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STANDARD FIVE

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SCIENCE
SOCIAL SCIENCE

Term - II

Volume-2

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Department of School Education

Untouchability is Inhuman and a Crime

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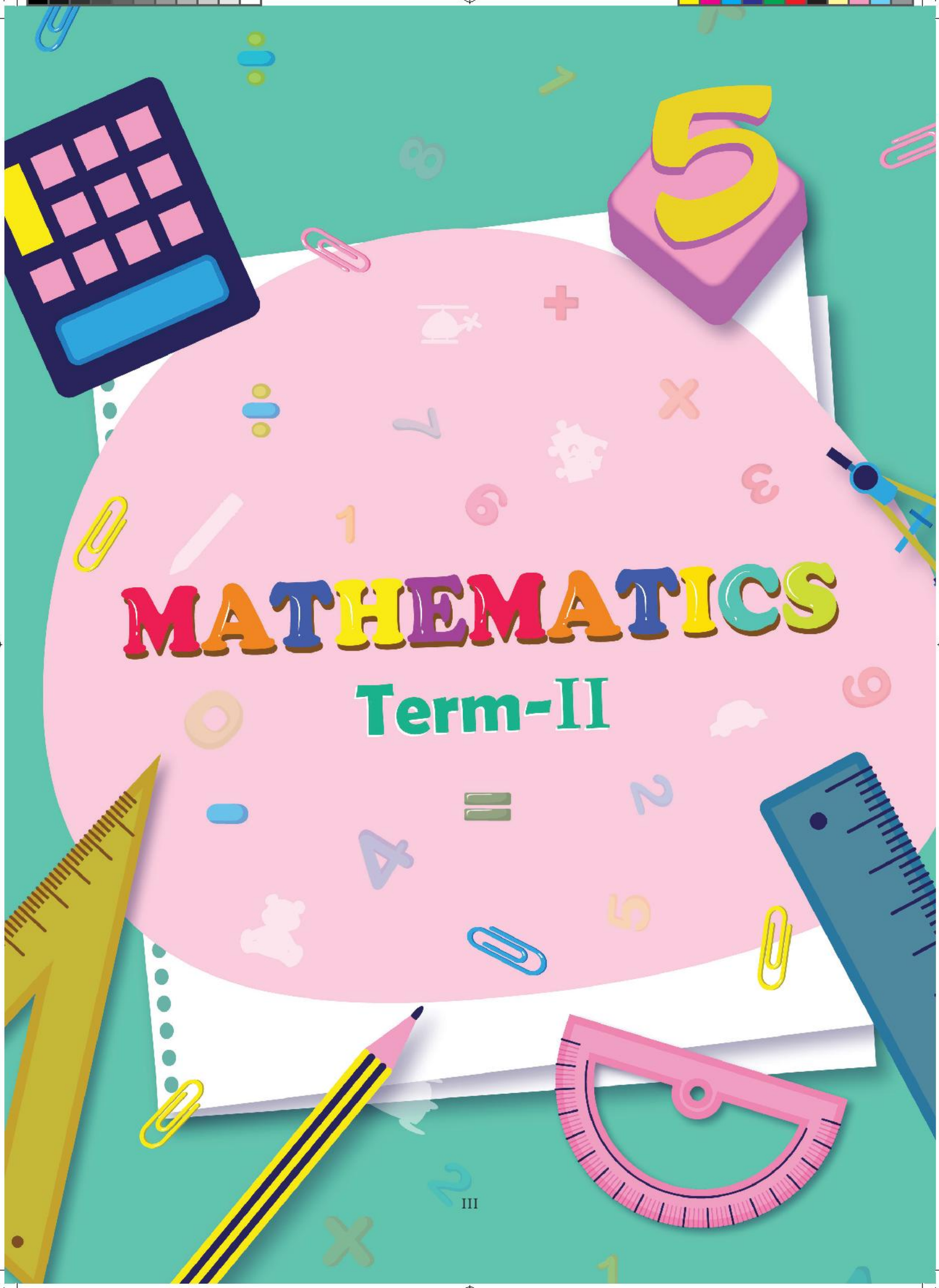
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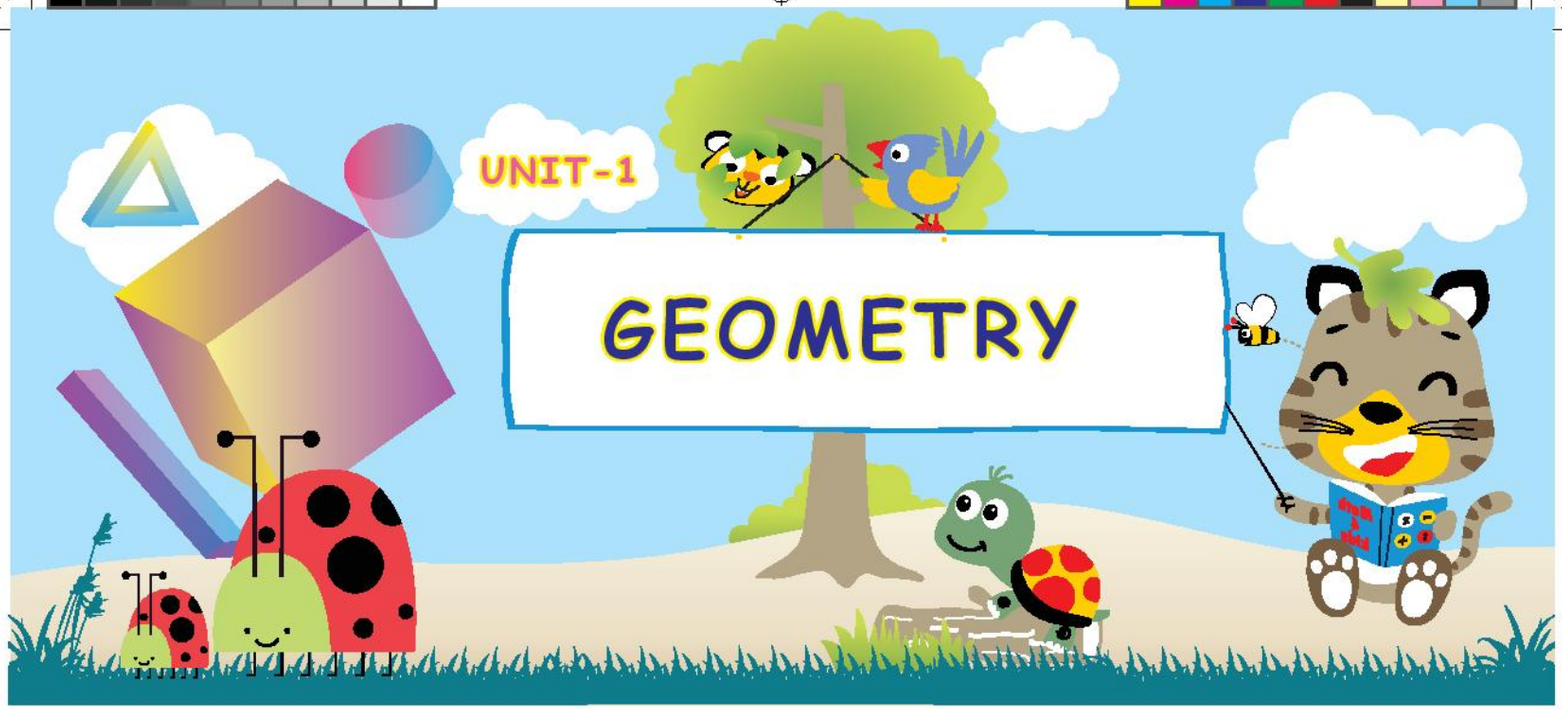
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Assessment



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Recall:

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Point, line, line segment and Ray:

Point •

A point is an exact position on a plane surface

Line ←——→

A line is a set of points in a straight path that extends in opposite directions without ending.

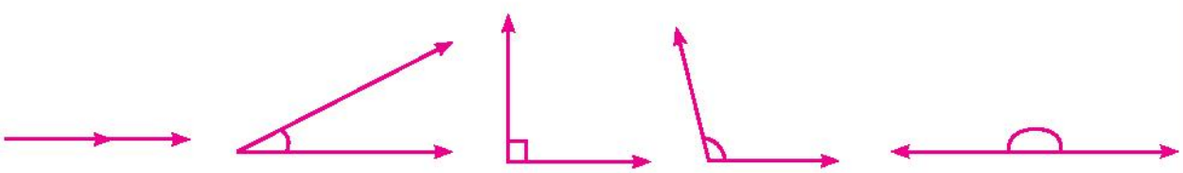
Line segment •——•

A line segment is a part of a line between two end points.

Ray •——→

A ray is a part of a line that has one end point and extends in one direction without ending.

Types of Angles



Zero angle equal to 0°

Acute angle between 0° and 90°

Right angle equal to 90°

Obtuse angle between 90° and 180°

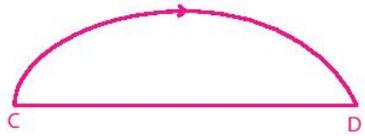
Straight angle equal to 180°

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Try this

1 **Tick (✓) the correct alternative**

i)



The shortest distance between the points C and D is shown by <u>the segment CD / the curve CD</u>

ii)



line PQ and line QP represent <u>different lines / the same line</u>

iii)



point C lies on the <u>ray AB/ray BD</u>

iv)



Segment MN has <u>infinite / finite</u> length

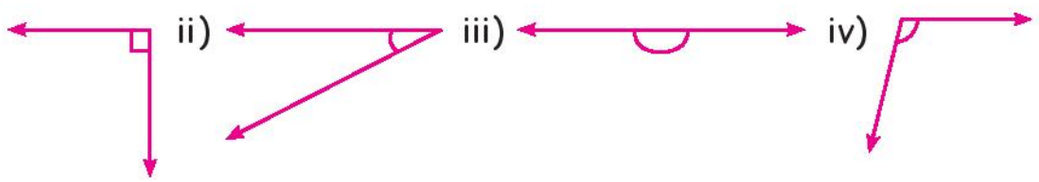
v)



Ray RT is <u>a part / is not a part</u> of the line TR

2 **Write the type of the angle**

i) ii) iii) iv)



1.1 COMPLEMENTARY ANGLES AND SUPPLEMENTARY ANGLES

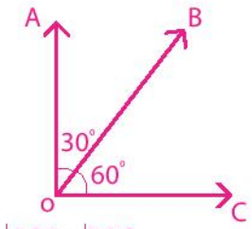
1. Complementary angles

When the sum of the measures of two angles is 90°, pair of angles are called complementary angles.

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Examples

i)

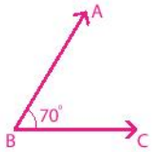


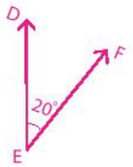
$\angle AOB + \angle BOC$

$= 30^0 + 60^0$

$= 90^0$

ii)





$\angle ABC + \angle DEF$

$= 70^0 + 20^0$

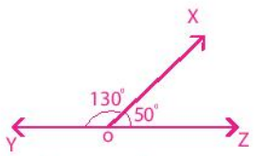
$= 90^0$

2. Supplementary Angles

When the sum of the measures of two angles is 180, the pair of angles are called supplementary angles.

Examples

i)

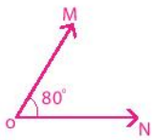


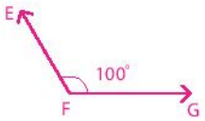
$\angle XOY + \angle XOZ$

$= 130^0 + 50^0$

$= 180^0$

ii)





$\angle MON + \angle EFG$

$= 80^0 + 100^0$

$= 180^0$

Exercise 1.1

HM14Z

1 **Write the measures of the complementary angles of the following angles**

i) 45° ii) 30° iii) 72° iv) 88° v) 38°

2 **Write the measures of the supplementary angles of the following angles**

i) 80° ii) 95° iii) 110° iv) 135° v) 150°

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1.2 Fractals

Definition of Fractals:

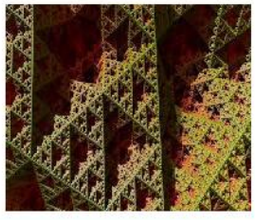
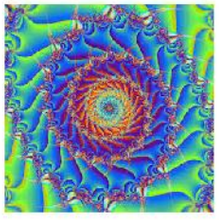
A fractal is a never ending pattern that repeats itself at different scales. This property is called "Self-similarity".

Although fractals are very complex, they are made by repeating a simple process.

Fractals are extremely complex, sometimes infinitely complex – meaning you can zoom in and find the same shapes for ever.

Amazingly, fractals are extremely simple to make.

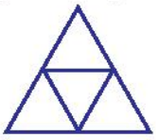
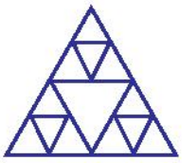
Examples



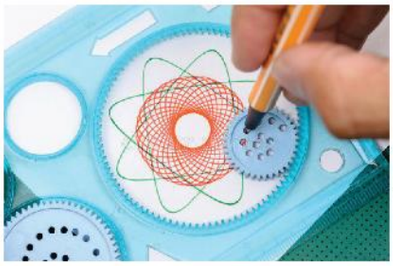
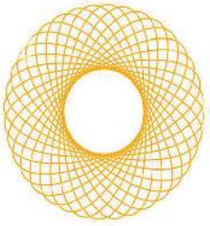
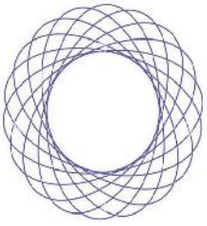
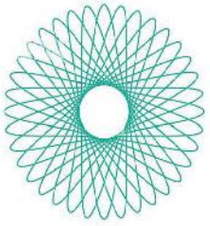
Activity: 1

Create the given fractal image using matchstick.

