A mountain pass / mountain range.
3. Drought - A long period without rainfall.
4. Weather - The daily state of the atmosphere in any given place.
5. Climate - The average of weather conditions in a vast area over a long period.

Recap

- Tamil Nadu is located in the South of India.
- Landscapes are divided into four forms namely mountains, plateaus, plains and coasts.
- Plains are found along the rivers and the coasts.
- The coastline of Tamil Nadu is shared by 14 districts.
- Tamil Nadu has a tropical climate.
- Forests can be grouped as evergreen forests, deciduous forests and swamp forests.

GK1XS



Evaluation

I. Choose the correct answer.

1. Which wildlife sanctuary is located in Tamil Nadu?

   a. Mudumalai wildlife sanctuary b. Corbett national park
   c. Sunderbans national park d. Indira Gandhi Wildlife Sanctuary

2. Western ghats and Eastern ghats meet at _____.

   a. Aravalli range b. Nilgiri hills
   c. Himalayan range d. Vidhyas range

3. The topmost branches of trees form a chain called _____.

   a. sunlight b. canopy
   c. forest d. mangrove

4. Tamil Nadu experiences _____ climate.

   a. extreme winters b. highest rainfall
   c. tropical d. snow fall

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5. _____ are found in the places where there is heavy rainfall.

a. Deciduous forests
b. Swamp forests
c. Evergreen forests
d. None of them

II. Match the following.

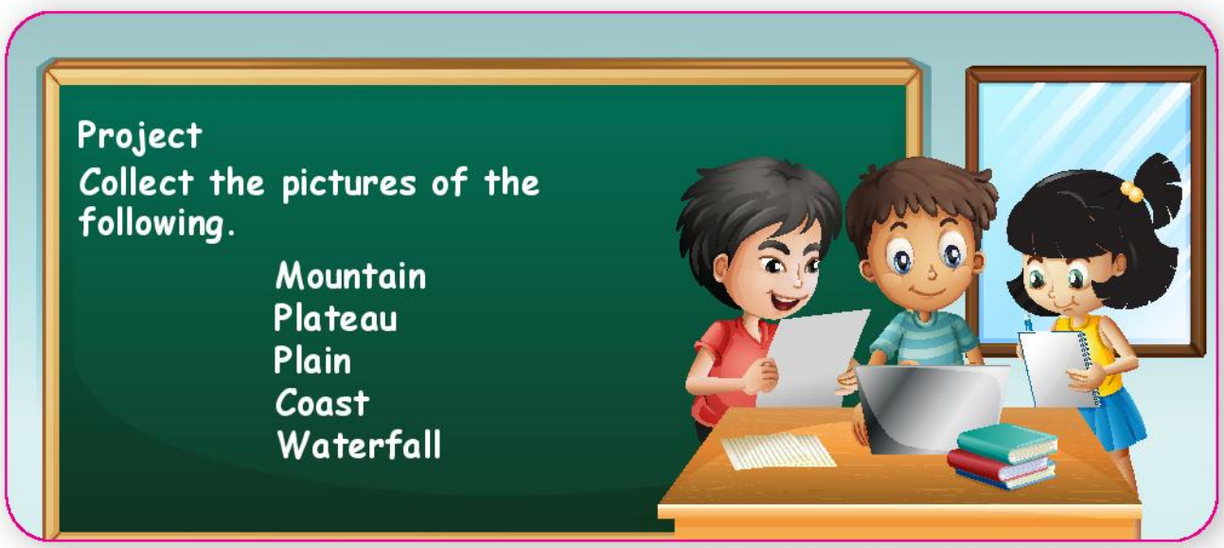
1. Mountain ranges in Tamil Nadu - Pamban bridge
2. Suruli waterfall - Western and Eastern ghats
3. India's first sea bridge - Theni
4. Pichavaram - Third longest in India
5. Tamil Nadu's coastline - Mangrove forest

III. True or False.

1. Tamil Nadu is the Tenth largest state in India.
2. Taml Nadu is located in the west of India.
3. Kurunji flowers blossom once in 2 years.
4. Tamil Nadu experiences hot and humid weather throughout the year.
5. Deciduous forests leaves that are always green.