Step I  **Step II**  **Step III** 

Activity: 2

Create fractals of your own. An example is shown below.

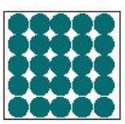
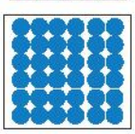
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2.1 Introduction of square numbers.

To understand the meaning of square numbers.

P2A0Q

4		2 x 2 = 4
9		3 x 3 = 9
16		4 x 4 = 16
25		5 x 5 = 25
36		6 x 6 = 36

Do you know?

2 x 2 can be written as 2^2 which is read as 2 square.
3 x 3 can be written as 3^2 which is read as 3 square and so on.

Definition:

A square number is the product of a number by itself.

Try this

1x1	2x2	3x3	4x4	5x5	6x6	7x7	8x8	9x9	10x10
1	4	9	16	25	36	___	___	___	___

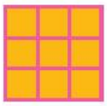
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Activity: 1

A. Count and write the number of boxes:

1 X 1 

2 X 2 

3 X 3 

4 X 4 

Activity: 2

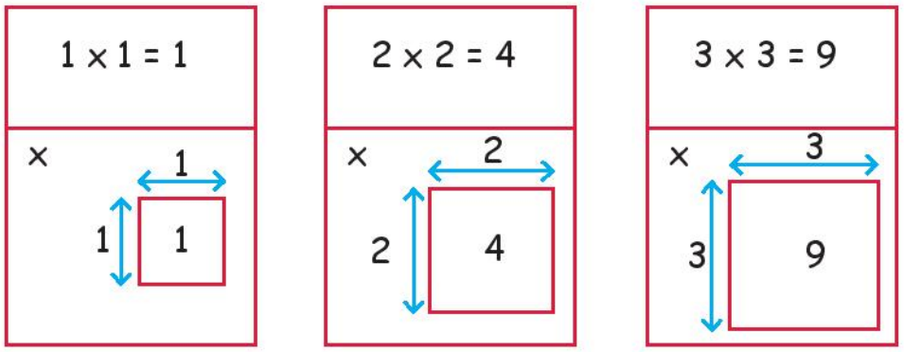
B. Circle and Colour the square numbers:

X	1	2	3	4	5	6	7	8	9	10
1	1	2	3	4	5	6	7	8	9	10
2	2	4	6	8	10	12	14	16	18	20
3	3	6	9	12	15	18	21	24	27	30
4	4	8	12	16	20	24	28	32	36	40
5	5	10	15	20	25	30	35	40	45	50
6	6	12	18	24	30	36	42	48	54	60
7	7	14	21	28	35	42	49	56	63	70
8	8	16	24	32	40	48	56	64	72	80
9	9	18	27	36	45	54	63	72	81	90
10	10	20	30	40	50	60	70	80	90	100

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Activity: 3

Let's draw and enjoy: (Using grid sheet or Graph sheet)



Activity: 4

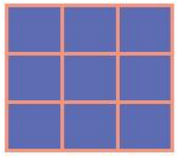
Teacher shall prepare to sets of cards. One set with numbers 1 to 9 and another set with their square numbers (1, 4, 9, 16,...) and keep them in two seperate bowls.

Teacher shall call a child randomly and ask the child to pick a card from first bowl and it has to be shown to the class.

Now the child has to pick the square of that number from the second bowl. If the child finds the correct card that child can be considered as winner.

Exercise 2.1

I. Answer the following:

1. The square number of 2 is ----------
2. The square number of 5 is ----------
3.  These number of boxes is equal to one square number. The number is ----------

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4 **Which of following number is square number --------**

a. 23 b. 54 c. 36 d. 45

5 **What is next square number of 49?**

a. 76 b. 95 c. 64 d. 54

2.2 Factors and Multiples

Kavitha brought 12 laddus from her home. She gave one laddu for each friend. She was able to give laddus to 12 friends without any remaining.

If she gives 2 for each, she could give to 6 friends.

If she gives 3 for each, She could give to 4 friends. Like this how can she give laddus so that no laddu would be remaining? She can give each 4, 6, 12.

Numbers that divide 12 without remaining are 1, 2, 3, 4, 6 and 12.

The numbers which can divide a number without leaving a remainder is called its factor.

Try this

Find the Factors:

Factors of 4 are 1, 2 and 4.

Factors of 10 are 1, 2, 5 and 10.

Factors of 16 are 1, 2, 4, 8 and 16.

Factors of 18 are ----------

Factors of 20 are ----------

Factors of 24 are ----------

Factors of 42 are ----------

Another Method

Find the factor of 18:

18 → 1 x 18, 2 x 9, 3 x 6,

1,2,3,6,9 and 18 are the factors of 18.

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2.3 Composite and Prime Numbers

Activity: 5

Tick the factors of the following numbers

	Factors									
Numbers	1	2	3	4	5	6	7	8	9	10
12										
20										
29										
37										
44										
60										

Composite Number:

A natural number having more than 2 factors is called a **composite number.**

Examples

4, 6, 8, 9, 12, 26, 60,...

Prime number:

A natural number greater than 1, having only two factors namely one and the number itself is called a **prime number.**

Do you know?

2 is the only even prime number.

Examples

2, 3, 5, 7, 11, 13, 29, 37,...

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COMMON FACTORS:

The factors that are common in two or more numbers are called as **common factors.**

Example

The factors of 12, 18 are :

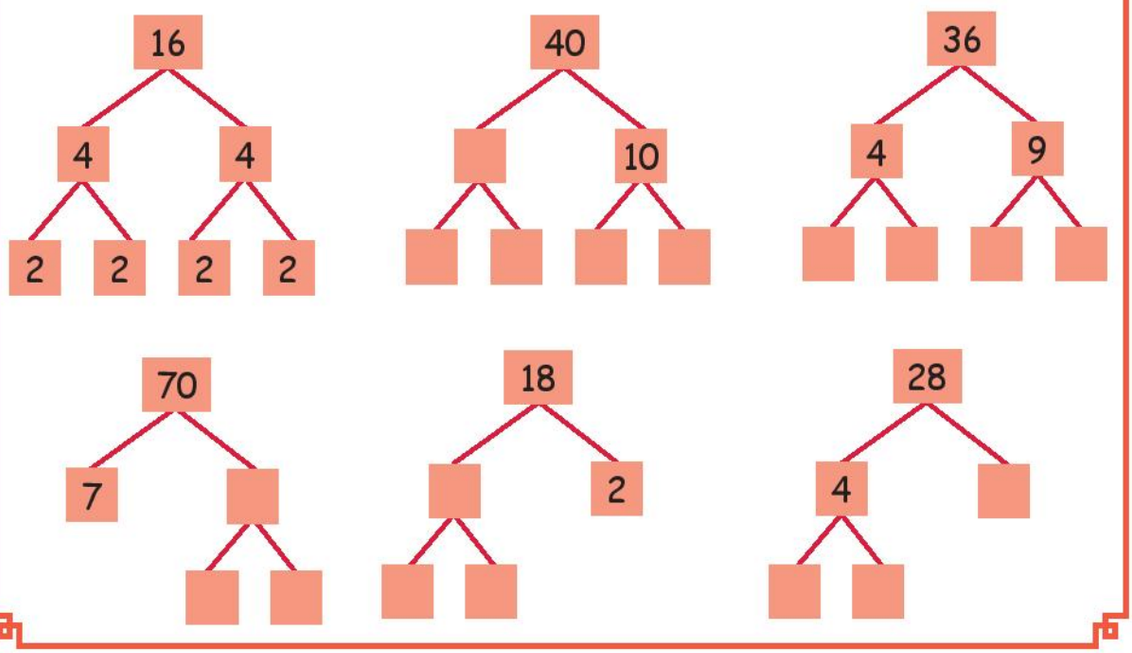
The factors of 12 - 1, 2, 3, 4, 6, 12

The factors of 18 - 1, 2, 3, 6, 9, 18

The common factors of 12, 18 are 1, 2, 3 and 6.

Activity: 6

Complete the following factor tree:



Exercise 2.2

1 **Find the common factors for:**

(i) 8 and 12 (ii) 24 and 30 (iii) 20 and 30

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2.4 Least Common Multiple (L.C.M)

L. C. M of two or more given numbers is the smallest number which is divisible by all the given numbers.

Multiples

How many steps can a rabbit jump if it is jumping 4 steps for 10 times?

4, 8, 12, 16, 20, 24, 28, 32, 36, 40

If we add 4 to each number we will get 40.

Try this

5, 10, 15, ----, ----, -----, -----, -------

Do you know?

Each number is the first multiple of that number.

There is a relation between the multiples and multiplication table of a number.

Common Multiples:-

The Multiples that are common to two numbers are their common multiples.

Example

Find the common multiples of 9, 12

Multiples of 9 - 9, 18, 27, 36, 45, 54, 63, 72, 81, 90,...

Multiples of 12 - 12, 24, 36, 48, 60, 72, 84, 96, 108, 120,...

The common multiples of 9, 12 are **36, 72,...**

Example

Find L.C.M of 4 and 6

Multiples of 4 - 4, 8, 12, 16, 20, 24, 28, 32, 36,...

Multiples of 6 - 6, 12, 18, 24, 30, 36, 42, 48, 54,...

Common multiples of 4, 6 are 12, 24, 36,...

L.C.M of 4, 6 is 12.

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Try this

Find L.C.M

1. 10 and 15 2. 8 and 6 3. 4 and 10 4. 6 and 16

Example

Multiply the common factors and other Factors of two numbers to get its L.C.M

Find L.C.M of 8 and 12

2 | 8	2 | 12
2 | 4	2 | 6
2 | 2	3 | 3
1	1

$8 = \boxed{2} \times \boxed{2} \times 2$

$12 = \boxed{2} \times \boxed{2} \times 3$

L.C.M of 8, 12 = 2 x 2 x 2 x 3 = 24.

Do you Know?

If one number is a multiple of another number, then the bigger number is L.C.M and smaller number is H.C.F.

Example

L.C.M of 4, 16 is 16

H.C.F of 4, 16 is 4

Think it

Can we say the highest common multiples for two numbers?

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2.5 Life Applications of L.C.M

Example

Raja is a cloth seller. Suja is a Bangle seller both of them started from their native place of trichy for selling. Raja returned after 8 days, suja returned after 6 days, when they will meet at trichy if they started in same day?

Solution:

We have to find L.C.M

L.C.M of 8, 6

2 | 8	
2 | 4	
2 | 2	
1	

2 | 6	
3 | 3	
1	

$8 = \boxed{2} \times \boxed{2} \times 2$

$6 = \boxed{2} \times \boxed{3}$

L.C.M of 8, 6 = 2X2x2X3

= 24

They both will meet 24th day at Trichy.

Exercise 2.3

Q739L

1 Choose the best answer:

(i) The number divisible by 5 with no remainder

a. 14 **b.** 535 **c.** 447 **d.** 316

(ii) Pick the number which is not a multiple of 6.

a. 18 **b.** 26 **c.** 72 **d.** 36

(iii) The common multiple of 4 and 8 among the given number is.

a. 32 **b.** 84 **c.** 68 **d.** 76

(iV) Factors of 6

a. 1, 2, 3 **b.** 1, 6 **c.** 1,2,3,6 **d.** 2,3

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(v) Multiple of 9 is

a. 79 **b.** 87 **c.** 29 **d.** 72

2 **Fill in the blanks:**

(i) Factors of 7 ----------

(ii) The only even prime number is ----------

(iii) L.C.M of 4, 12 ----------

(iv) L.C.M of 5, 15 ----------

(v) The numbers which divides 35 without remainders are -----,-----,-----.

3 **Write down the factors of the given numbers.**

(i) 25 (ii) 36 (iii) 14 (iv) 16 (v) 12

4 **Draw a picture of factor tree.**

(i) 18 (ii) 33 (iii) 16 (iv) 50

5 **Write down the first 5 multiples of the given numbers.**

(i) 7 (ii) 9 (iii) 16 (iv) 11 (v) 21

6 **Find first three common multiples of the given numbers.**

(i) 24, 16 (ii) 12,9 (iii) 24,36

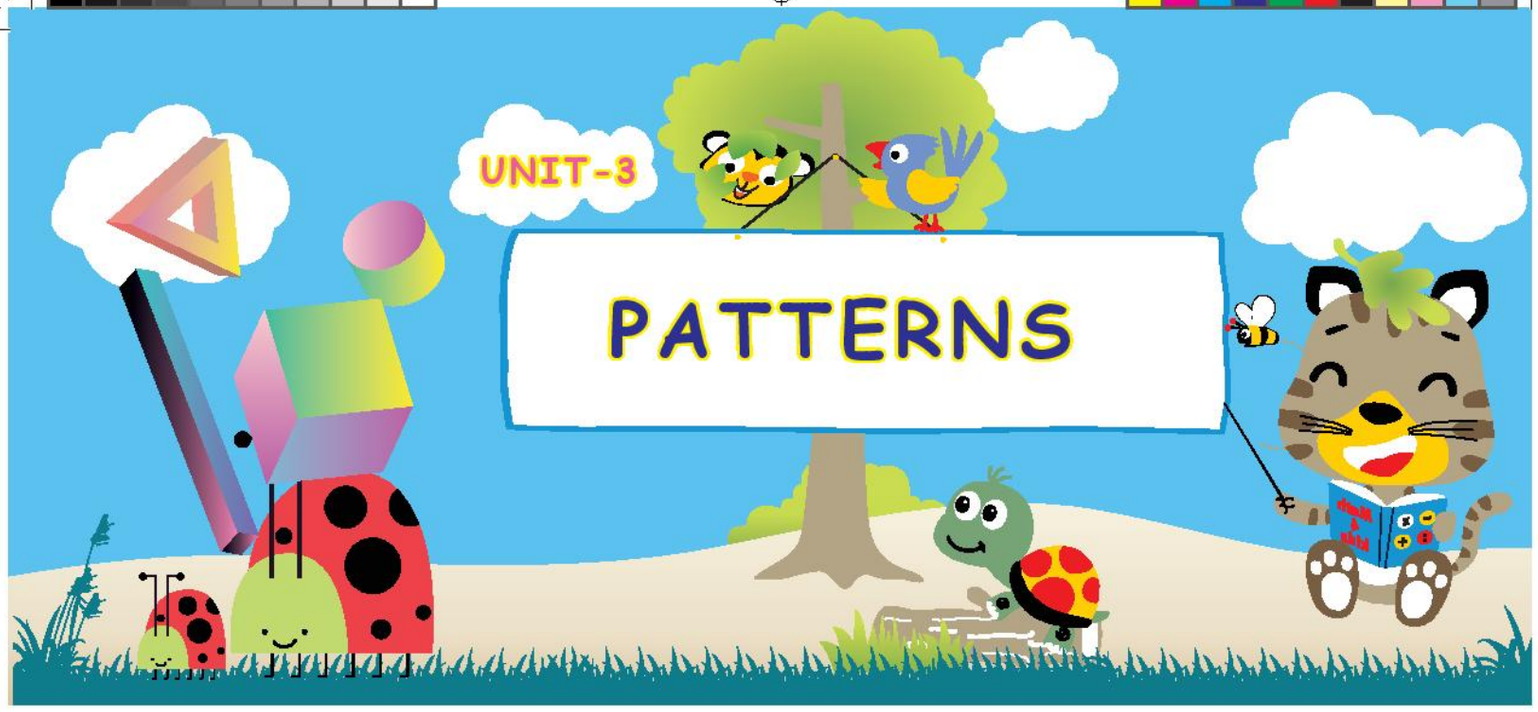
7 **Find L. C.M of the given numbers.**

(i) 12 and 28 (ii) 16 and 24 (iii) 8 and 14 (iv) 30 and 20

8 Ramya visits the gym five days once and Kavitha visits the gym six days once. In which day will they meet each other?

9 Arun and shahjahan goes for walking in a circular path of a park in the same direction. Arun takes 6 minutes to complete one round, while shahjahan takes 8 minutes to completed one round. In how many minutes will they meet each other?

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3.1 Patterns in Geometry

BW049

Able to make border strip and tiling

Tiles: A **tiling** of the plane is a collection of subsets of the plane, i.e. **tiles**, which cover the plane without gaps or overlaps.

Example



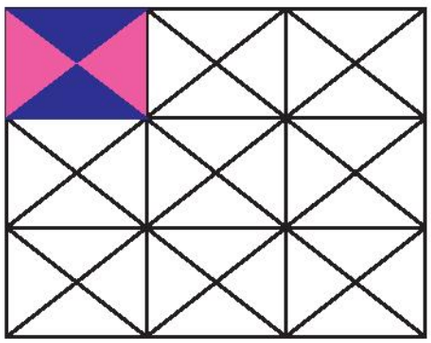


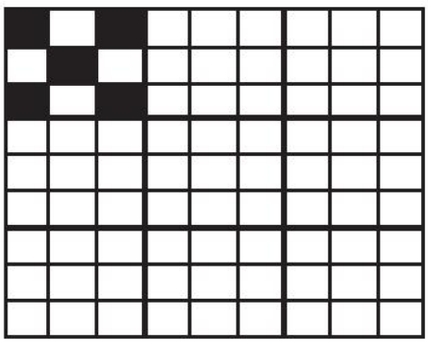
Note:
A design can be made of more than one kind of shapes .

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Activity 1

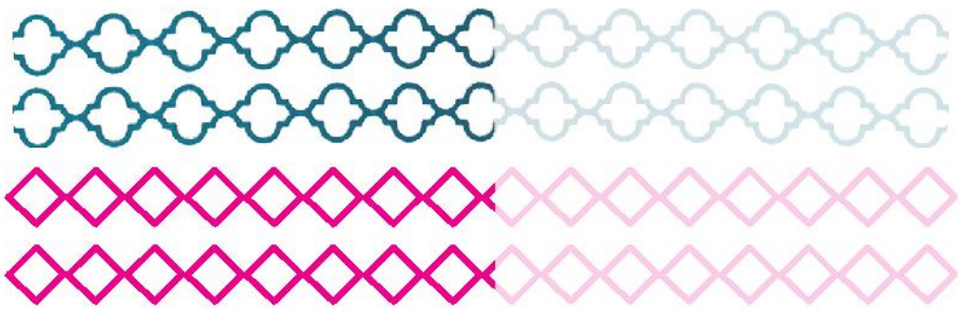
Continue the pattern as done in first to complete the tile.





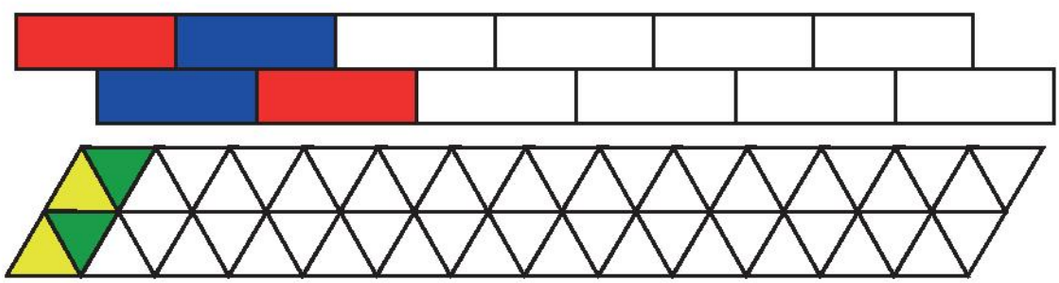
Activity 2

Continue the border stripe.



Activity 3

Colour the shapes to complete the pattern.

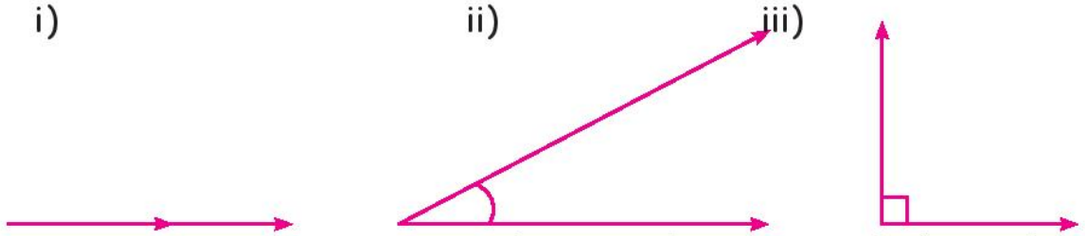


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3.2 To make patterns of shapes using different number of angles / types of angles

Let us recall the types of angles.

i) ii) iii)

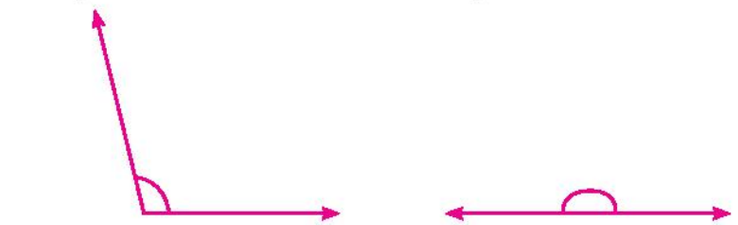


Zero angle equal to 0°

Acute angle less than 90°

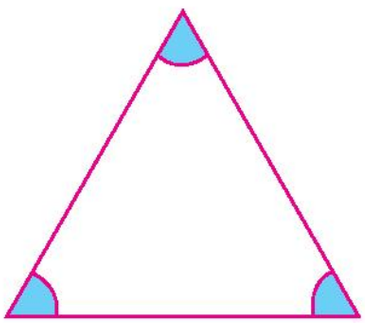
Right angle equal to 90°

iv) v)



Obtuse angle between 90° and 180°

Straight angle equal to 180°



Observe the angles formed at the vertex of the following shapes.

This is an equilateral triangle.

It has 3 angles formed at 3 vertices.

The 3 angles are equal in measure and they are equal to 60°.

It can be demonstrated as follows.



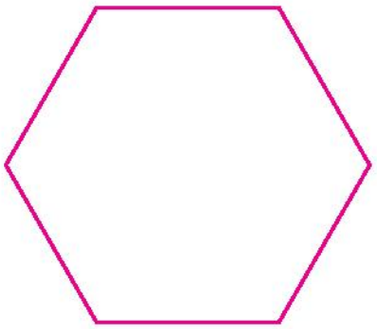
Straight angle

180°÷3=60°

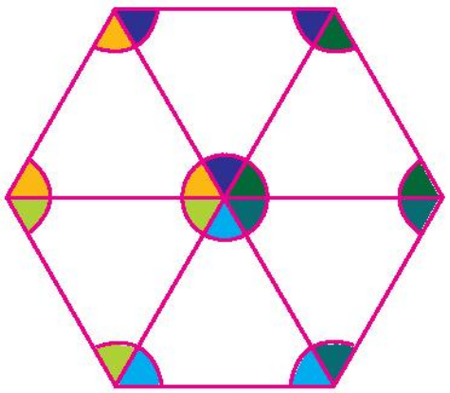
60°+60°+60°=180°

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Finding the angle of a regular hexagon using the equilateral triangle.



We shall find the angles of a regular hexagon using the equilateral triangle. Place the equilateral triangles in a regular hexagon as shown in the figure.



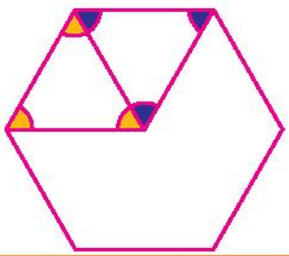


$60° + 60° + 60° + 60° + 60° + 60° = 360°$

Angle at the centre of a regular hexagon is 360°.

This is also the angle of a circle.

Angle at each vertex of a regular hexagon is 120°





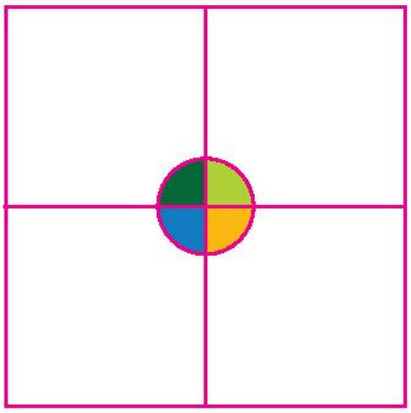
$60° + 60° = 120°$

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Finding the angle of a square.

Angle of a circle is 360° ◯.

Let us find the angle of square using a circle.



= 360° ÷ 4 = 90°

Place 4 squares as shown in the above figure.

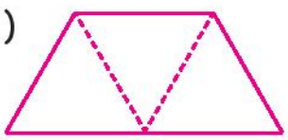
The shape formed at the centre is a circle. The angle of circle is 360°.

Now the angle of a square is 360° ÷ 4 = 90°.

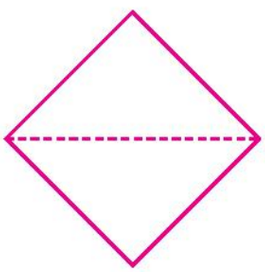
Exercise 3.1

1. **Find the angle of the given shapes using the equilateral triangle.**

i)



ii)



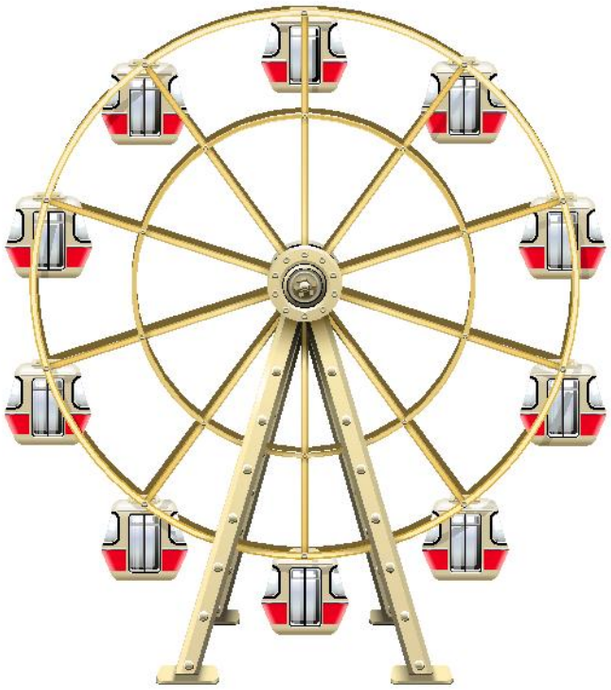
2. **Find the angles of a rectangle using a circle.**

3.3 Rotating angles

Giant wheel

Look at the rotation of the giant wheel.Every compartment moves to a position and comes back to the original position.