IV. Answer in brief.

1. Name the states that share boundary with Tamil Nadu.
2. What are the different landscapes of Tamil Nadu?
3. Name the types of plains in Tamil Nadu.
4. Name the waterfalls in Tamil Nadu.
5. Describe the climate of Tamil Nadu.
6. Differentiate evergreen forests and deciduous forests.



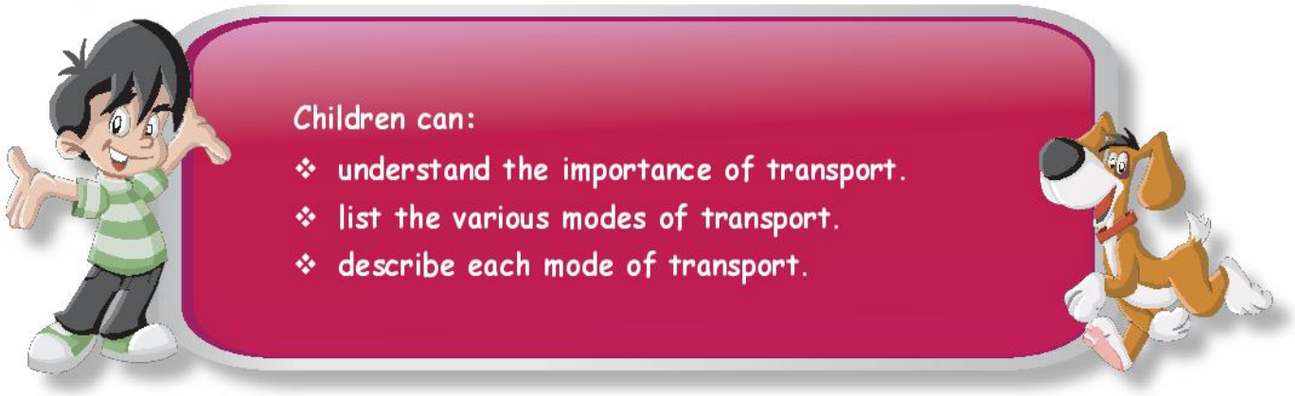
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Unit 3 Transport



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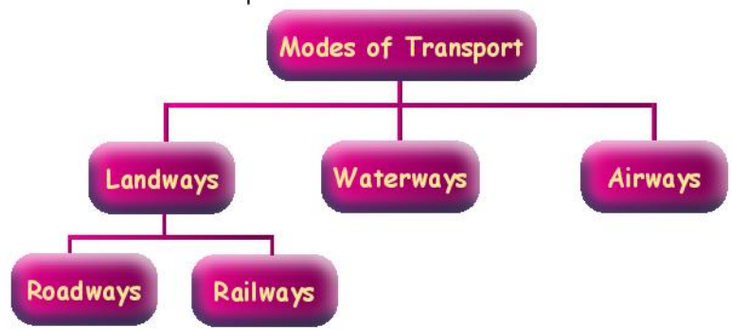
Transport

Transport is the action of carrying or taking people, animals and things from one place to another.

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Modes of Transport

There are three modes of transport in India.



Before the invention of wheels, humans used to walk everywhere. They used bullock carts to cover distances. Even today, many use bicycles which are eco-friendly to travel.

Landways

Landways is classified into two types.

a) Roadways

India has been building roads since old times. Roadways connect the nook and corners of our country.



National Highways (NH) - These are the main roads connecting cities in the country. e.g. NH 44 runs from Srinagar to Kanniyakumari. This NH is the longest NH in India. The Golden Quadrilateral road connects the four major cities - Chennai, Mumbai, Delhi and Kolkata in India.