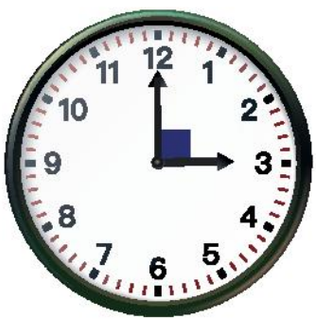
5th_Maths_Term_II_Unit_03_Patterns_EM.indd 19 02-06-2024 11:25:54



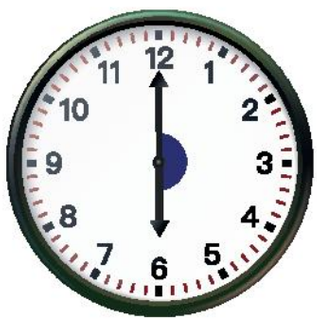
A clock shows time by the rotation of minute hand and hour hand.

The minute hand and hour hand of a clock form an angle.

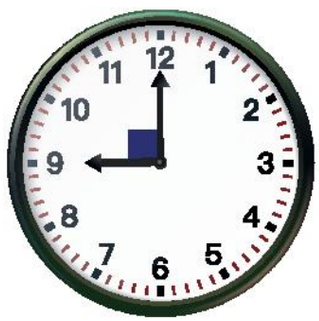
Observe the various angle formed by the rotation of the hands of the clock.



Right angle



Straight angle



Right angle



Acute angle



Zero angle



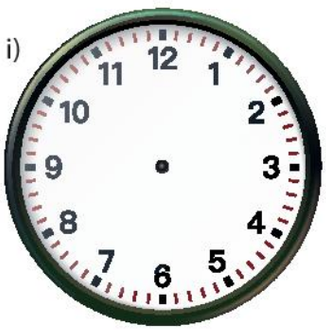
Obtuse angle

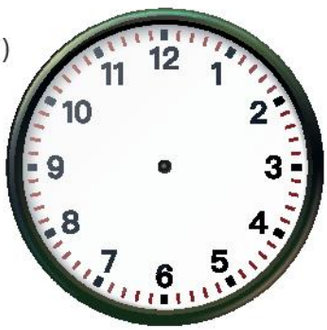
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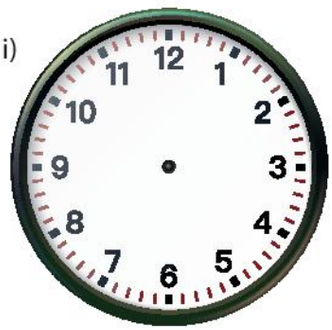
You can note that from 12.00 midnight to 12 noon the hour hand of the clock has completed one rotation. That is, it has completed 360° once. While the minute hand has completed 12 rotations. That is, it has completed 360° twelve times.

Exercise 3.2

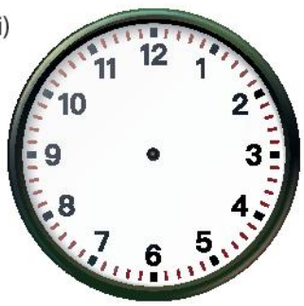
1 **Mention the time in the clock when the angle is i)180°, ii) 90°, iii)60°.**

i) 

ii) 

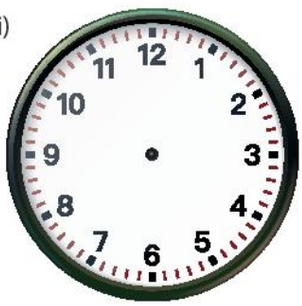
iii) 

2 **Find the angle made by the hands of the clock at the given time.**

i) 

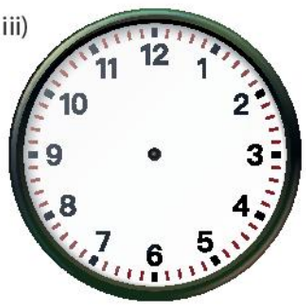
11:00

_____

ii) 

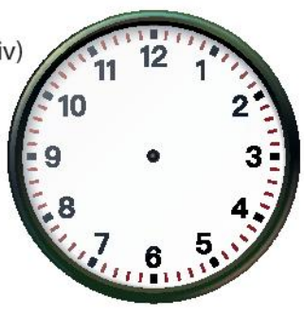
09:00

_____

iii) 

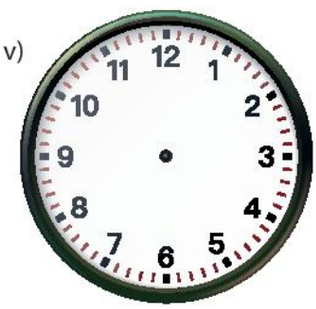
06:00

_____

iv) 

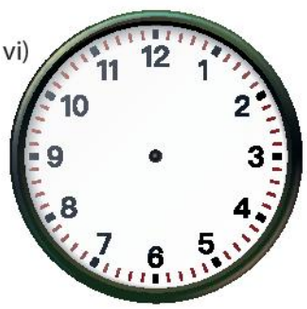
06:10

_____

v) 

06:45

_____

vi) 

06:30

_____

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3.4 Able to find patterns in a collections of words.

Example

Observe the words given below.

few, cop, cut, new, hop, hut, knew, shop, put

The last two letters of the words follow the pattern ***ew***, ***op***, ***ut***.

Activity 4

Arrange the given words to form a pattern.

Depth, called, walked, mice, played, pulled, breadth, rice, length, width, price, voice

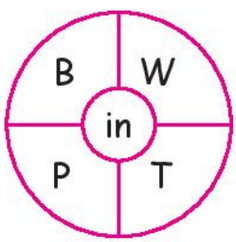
_____, _____, _____, _____

_____, _____, _____, _____

_____, _____, _____, _____

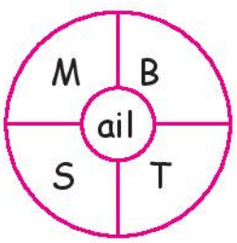
Example

Form the words ending with 'in' and 'ail' to make a pattern.



_____, _____,

_____, _____



_____, _____,

_____, _____

Exercise 3.3

1. **Write down the collection of words by ending with "ENT" and "IGHT"**

   (i) WENT, SENT, B_____, R_____, T_____

   (ii) NIGHT, LIGHT, R_____, S_____, M_____

2. **Fill in the blanks**

   (i) C__AT, B__AT, G__AT

   (ii) R__D, B__D, W__D

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UNIT-4

Measurements

WEIGHT

3Z2B0

4.1 Able to apply the four operations in solving problems involving weight.

Recall

Sort out the following things and write









Need to weigh	No need to weigh (Can be counted)

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Let us recall

10 milligram = _____ centigram

10 centigram = _____ decigram

10 decigram = _____ gram

_____ gram = _____decagram

_____ decagram = 1 hectagram

10 hectagram = _____ kilogram

Weighing Machines:

These are some examples of weighing machines



Simple balance



Analog weighing machine



Digital weighing machine

Do you know?

1 gram (g) = 1000 milligram (mg)

1kilogram (kg) = 1000 gram (g)

$\frac{1}{2}$ kilogram (kg) = 500 gram (g)

$\frac{1}{4}$ kilogram (kg) = 250 gram (g)

$\frac{3}{4}$ kilogram (kg) = 750 gram (g)

Note:
Generally, we used to write kilogram as kg and milligram as mg in short.

Activity: 1

Tick the suitable unit to measure the following objects



g/kg



g/kg



g/kg



g/kg



g/kg

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g/kg


g/kg


g/kg


g/kg


g/kg

CONVERSION

Examples

Convert the following into grams.

(i) 2 kg 250 g

1 kg = 1000 g

2 kg 250 g = (2 x 1000) + 250 g

= 2000 + 250

2 kg 250 g = **2250 g**

Note:
To convert kilogram into gram multiply the given kilogram by 1000.

(ii) 15 kg 30 g

15 kg 30 g = (15 x 1000) + 30 g

= 15000 + 30

15 kg 30 g = **15030 g**

Note:
To convert milligram into gram divide the given milligram by 1000.

(iii) 3500 mg

1000 mg = 1 g

3500 mg = 3500 ÷ 1000 g

= 3 g 500 mg

Note:
To convert gram into kilogram divide the given gram by 1000.

$$\begin{array}{r|l} & 3\ g \\ 1000 & 3500 \\ & 3000 \\ \hline & 500\ mg \end{array}$$

Try this

Convert into gram

1. 2250 mg
2. 5 kg 400 g

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Examples

Convert into kilograms

(i) 7500 g

1000 g = 1 kg

7500 g = 7500 ÷ 1000 g

= 7 kg 500 g

```
      7 kg
1000 | 7500
       7000
       ----
        500 g
```

(i) 4250 g

4250 g = 4250 ÷ 1000 g

= 4 kg 250 g

```
      4 kg
1000 | 4250
       4000
       ----
        250 g
```

Try this

Convert into kilogram

1. 4000 gram
2. 7350 gram
3. 4750 gram

Addition

Examples

Find the sum of the following.

(i) 7 kg 400 g + 5 kg 350 g

	kg	g
	7	400
+	5	350
	12	**750**

7 kg 400 g + 5 kg 350 g = 12 kg 750 g

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(ii) 14 g 500 mg + 10 g 750 mg

	g	mg
	1	
	14	500
+	10	750
	25	**250**

Try this

Find the sum of the following:

1. 5 kg 300g + 19 kg 850 g
2. 15 g 450 mg + 14 g 25 mg + 3 g 700 mg
3. 18 kg 750 g + 16 kg 400 g + 3 kg 500 g

14 g 500 mg + 10 g 750 mg = 25 g 150 mg

Example

In a market Rahman bought 12 kg 500 g of brinjal, 15 kg 250 g of ladies finger and 17 kg 350 g of onion what is the total weight of vegetables?

Solution:



		kg	g
		1	
Weight of the brinjal	=	12	500
Weight of the ladies finger	=	15	250
Weight of the onion	=	+ 17	350
Total weight	=	**45**	**100**

Total weight of the three vegetables = 45 kg 100 g

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Subtraction

Examples

Find the difference

(i) 39 kg 500 g - 33 kg 750 g

	kg	g
	39 (8)	500 (14 10)
-	33	750
	5	**750**

Difference = 5 kg 750 g

(ii) 750 g 350 mg - 350 g 225 mg

	g	mg
	750	350
-	350	225
	400	**125**

Difference = 400 g 125 mg

Try this

Subtract the following

a. 75 kg - 35 kg 400 g

b. 57 kg 750 g - 23 kg 450 g

c. 975 kg 400 g - 755 kg 550 g

Example

A sack had 25 kg rice. Out of 25kg rice 13 kg 500 g of rice which was used for noon meal. What is the weight of the remaining rice?



Solution:

		kg	g
Rice in the sack	=	25 (4)	000 (10)
Rice used for noon meal	=	- 13	500
Remaining rice	=	11	500

Remaining amount of rice in sack = 11 kg 500 g

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Multiplication

Examples

Write the answer in multiply:

(i) 7 kg 400 g x 3

	kg	g
	7	400
x		3
	22	**200**

7 kg 400 g x 3 = 22 kg 200 g

(ii) 52 kg 350 g x 8

	kg	g
	52	350
x		8
	418	**800**

52 kg 350 g x 8 = 418 kg 800 g

Try this

Multiply the following:

a. 7 kg 350 g x 7
b. 9 kg 750 g x 3
c. 9 kg 750 g x 3
d. 45 kg 800 g x 6

Example

A packet can contain 3 kg 500 g of sugar, how much amount of sugar can 7 such packets contain?

Solution:

		kg	g
Weight of one packet of sugar	=	3	500
Weight of 7 packets sugar	=	3	500 x 7
	=	24	500

Weight of 7 packets of sugar = 24 kg 500 g

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Division

Examples

Divide the following:

(i) 70 kg 350 g ÷ 7

```
          kg   g
          10   050
       ┌──────────
     7 |  70   350
       | - 7
       | ---
       |   0
       |       35
       |   -   35
       |       ---
       |       00
       |       00
       |       --
       |       0
```

70 kg 350 g ÷ 7 = 10 kg 50 g

(ii) 66 g 720 mg ÷ 6

```
          g    mg
          11   120
       ┌──────────
     6 |  66   720
       | - 6
       | ---
       |   06
       | -  6
       | ---
       |       7
       |   -   6
       |       ---
       |       12
       |   -   12
       |       ---
       |       00
```

66 g 720 mg ÷ 6 = 11 g 120 mg

Try this

Divide the following:

a. 7 kg 490 g ÷ 7
b. 35 kg 650 g ÷ 5
c. 6 g 240 mg ÷ 4
d. 150 g 750 mg ÷ 15

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Example

How many packets of 3 kg groundnut cookies can be made from 75 kg of groundnut cookies?



Solution:

Total amount of groundnut cookies = 75 kg

Weight of 1 packet of groundnut cookies = 3 kg

Number of packets of 3 kg groundnut cookies = 75 ÷ 3

= 25 packets

we can separate 75 kg groundnut cookies as 3 kg groundnut cookies in 25 packets.

Exercise 4.1

1 **Fill in the blanks:**

(i) 7 kg 400 g = _____g

(ii) 5g 50mg = _____mg

(iii) 9500 mg = _____g _____mg

(iv) 15 kg 350 g = _____g

(v) 6250g = _____kg _____g

2 **Add the following:**

(i) 4 kg 250 g + 3 kg 450 g

(ii) 75 g 430 mg + 750 g.

(iii) 97 kg 45 g + 77 kg 450 g + 33 kg 250 g

(iv) 75 kg 400 g + 30 kg 250 g

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3 **Subtract the following:**

(i) 40 kg 350 g - 25 kg 200 g

(ii) 35 kg 850 g - 18 kg 500 g

(iii) 985 kg 475 g - 275 kg 325 g

(iv) 700 kg - 300 kg 500 g

4 **Multiply the following:**

(i) 4 kg 300 g x 7

(ii) 17 kg 750 g x 8

(iii) 25 kg 550 g x 4

(iv) 72 g 350 mg x 5

5 **Divide the following:**

(i) 99 kg 990 g ÷ 3

(ii) 147 g 630 mg ÷ 7

(iii) 550 kg 220 g ÷ 11

(iv) 484 g 384 mg ÷ 4

6 What is the total weight of 7 kg 500 g of cashew nut and 3 kg 350 g of pista?

7 Vimal had a sack of cotton seeds weighing 50 kg 350 g. He used 7 kg 300 g cotton seeds to feed his cow. How much cotton seed will be remaining after feeding his cow?

8 A glass bottle can contain 25 g 125 mg of medicine, how much medicine can 7 such bottles contain?

9 75 kg 750 g of groundnut seed is filled in five bags, how much groundnut seed can a bag contain?

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5.1 Fractions

Fraction is a part of a whole or collection.

Example 6.1

Given below is a collection of 7 stars, ☆ ☆ ★ ★ ★ ★ ★

How will you represent the shaded and unshaded stars given above as fractions?

Solution

Total stars = 7

Shaded stars = 5

Unshaded stars = 2

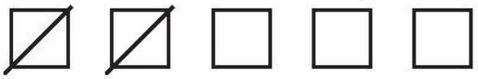
Fraction of the shaded stars = $\frac{5}{7}$

Fraction of the unshaded stars = $\frac{2}{7}$

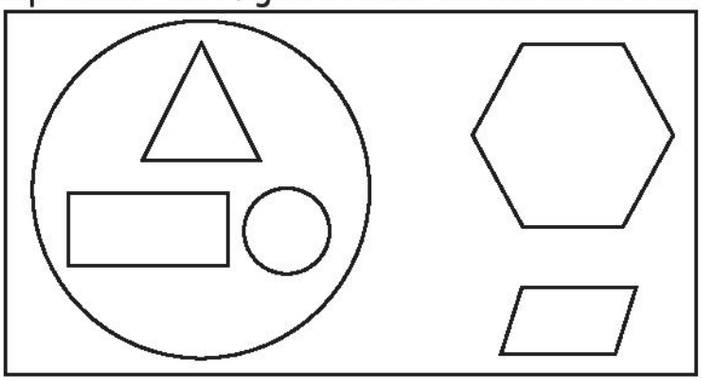
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Try these

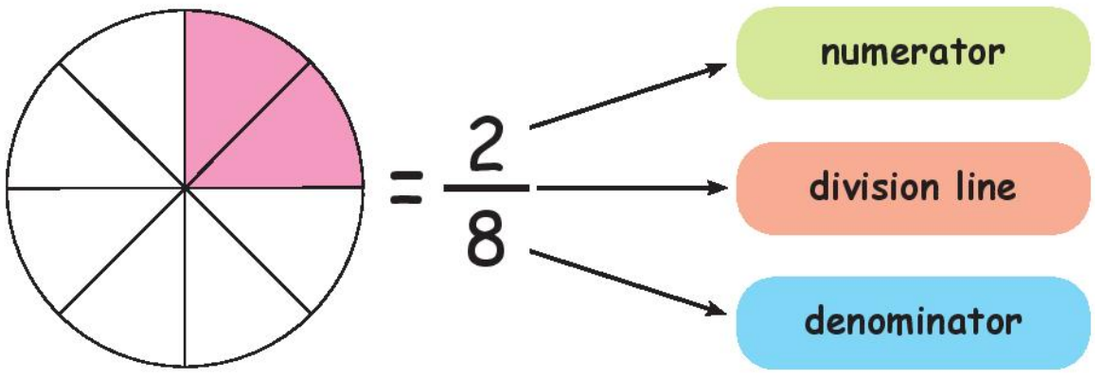
i. Represent the crossed out part as a fraction.



ii. Represent the figures that are outside the circle as a fraction.



To identify the terms like numerator and denominator.



The number above the line represents the numerator and the number below the line represents the denominator.

Try these

i. In $\frac{3}{7}$, ____ is the numerator and ____ is the denominator.

ii. In $\frac{6}{10}$, ____ is the numerator and ____ is the denominator.

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To compare different simple fractions

A cake was cut into 8 pieces. Radhika took 6 pieces and Tharun took 2 pieces.

Radhika's share = $\frac{6}{8}$

Tharun's share = $\frac{2}{8}$.

Who gets more pieces of chocolate?

Radhika will get more pieces of chocolate.

How do you know that?

By comparing the numerator. Here, Denominator is equal in both the fractions.

Check the Numerator: $2 < 6$ (or) $6 > 2$.

Therefore,

$\frac{2}{8} < \frac{6}{8}$ (or) $\frac{6}{8} > \frac{2}{8}$

Example 5.2

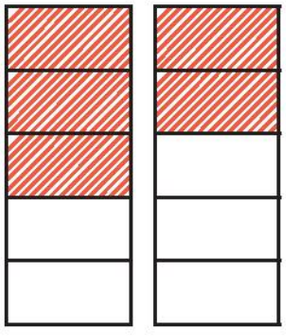
Represent the following figures in fraction, compare them and say which is greater ?

Solution

Fraction represented in fig(i) is $\frac{3}{5}$ and the fraction represented in fig (ii) is $\frac{2}{5}$.

As the denominators in both the fractions are equal, checking the numerator, we get, $3 > 2$.
Therefore,

$\frac{3}{5} > \frac{2}{5}$

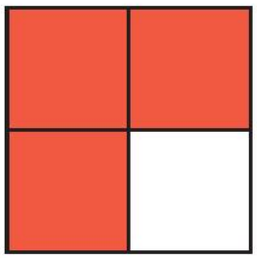


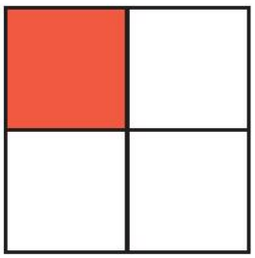
(i) (ii)

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Example 5.3

Write the following figures in fractions and say which is smaller?

(i) 

(ii) 

Solution

Fraction represented in fig(i) is $\frac{3}{4}$.

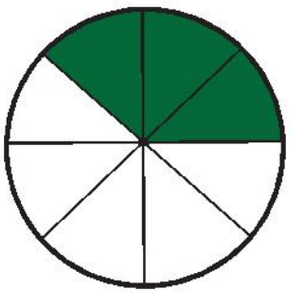
Fraction represented in fig(ii) is $\frac{1}{4}$.

As the denominators in both the fractions are equal, checking the numerator, we get $1 < 3$.

Therefore,

$$\frac{1}{4} < \frac{3}{4}$$

Types of fractions:



Represent the following figure in fraction.

It is $\frac{3}{8}$. In this, 3 is the numerator which is smaller than the denominator, that is, $3 < 8$.

This type of fraction is called as proper fraction.

Proper fraction: In a fraction, if the numerator is smaller than the denominator, then it is called as a proper fraction

Examples: $\frac{3}{5}, \frac{4}{15}, \frac{9}{21}$.

Improper fraction: In a fraction, if the numerator is greater than the denominator, then it is called as an improper fraction.

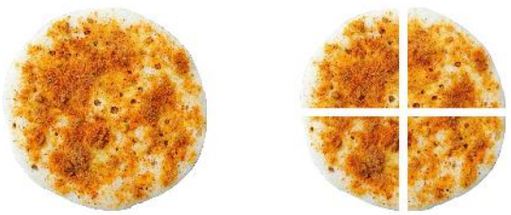
Examples: $\frac{9}{5}, \frac{11}{3}, \frac{21}{17}$.

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Mixed fraction:

Kavitha had five dosas. She wanted to share the dosas among herself and her 3 friends equally. Each one got a dosa. She didn't know how to divide the remaining one dosa equally.

So, she requested her teacher to help. The teacher asked her to divide the remaining 1 dosa into 4 parts, so that each one would get 1 out of 4 parts. Teacher explained her how much did each one of them get out of 5 dosas. That is, each one got 1 and $\frac{1}{4}$ dosas. i.e $1\frac{1}{4}$.



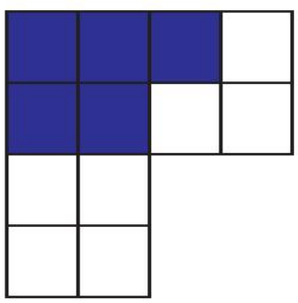
$1\frac{1}{4}$ is called mixed fractions.

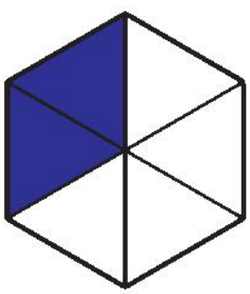
A fraction which contains a whole number and a proper fraction is called as a mixed fraction.

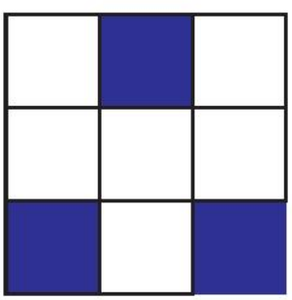
In the above situation, 1 is the whole number and $\frac{1}{4}$ is the proper fraction.

Exercise 5.1

1. Write the fraction shown by the shaded parts.

(i) 

(ii) 

(iii) 

2. Write the fractions for the following and find the numerator and the denominator.

(i) Sheela got 12 marks out of 20 marks in science.

(ii) Six fruits are rotten out of forty fruits in a basket.

(iii) In a colony of 50 houses, 17 houses are not occupied.

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3 Find out which is greater in the following fractions.

(i) $\frac{5}{12}$ and $\frac{7}{12}$ (ii) $\frac{22}{48}$ and $\frac{17}{48}$ (iii) $\frac{11}{56}$ and $\frac{27}{56}$

4 Which is smaller in the following fraction?

(i) $\frac{10}{42}$ and $\frac{21}{42}$ (ii) $\frac{31}{37}$ and $\frac{15}{37}$

5 Clasify the fractions $\frac{4}{7}$, $\frac{11}{4}$, $1\frac{3}{5}$, $\frac{9}{12}$, $2\frac{7}{9}$, $\frac{6}{15}$.

Proper fraction	Improper fraction	Mixed fraction

5.2 Able to reason out in solving problems by comparing Time, Money, Distance

1CFAW

Recall:

Teacher: Hello children,

Did you all reach the school in time today?

Children: Yes, Teacher

Teacher: Do you know the relation of distance, time and money? Shall we discuss about that?

Prabu, where are you coming from? How much money did you spend for travel? How many kilometres did you travel to reach the school daily?

Children: Prabu replied, "I Started 8:30 a.m and spent rupees 8 for 3 kilometres and I have been reaching the school 8:45 a.m regularly".

Teacher: So, you have been spending 15 minutes and rupees 8 for 3 kilometres daily.

Teacher: Ok, children let us discuss topic about distance, time and money.

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Activities

1. Write distance, bus fares and travel time from your town to the nearest cities:

Distance, Time and money are interrelated in our daily life situations.

Can you discuss and complete the table given below?

S. No	Departure location	Going to town	Distance	Time	Bus Charge

2. Distances are given below from Chennai to Kanyakumari

City	Distance [KM]
Chennai	0 Km
Tambaram	35 Km
Tindivanam	128 Km
Villupuram	172 Km
Trichy	332 Km
Madurai	462 Km
Virudunagar	520 Km
Tirunelveli	624 Km
Kanya kumari	707 Km

Let us know

1 mile ≃ 1.610 km (approx)

Complete the following:

- The distance between Chennai and Tindivanam _____
- The distance between Chennai and Villupuram _____
- The distance between Chennai and Trichy _____
- The distance between Trichy and Madurai _____
- The distance between Madurai and Tirunelveli _____
- The distance between Chennai and Kanyakumari _____
- The distance between Trichy and Kanyakumari _____
- The distance between Tindivanam and Tirunelveli _____
- The distance between Chennai and Madurai _____
- Which is the longest distance?
  Chennai to Trichy/Chennai to Madurai

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5.3 Able to Create problems integrating time, money and distance

- Raju travelled 20 km in 1 hour Dinu travelled 5 km in Half an hour. Who travelled fast?
- In metro train ₹ 60 charged for Half an hour. Deepa has ₹ 200. How many hours does she travel in metro train?
- Senthil spent ₹ 80 for 50 km. Gowtham spent ₹ 50 for 30 km. Who travelled at low cost?

From these above questions, we can conclude the relationship between **Time**, **Distance** and **Money**. These are interrelated

$$\text{Speed} = \frac{\text{Distance}}{\text{Time}} \qquad \text{Time} = \frac{\text{Distance}}{\text{Speed}}$$

$$\text{Distance} = \text{Speed} \times \text{Time}$$

Example

If Sabari Walked 5 Hours at a speed of 5Km/Hour, then how much distance did he cover?

Distance = Speed x Time

= 5 x 5

Distance covered by Sabari = 25 Km

Exercise 5.2

1 Answer the following:

S.No	Speed	Time	Distance
i	48 Km/Hour	2 Hours	_____
ii	35 Km/Hour	3 Hours	_____
iii	30 Km/Hour	5 Hours	_____
iv	50 Km/Hour	4 Hours	_____
v	20 Km/Hour	6 Hours	_____

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2 i. Distance covered in 2 hours at the speed of 20 miles/hour:

ii. Distance covered in 4 hours at the speed of 65 miles/hour:

iii. Distance covered in 5 hours at the speed of 48 Km/hour:

iv. Distance covered in 6 hours at the speed of 80 Km/hour:

v. Distance covered in 3 hours at the speed of 42 Km/hour:

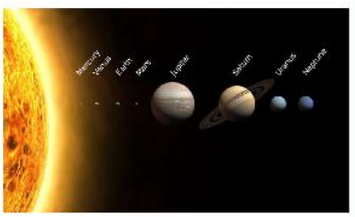
3 If Gopi ran 12 Hours at a speed of 14 Km/Hour, then how much distance did he ran?