State Highways (SH) - These are the roads connecting important cities within the state. e.g. SH 4 runs from Arcot to Villupuram.

District Roads - They are of two types - Major District Roads (M.D.R.) and Other District Roads (O.D.R.). These roads connect markets and offices in the district.

Village Roads - These roads connect villages or a group of villages with each other and also to other major roads near it.

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Bus is the most important means of public transport system in India. Buses are managed by the respective State governments. Many State governments have introduced air-conditioned buses and sleeper buses. The Chennai Mofussil Bus Terminus is the largest bus terminus in Asia.




Chennai Mofussil Bus Terminus, Koyambedu

Bus Rapid Transit System (BRTS) is a high quality bus - based transit system. It has been introduced in a few cities in India. The BRTS ensured that the roadways that are used by only buses.



Stick pictures of any two forms of land transport that you use everyday.

b) Railways

Railway is the most important form of transport system connecting various states in India. The first railway line was laid between Mumbai and Thane in 1853.

Royapuram railway station is the oldest station in Tamil Nadu. It was built in 1856 and it is the second oldest station in India. In the beginning, steam engines were used to run the railway coaches. From steam engines to high speed train, the growth of Indian Railways over the past 170 years has been vast and it has contributed to the development of India.

Major Rail links from Tamil Nadu

Name of the train	From	To
Himsagar Express	Kanniyakumari	Jammu
Tamil Nadu Express	Chennai	New Delhi
Tirukkural Express	Kanniyakumari	New Delhi
Coromandal Express	Chennai	Kolkata
Chennai Express	Chennai	Mumbai

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There are also sub-urban trains that connect different places within a city. The first modern rapid transit system in India is the Kolkata Metro Rail System. The Chennai Metro Train was started in the year 2015.



Chennai Metro Train



Indian Railways is the 4th largest network in the world. Darjeeling Himalayan Train in West Bengal is a World Heritage Site and it is the only steam operated railway in India.



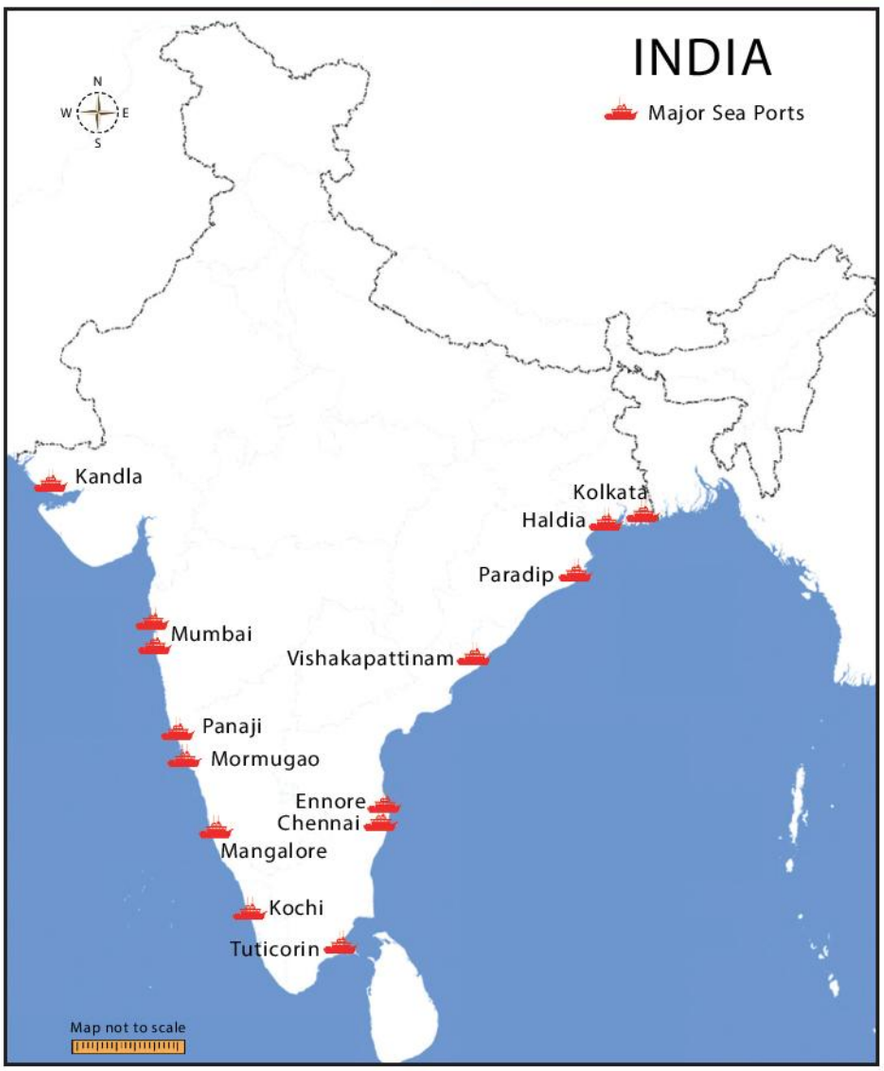
Stick pictures of different forms of railways (ex: metro, steam, high speed) and write their names below it.