4 If Raja rides motorcycle for 4 Hours at a speed of 30 Km/Hour, then how much distance did he go?

Activity 3

The distance between Planets and sun

Planets	Distance from sun (KM)
Mercury	57909175
Venus	108200000
Earth	149600011
Mars	227940000
Jupiter	778333000
Saturn	1429400000
Uranus	2870990000
Neptune	4504300000



Answer the following from the given table:

- The distance between Earth and Sun is _____.
- _____ Planet is in the longest distance from the sun.
- The Nearest Planet to Sun is _____.
- Arrange the planets in ascending order depending upon the Planets distance from the sun.
- Arrange the planets in descending order depending upon the Planets distance from the sun.

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5.4 Relation between Speed, time and Distance

Example

Raman reached 195 Km at the speed of 65 Km/hr. How much time did he travelled?

$$\text{Time} = \frac{\text{Distance}}{\text{Speed}} = \frac{195}{65} = 3 \text{ Hours}$$

Raman travelled 3 hours

Exercise 5.3

1. Answer the following:

S.No	Speed	Distance	Time (Hours)
i	35 Km/hour	280 Km	
ii	40 Km/hour	360 Km	
iii	45 Km/hour	315 Km	
iv	50 Km/hour	300 Km	
v	55 Km/hour	275 Km	

2. Wilson reached 240 Km at the speed of 60 Km/hour. How much time did he travelled?

3. Anbarasan travelled 350 Km at the speed of 70 Km/hour.Find the time taken for his travel.

4. Nazar travelled 360 Km at the speed of 90 Km/hour.Find the time taken for his travel.

5. Fathima reached 480 Km at the speed of 120 Km/hour. How much time did she travell?

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5.5 Relation between Distance and Money

Example

Akbar spent ₹ 4 per Km for a trip and he travelled 115 Km in that trip. How much is the total cost of the trip?

Cost per kilometre is ₹ 4.

Cost for 115 kilometre = 115 x ₹ 4

= ₹ 460

The amount spent by Akbar = ₹ 460

Exercise 5.4

1. **Answer the following:**

S.No	Distance	Money	Total cost
i	180 Km	₹5 per km	
ii	220 Km	₹8 per km	
iii	315 Km	₹4 per km	
iv	420 Km	₹6 per km	
v	580 Km	₹3 per km	

2. Sneha spent ₹ 7per Km for a trip and she travelled 850km. How much is the total cost of the trip?

3. Prabhu spent ₹ 9per Km for a trip and he travelled 580km. How much is the total cost of the trip?

5.6 Use fractions in the context of units of length, time and money

Length (In fractions)

Example

2 Km 500 m = 2 $\frac{1}{2}$ Km

1 Km 250 m = 1 $\frac{1}{4}$ Km

7 Km 750 m = 7 $\frac{3}{4}$ Km

8 Km 500 m = 8 $\frac{1}{2}$ Km

Let us know

1 Km = 1000 m

$\frac{1}{2}$ Km = 500 m

$\frac{3}{4}$ Km = 750 m

$\frac{1}{4}$ Km = 250 m

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Time (In fractions)

15 minutes = $\frac{1}{4}$ Hour

30 minutes = $\frac{1}{2}$ Hour

45 minutes = $\frac{3}{4}$ Hour

60 minutes = 1 Hour

Let us know

60 minutes = 1 Hours

Half part of 60 minutes = 30 minutes

Quarter part of 60 minutes = 15 minutes

Three Quarter part of 60 minutes = 45 minutes

$\frac{1}{4}$ of $60 = \frac{60}{4} = 15$ minutes

$\frac{3}{4}$ of $60 = \frac{180}{4} = 45$ minutes

$\frac{1}{2}$ of $60 = \frac{60}{2} = 30$ minutes

1 of 60 = 60 minutes

Examples

1 **Convert into minutes**

1 Hour = 60 minutes

a) 2 Hour = 2 x 60 = **120 minutes**

b) 3 Hour 20 minutes = (3 x 60) + 20 = **200 minutes**

c) 4 Hour = 4 x 60 = **240 minutes**

d) 5 Hour 15 minutes = (5 x 60) + 15 = 300 + 15 = **315 minutes**

2 **Convert in to hours**

a) 75 minutes = 60 minutes + 15 minutes

$= 1 \text{ hour} + \frac{1}{4} \text{ hour} = 1\ \frac{1}{4} \text{ hour}$

b) 90 minutes = 60 minutes + 30 minutes

$= 1 \text{ hour} + \frac{1}{2} \text{ hour} = 1\ \frac{1}{2} \text{ hour}$

Money [In fractions]

Example

Let us know

₹ 1 = 100 paise

In ₹1

$\frac{1}{4}$ part of ₹ 1	= 25 paise	Quarter part of ₹ 1	= 25 paise
$\frac{1}{2}$ part of ₹ 1	= 50 paise	Half part of ₹ 1	= 50 paise
$\frac{3}{4}$ part of ₹ 1	= 75 paise	Three quarter part of ₹ 1	= 75 paise
1 part of ₹ 1	= 100 paise	Full part of ₹ 1	= 100 paise

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Example

In ₹100

$\frac{1}{4}$ part of ₹ 100	= ₹ 25	Quarter part of ₹ 100	= ₹ 25
$\frac{1}{2}$ part of ₹ 100	= ₹ 50	Half part of ₹ 100	= ₹ 50
$\frac{3}{4}$ part of ₹ 100	= ₹ 75	Three quarter part of ₹ 100	= ₹ 75
1 part of ₹ 100	= ₹ 100	Full part of ₹ 100	= ₹ 100

Example

In ₹2000

$\frac{1}{4}$ part of ₹ 2000	= ₹ 500	Quarter part of ₹ 2000	= ₹ 500
$\frac{1}{2}$ part of ₹ 2000	= ₹ 1000	Half part of ₹ 2000	= ₹ 1000
$\frac{3}{4}$ part of ₹ 2000	= ₹ 1500	Three quarter part of ₹ 2000	= ₹ 1500
1 part of ₹ 2000	= ₹ 2000	Full part of ₹ 2000	= ₹ 2000

Exercise 5.5

JHN4P

1. Convert the following into kilometres [In fraction]
   - (i) 3 Km 500 m = _____
   - (ii) 25 Km 250 m = _____
   - (iii) 17 Km 750 m = _____
   - (iv) 35 Km 250 m = _____
   - (v) 45 Km 750 m = _____
2. Convert into Hours : [In fraction]
   - (i) 30 minutes
   - (ii) 2 hours 15 minutes
   - (iii) 3 hours 45 minutes
   - (iv) 1 hour 30 minutes
   - (v) 4 hours 15 minutes

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3 Convert into minutes:

(i) $2\frac{1}{4}$ Hours

(ii) $2\frac{1}{2}$ Hours

(iii) $3\frac{3}{4}$ Hours

(iv) 11 Hours

(v) $5\frac{1}{2}$ Hours

4 Match the following:

(i) $\frac{1}{2}$ part of ₹ 1	-	₹ 100
(ii) $\frac{1}{4}$ part of ₹ 4	-	50 paise
(iii) $\frac{1}{2}$ part of ₹ 10	-	₹ 75
(iv) $\frac{3}{4}$ part of ₹ 100	-	₹ 1
(v) $\frac{1}{2}$ part of ₹ 200	-	₹ 5

5 Write the $\frac{1}{4}$, $\frac{1}{2}$ and $\frac{3}{4}$ parts of the following:

(i) ₹ 200

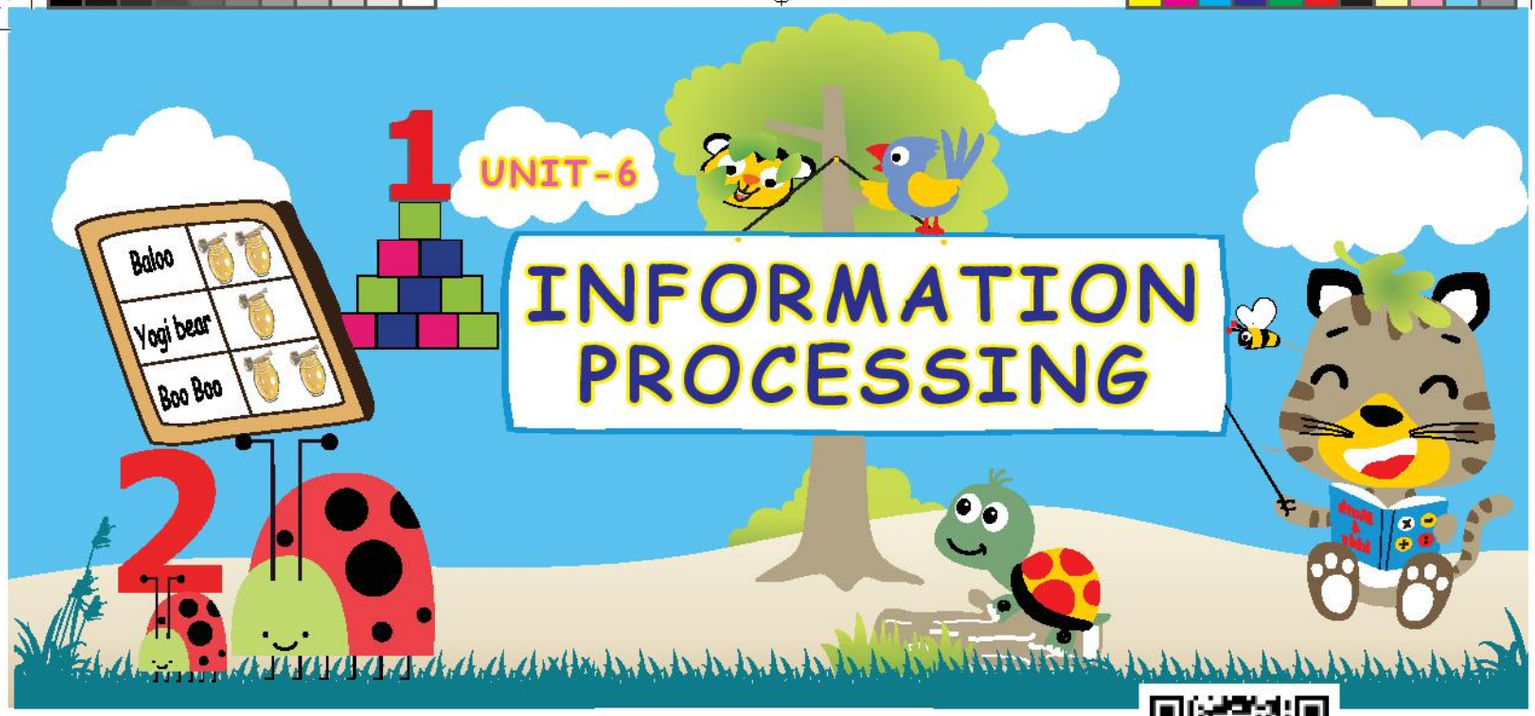
(ii) ₹ 10,000

(iii) ₹ 8,000

(iv) ₹ 24,000

(v) ₹ 50,000

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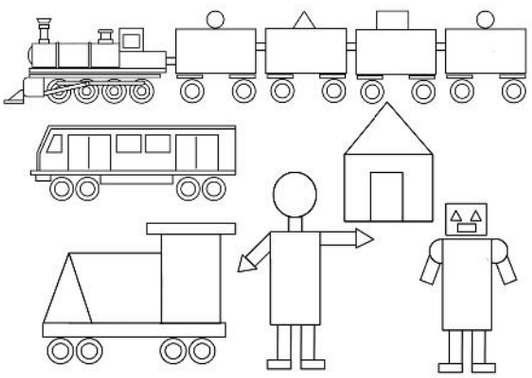
6.1 Modelling

A way of introducing the mathematical concept.

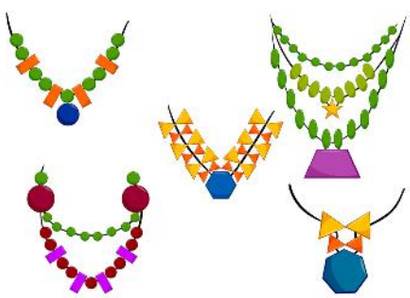
Modelling is an activity like drawings as sketches, Physical models, computer programmes or mathematical formulas.

Let us see the following models using the different shapes such as circles, rectangles and triangles.

Geometrical shaped objects.



Let us see artistic chains with different coloured beads.



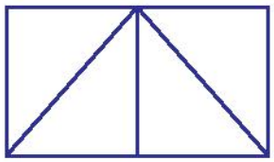
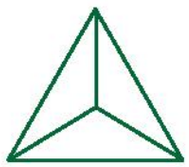
Try this

How many squares are there?



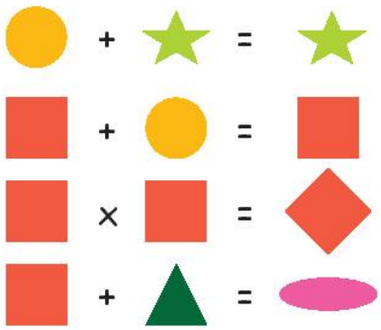
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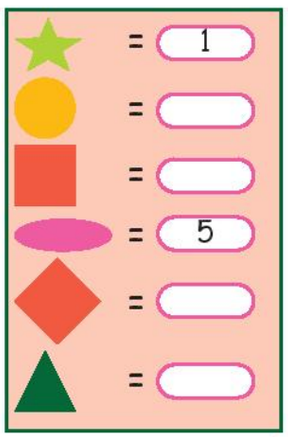
Activity: 1

Figures			
Number of Triangles	12		
Number of Squares	6		

Activity: 2

The following shapes are drawn instead of numbers 0, 1, 2, 3, 4, 5. Shall we find the number of each shapes.





Let us know

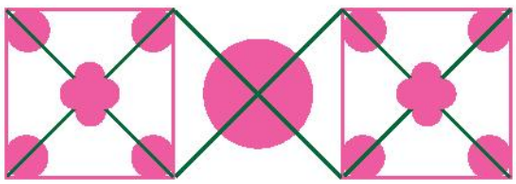
In a street, there are two times Cats as Dogs.

D - Dog, C - Cat

It is represented as D = 2C.

Activity: 3

Complete the following



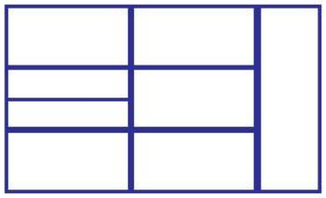
Number of circles _____

Number of Triangles _____

Number of Squares _____

Try this

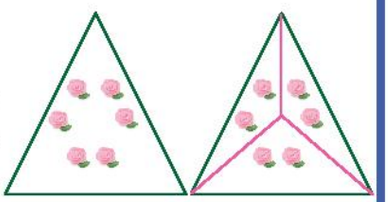
How many rectangles are there in this diagram?



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Example

Birthday triangle Cake



The given figure is a triangle shaped birthday cake, this was bought by the parents to celebrate the birthday of a three year child. There are six flowers in the cake, you have to divide this cake into three equal parts so as to have two flowers in each part. There should not be more than three cuts.

Exercise 6.1

1 Choose the correct answer:

(i) Which shape have 6 triangles?

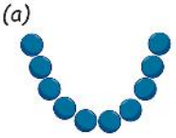
(a) 

(b) 

(c) 

(d) 

(ii) Find which garland has made up of 12 beads?

(a) 

(b) 

(c) 

(d) 

2 Answer the following:

(i) 

4, 4, 3, 5, 4, 4, _____, _____, _____, _____, _____, _____

(ii) 1, 1, 2, 3, 5, 8, _____, _____, _____, _____

3 If △ = 3 □ = 4 ⬠ = 5, then

(i) △ + □ + ⬠ + △ - □ =

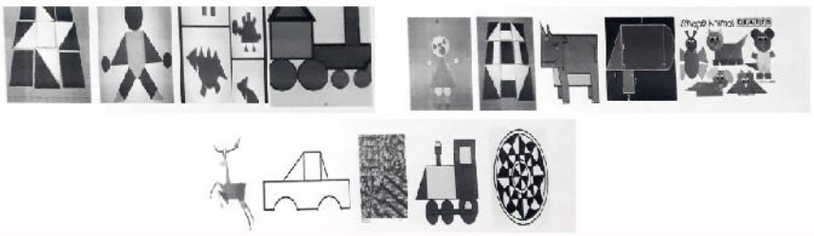
(ii) □ □ - △ △ =

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Activity: 4

Paper Cutting

Ask the children to make different types of pictures by using cutouts of □, ▭, ○ and △ of different sizes.



Activity: 5

Children can create the artistic chain with different coloured beads, this will help the learners to solve maths related questions very easily.



Activity: 6

Chains made up of various coloured beads are given. Try to make chains using various pattern.



6.2 Able to split bigger task into smaller known task

Situation 1

Karkuyil and Kayalvizhi are sisters. Their mother asked them to arrange their cupboards. Karkuyil arranged her cupboard within 10 minutes while Kayalvizhi could not

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arrange them. When Kayalvizhi asked Karkuyil about this, she told her that she had split the task of arranging the cupboards in two smaller tasks namely,

1. Sorting the things and
2. Keeping the things in shelves



Karkuyuil could complete the work in less time easily.

Situation 2



Mugilan is the secretary of the Math club in his school. The principal of the school has announced for a quiz competition and Mugilan is given the incharge of arranging for the competition.

Write the tasks to be done by Mugilan.

_____ _____

_____ _____

_____ _____

Activity: 7

Consider the situation

Vizhyan's birthday is on Wednesday. His father asked his sister Poovizhi to arrange for the party. She is happy to do it but does not know how to arrange for the party. Her father suggested her to first break the event into smaller tasks and complete those tasks one by one. Poovizhi thought that this way she could easily arrange for the party. If you are Poovizhi what would be tasks you will plan for. Write the smaller tasks which you will arrange.

Solving a multiplication problem involving 2 three digit numbers.

Let us split the task of multiplying 2 three digit numbers into the following steps.

Multiplying 2 three digit numbers can be done easily if we do it step by step.

Step 1 – Multiplying the ones digit with the first number

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567 x 253

1701

Step 2 – Multiplying the tens digit with the number

567 x 253

2835

Step 3 – Multiplying the hundreds digit with the first number

567 x 253

1134

Step 4 – Add all the results of step 1, step 2 and step 3 to find the multiplication of

567 x 253

1701

2835

1134

143451

Exercise 6.2

1. Find the product of the following numbers:

(i) 234 x 765 (ii) 908 x 512 (iii) 481 x 503

To enable how to find out easy and difficult ways to solve tasks and justify with reason.

Situation



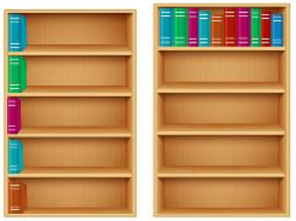
Kavitha and Bavitha were planning for a picnic with their family. Kavitha said it would be better to pre book a taxi for sightseeing before reaching the spot while Bavitha preferred to hire a taxi after reaching the spot.

Whose idea is better?

Suggest other ways also for planning the picnic.

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Activity: 8



Arranging 50 books orderly by number on them in 5 hours

Ezhilan and Iniyan has been asked to arrange two sets of fifty books each in two book shelves of a library. The books were numbered from 1 to 50 and there are 5 shelves in each cupboard

Ezhilan arranged 10 books in each shelf atonce while Iniyan placed 1 book at a time in each of the 5 shelves.

BMFQU

Which is the easy way to complete the work and who will arrange the books quickly?

Factor Bingo

Here is a Board of numbers

2	28	36	4
12	16	5	10
9	14	6	8
3	20	7	40

The teacher gave a number board to Imayan and Varman. Then, he asked them to pick out the factors of the numbers 36, 28 and 40 from the number board.

Imayan used different notations for each number. He circled the factors of 36, drew triangles for the factors of 28 and drew squares for the factors of 40. But, Varman circled the factors of all the three numbers. Whom do you think will complete the task of picking out the factors of each number easily? Justify your answer.

Activity 9

Sort the factors of 40,72 and 75 from the number board given below.

1	40	20	12	25
2	15	18	6	36
5	7	10	3	72
24	4	8	9	75

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Answers

Geometry

Exercise 1.1

1. i) 45° ii) 60° iii) 18° iv) 2° v) 52°

2. i) 100° ii) 85° iii) 70° iv) 45° v) 30°

Numbers

Exercise 2.1

1. 4 **2.** 25 **3.** 9 **4.** c. 36 **5.** c. 64

Exercise 2.2

i) 1,2,4 ii) 1,2,3,6 iii) 1,2,5,10

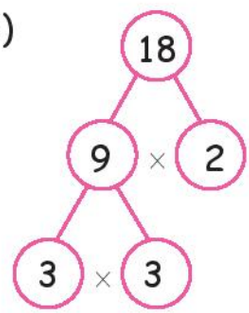
Exercise 2.3

1. i) b.535 ii) b. 26 iii) a. 32 iv) c. 1,2,3,6 v) d. 72

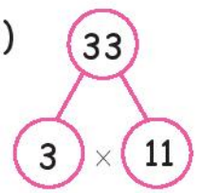
2. i) 1,7 ii) 2 iii) 12 iv) 15 v) 1,5,7

3. i) 1,5,25 ii) 1,2,3,4,6,9,12,18,36 iii) 1,2,7,14 iv) 1,2,4,8,16
v) 1,2,3,4,6,12

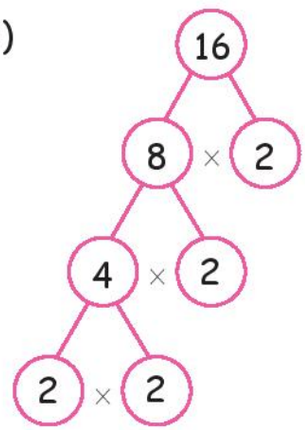
4. i)



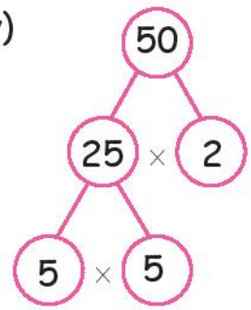
ii)



iii)



iv)



5. i) 7, 14, 21, 28, 35 ii) 9, 18, 27, 36, 45 iii) 16, 32, 48, 64, 80
iv) 11, 22, 33, 44, 55 v) 21, 42, 63, 84, 104

6. i) 48, 96, 144 ii) 108, 216, 324 iii) 864, 1728, 2592

7. i) 84 ii) 48 iii) 56 iv) 60

8. 30th day **9.** 24 minutes

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Patterns

Exercise 3.3

1. i) BENT, RENT, TENT ii) RIGHT, SIGHT, MIGHT

2. i) COAT, BOAT, GOAT ii) RED, BED, WED

Measurement

Exercise 4.1

1. i) 7400g ii) 5050mg iii) 9g 500mg iv) 15350g v) 6kg 250g

2. i) 7kg 700g ii) 825g 430mg iii) 207kg 745g iv) 105kg 650g

3. i) 15kg 150g ii) 17kg 350g iii) 710kg 150g iv) 399kg 500g

4. i) 30kg 100g ii) 142kg iii) 102kg 200g iv) 361g 750mg

5. i) 33kg 330g ii) 21g 90mg iii) 50kg 20g iv) 121g 096mg

6. 10kg 850g **7.** 43kg 50g **8.** 175g 875 mg **9.** 15kg 150g

Interconcept

Exercise 5.1

1. (i) $\frac{5}{12}$ (ii) $\frac{6}{40}$ (iii) $\frac{3}{9}$ 3. (i) $\frac{7}{12}$ (ii) $\frac{22}{48}$ (iii) $\frac{27}{56}$

2. (i) $\frac{12}{20}$ (ii) $\frac{34}{40}$ (iii) $\frac{17}{50}$ 4. (i) $\frac{10}{42}$ (ii) $\frac{15}{37}$

Exercise 5.2

1. i) 96Km ii) 105Km iii) 150Km iv) 200Km v) 120Km

2. i) 40 miles ii) 260 miles iii) 240Km iv) 480Km v) 126Km

3. 168Km **4.** 120Km

Exercise 5.3

1. i) 8 hours ii) 9 hours iii) 7 hours iv) 6 hours v) 5 hours

2. 4 hours **3.** 5 hours **4.** 4 hours **5.** 4 hours

Exercise 5.4

1. i) ₹ 900 ii) ₹ 1760 iii) ₹ 1260 iv) ₹ 2520 v) ₹ 1740

2. ₹ 5950 **3.** ₹ 5220

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Exercise 5.5

1. i) 3 $\frac{1}{2}$ Km ii) 25 $\frac{1}{4}$ Km iii) 17 $\frac{3}{4}$ Km iv) 35 $\frac{1}{4}$ Km v) 45 $\frac{3}{4}$ Km

2. i) $\frac{1}{2}$ hours ii) 2$\frac{1}{4}$ hours iii) 3$\frac{3}{4}$ hours iv) 1$\frac{1}{2}$ hours v) 4$\frac{1}{4}$ hours

3. i) 135 min. ii) 150 min. iii) 225 min. iv) 660 min. v) 330 min.

4.
(i) $\frac{1}{2}$ part of ₹ 1 - 50 paise
(ii) $\frac{1}{4}$ part of ₹ 4 - ₹ 1
(iii) $\frac{1}{2}$ part of ₹ 10 - ₹ 5
(iv) $\frac{3}{4}$ part of ₹ 100 - ₹ 75
(v) $\frac{1}{2}$ part of ₹ 200 - ₹ 100

5. i) ₹ 50, ₹ 100, ₹ 150 ii) ₹ 2,500, ₹ 5,000, ₹ 7,500 iii) ₹ 2,000, ₹ 4,000, ₹ 6,000 iv) ₹ 6,000, ₹ 12,000, ₹ 18,000 v) ₹ 12,500, ₹ 25,000, ₹ 37,500.

Information Processing

Exercise 6.1

1. i) (b)  ii) (c) .