c) Waterways

India has a very long coastline and hence ports remain main centers for trade.

Oceanic or Coastal water transport

India has 13 major ports and Tamil Nadu is the only state in India that has three major ports: Ennore, Chennai and Tuticorin. Shipping Corporation of India is a public sector company. It manages all offshore and other marine transport related infrastructure in the country.



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Water transport takes place through:

1. Boat
2. Speed Boat (Motor Boat)
3. Ship

The boats are widely used for fishing in Tamil Nadu.



Boat



Speed Boat



Ship



1. **Which is the only state in India that has more than two ports?**
2. **Name the ports in Tamil Nadu.**
3. **Name the government agency that handles marine transport related infrastructure in the country.**

d) Airways

Airways is the fastest mode of transport used to travel to different parts of the world. In 1911, the world's first airmail service took place in India between Allahabad and Naini.



Take off of a flight

In Tamil Nadu there are 4 international airports at Chennai, Coimbatore, Madurai and Tiruchirappalli.

Airlines plays a huge role in connecting cities within the country and across the world.

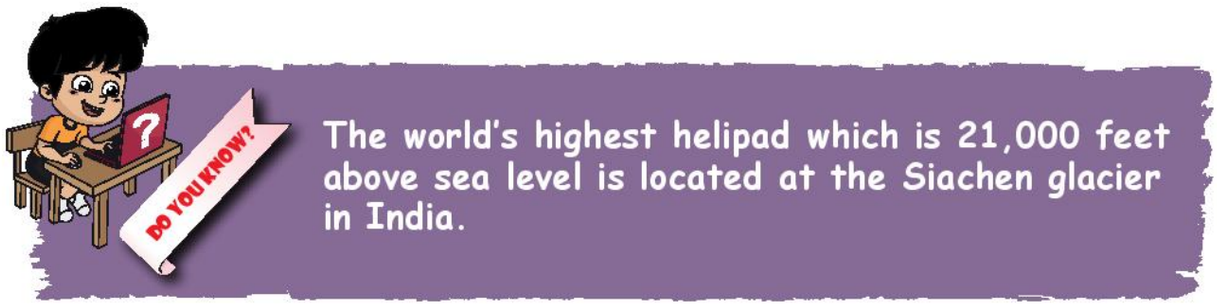
Helicopters are used for short distances and in hilly regions like Haridwar, Badrinath, Kedarnath and Darjeeling.



Helicopter flies over Kedarnath

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Advantages of transport

1) Growth of agricultural and industrial production

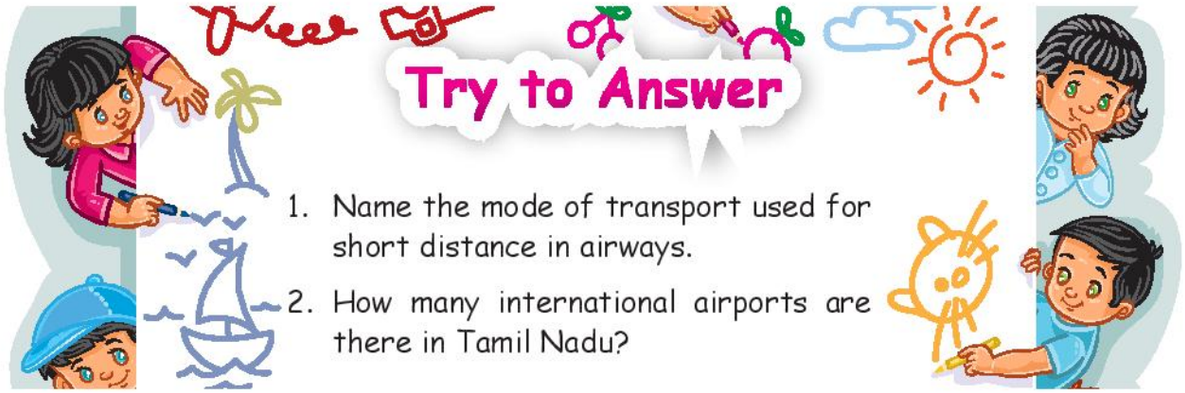
Transport system plays a huge role in the growth of agricultural and industrial production by carrying raw materials to different parts of the country.

2) Growth in trade

It helps in promoting trade in the country. Transport plays a key role in the country's export and import of goods.

3) Promotes tourism

It helps people from different countries to visit other countries. Without a good transport system, promotion of tourism is not possible.



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Glossary

1. Trade - Buying and selling of goods and services.
2. Import - Buying of goods or services from other countries.
3. Export - Selling goods or services to another country.
4. Helipad - Place where helicopters land.

Recap

- Transport is the action of carrying or taking people, animals and things from one place to another.
- The three modes of transport are landways, waterways and airways.
- Bicycles, buses and cars etc are used to travel on roadways. The four types of roads are National Highways, State Highways, District Roads and Village Roads.
- Railways plays a very important role in connecting the states.
- Waterways include the transport done through water bodies. It happens through boats, speed boats and ships.
- Airways is the fastest mode of transport. We use aeroplanes and helicopters for air travel.



Evaluation

I. Choose the correct answer.

1. Which of the following is an example of land transport?
   a. Car b. Ship c. Helicopter d. Aeroplane
2. The first railway line was laid in _____.
   a. 2019 b. 1853 c. 1947 d. 1950
3. One of the major cities that connects Golden Quadrilateral highway is _____.
   a. Chennai b. Kanniyakumari c. Madurai d. Trichy
4. _____ is the oldest mode of transport.
   a. Boat b. Cycle c. Walking d. Bullock cart
5. There are _____ modes of transport.
   a. 3 b. 4 c. 5 d. 6

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II. Match the following.

1.	International airport in Tamil Nadu	-	Bus
2.	Important public transport	-	Tuticorin
3.	Train from Kanniyakumari to Jammu	-	Thiruchirappalli
4.	Major sea port of Tamil Nadu	-	2015
5.	Chennai metro train started in the year	-	Himsagar Express

III. True or False.

1. Transport is not needed for people.
2. Ports remain main centers of trade.
3. Roadways do not connect different parts of our country.
4. The Chennai Mofussil Bus Terminus is the smallest bus terminus in Asia.
5. Tamil Nadu has 5 major ports.

IV. Answer in brief.

1. Define transport.
2. List the different modes of transport.
3. Describe railways. Name any two major rail links from Tamil Nadu.
4. What is air transport? What are used for air transport?
5. Write any three advantages of transport.



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