2. i) 3,5,4,4,3,5 ii) 13,21,34,55

3. i) 11 ii) 11

Exercise 6.2

1. (i) 1,79,010 (ii) 4,64,896 (iii) 2,41,943

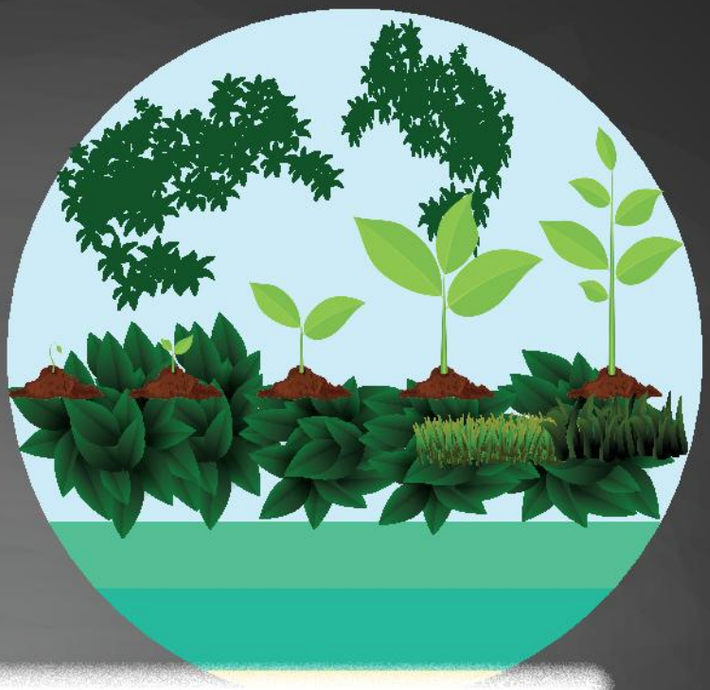
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Science



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1 FOOD



Learning Objectives

After completing this lesson, students will be able to:

- know about spoilage of food and food preservation methods.
- list out the deficiency diseases and the prevention methods.
- know about obesity and the method of calculation of BMI.
- understand the importance of balanced diet.
- identify the safety measures to be followed in the kitchen.

PTHBA

Introduction

Our body needs nutrients like proteins, carbohydrates and fats for its proper functioning. We get these nutrients from the food we eat. If we do not take all these nutrients in right proportion, it results in some diseases. Sometimes, we do not preserve the food properly and it gets spoiled. Through the spoiled food also we get diseases. So, we need to preserve the food we eat. In this lesson we will study about spoilage of foods and the ways to preserve them, deficiency diseases, balanced diet and kitchen safety.



I. Spoilage of Food

Food items like fruits, vegetables, milk and meat will be fresh for very short period. These are called perishable foods and they get spoiled easily. Some food items like rice have long life time, but they also decompose. The change in the normal state of the food is called spoilage of food. Spoiled food becomes unsuitable to eat. We can notice such changes from the taste and smell of the spoiled food. Eating spoiled food may cause diseases.

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Activity 1

Classify the following into perishable and non-perishable food items.

Salt, Sugar, Apple, Corn, Orange, Wheat, Pulses, Tomato, Papaya, Rice, Cucumber.

1 Causes

Once the food items are harvested they begin to decompose. Food can be spoiled by factors like air and oxygen, moisture, enzymes, microorganisms, light and temperature.

Air and Oxygen: When oxygen reacts with food contents, it produces changes in the colour and flavour of the food.

Moisture: Moisture keeps the food fresh. When the moisture is gone vegetables and fruits shrink. Due to evaporation, moisture loss occurs in foods like meat, fish and cheese.



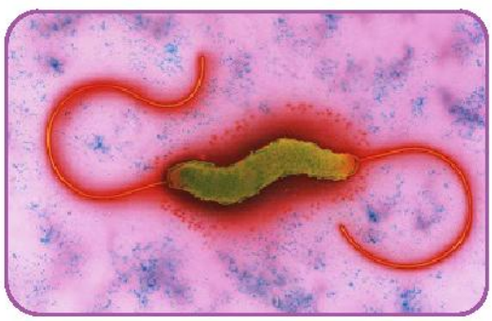
Enzymes: Enzymes break down the larger molecules of the food in different ways like oxidation, browning and ripening. So the food items decay.

Micro-organisms: Micro-organisms such as fungi, yeast and bacteria can grow well in low temperatures. They multiply in food and spoil them.



Light: Light produces colour changes and also vitamin loss.

Temperature: Sometimes rise in temperature causes food spoilage.





Activity 2

Look at the fruits and vegetables in your house. Is there any spoiled one? Find out the reason for spoilage.

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2 Effects

Spoiled foods are not suitable to eat. They may not be fresh and tasty. Sometimes it will be harmful to consume them. Micro-organisms present in spoiled foods may cause foodborne diseases like stomach pain, fever, dysentery, vomiting and indigestion.



II. Preservation of Food

VU9YK

The process of keeping the food materials for a long time without being spoiled is called preservation of food. Food will be spoiled if it is not prepared, preserved and handled in the right way. There are many methods used to prevent, delay and reduce the spoilage of food.

1 Food Preservation Methods

Cultivation of food requires lot of efforts. Nowadays food cultivation and the crop yield are decreasing. There are many people suffering in the world without food. So, we need to protect and preserve the food. The following are the ways to preserve food.

Drying: It is the process of removal of water content from the food by drying it in the sunlight. E.g. Grains



Do you know?

While purchasing packed food items, we should check the following details.

1. Manufactured date
2. Expiry date
3. Ingredients
4. Energy content of the food material.

Addition of salt: It is the method of adding salt to food to remove the water. E.g. Fish, Pickles

Addition of sugar: In this method sugar is added to food. Sugar dissolves in the water content of the food and preserves the food items from spoilage. E.g. Jam, Fruit juices.





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Freezing: The microbial growth and the enzyme activity on the food items can be prevented by this method. E.g. Fruits, Vegetables.

Boiling: Boiling kills the micro-organisms present in the food materials. E.g. Milk, Water.

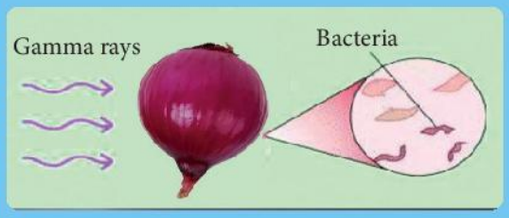
Canning: In this method, food is packed in air tight cans so that germs do not grow on them. E.g. Milk powder.

Addition of chemical preservatives: Chemical preservatives are added to stop the growth of micro-organisms in certain food materials. E.g. Sodium benzoate is added with fruits, Sulphur dioxide is added with dry fruits, Vinegar is added with pickles.



Do you know?

Irradiation is the modern method in which, food is exposed to gamma rays or ultra violet rays to kill the bacteria and the fungi. It does not affect the taste of the food or nutritive value of the foods. E.g. Onion, Potatoes.





2 Purpose of Food Preservation

Food production has increased due to modern technologies. Yet, agricultural practice is abandoned in many places as there is failure of monsoon. At the same time many people suffer in the world without food. So, food should not be wasted by any means. Preservation of food is important for the following reasons.

1. To retain the colour, taste and nutritive value of the food.
2. To make food available throughout the year.
3. To prevent the growth of micro-organisms like bacteria and fungi in the food items.
4. To reduce wastage of food items.
5. Preserving food not only protects our health but also makes food available to the people who need it.

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III. Obesity

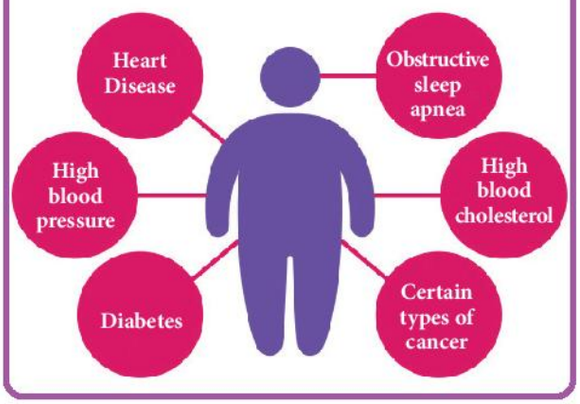
Obesity and overweight are defined as abnormal or excessive fat accumulation in the body that may affect the health. Obesity is most commonly caused by excessive food intake, lack of physical activity and genetic reasons. Obese people take more food, but work very less. When they eat more and work less, excess energy is accumulated as fat and creates problems. Obesity increases the chances of heart disease, diabetes and high blood pressure.

1 Prevention

Obesity is mostly related to our life-style and habits. Eating healthy foods and having regular physical activity can reduce obesity and overweight. It is important that we maintain proper weight in the young age. In order to avoid obesity and overweight we need to do the following.

1. Avoid fast foods, fried items and meat with more fat.
2. Eat fruits and vegetables, legumes, whole grains and nuts.
3. Do regular physical exercises.
4. Don't play games in computer and mobile phones.
5. Have adequate sleep.











2 Body Mass Index

People are generally classified as obese and overweight based on Body Mass Index (BMI). Body mass index is obtained by dividing a person's weight in kilograms by square of his height in metres (kg/m^2).



Do you know?

People with BMI between 18.5 and 25 have less chance of developing diseases like cancer, heart disease and diabetes.

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For example, BMI of a person with 60 kg weight and a height of 190 cm can be calculated as below.

BMI = Weight in kg / Height in m^2

= 60 / 1.90 × 1.90

= 60 / 3.61 = 16.62 kg/m^2

If the BMI is over 30 kg/m^2 people are said to be obese. The BMI range of 25–30 kg/m^2 denotes overweight.



Activity 3

Find your B.M.I

My B.M.I = $\frac{\text{My weight ____ kg}}{\text{My height ____ in } m^2}$

= -------- kg/m^2



IV. DISEASE

Disease is an abnormal condition that affects a living organism. This abnormal condition affects its structure and function. Diseases may be caused by external factors as well as internal dysfunction. Each disease has symptoms. We come to know about the diseases from their symptoms.

1 Causes of Diseases

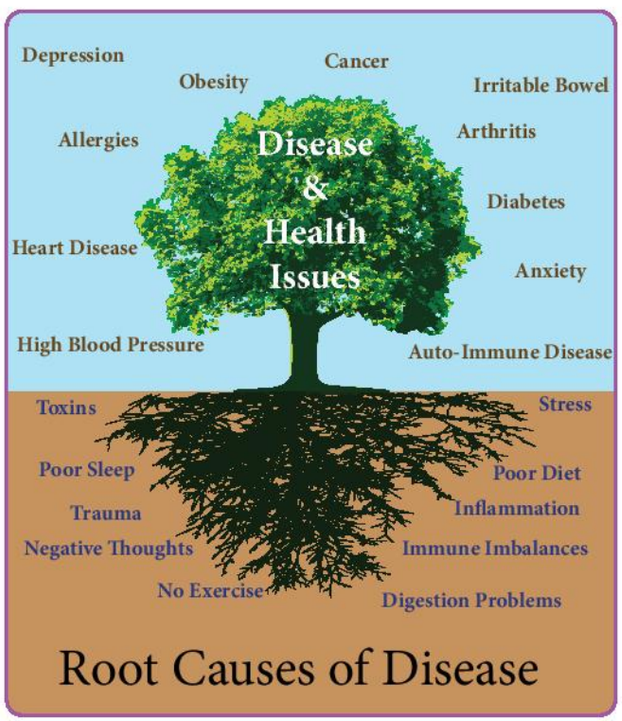
Diseases are mostly caused by micro-organisms like bacteria, virus, protozoa and fungi. They are transmitted by insects, and also through polluted air and contaminated water. Some diseases are caused when the function of the organ is affected. In general, causes of diseases can be classified as below.

- Metabolic factor. E.g. Diabetes
- Genetic factor. E.g. Colour blindness
- Microorganisms. E.g. Bacterial diseases
- Nutritional factor. E.g. Marasmus
- Environmental factor. E.g. Cholera



Activity 4

Find out the common diseases prevalent in your area. Find out the reason for them and discuss with your teacher how to get remedy for them.



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2 Types of Diseases

There are four main types of diseases. They are:

- Infectious diseases
- Hereditary diseases
- Physiological diseases
- Deficiency diseases



Do you know?

More number of people die every year due to heart diseases than any other diseases.

a. Infectious diseases

Infectious diseases are caused by microorganisms which enter our body and multiply inside them. These diseases spread from one person to another. E.g. Common cold, Covid - 19.

b. Hereditary diseases

Hereditary diseases occur due to abnormalities in the gene. These diseases are passed from parents to children. E.g. Heart disease.

c. Physiological diseases

Diseases which are caused due to malfunction of the body organs are called physiological diseases. E.g. Asthma.

d. Deficiency diseases

A diet which contains all essential nutrients in correct proportion is indispensable for maintaining good health. Deficiency in one or more of the nutrients causes various diseases. These diseases are called deficiency diseases.

❖ Protein deficiency diseases

Marasmus and Kwashiorkor are the protein deficiency diseases. The child affected by marasmus loses weight and it will appear as though bones are covered by skin. The child affected by kwashiorkor develops an enlarged belly with swollen face and feet. By eating protein rich foods like egg, milk, fish and green leafy vegetables we can avoid protein deficiency diseases.



Do you know?

Kwashiorkor disease is found more among people in developing countries. It is because their diet is high in carbohydrates which is cheaper and low in proteins which is costly. As they live below poverty line, they couldn't afford protein rich food.





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❖ Vitamin and mineral deficiency diseases

Certain diseases are caused by deficiency of vitamins and minerals. By eating vitamin and mineral rich food items, we can avoid these diseases. The following table gives some of the diseases caused by deficiency of vitamins and minerals and the food items which rectify them.

Name of the Vitamin / Mineral	Name of the disease	Food containing the Vitamin / Mineral
Vitamin –A	Night blindness	Egg, Milk, Carrot, Papaya
Vitamin –B	Beriberi	Milk, Peas, Cereals, Green vegetables
Vitamin –C	Scurvy	Amla, Orange, Lemon, Tomato
Vitamin –D	Rickets	Sunlight, Milk, Egg, Fish
Vitamin –E	Sterility	Apple, Wheat, Green vegetables
Vitamin –K	Haemorrhage	Green vegetables, Tomato, Cabbage
Iodine	Goitre	Iodized salt, Vegetables
Iron	Anaemia	Cashews, Beans and lentils, Spinach



V. Food Pyramid

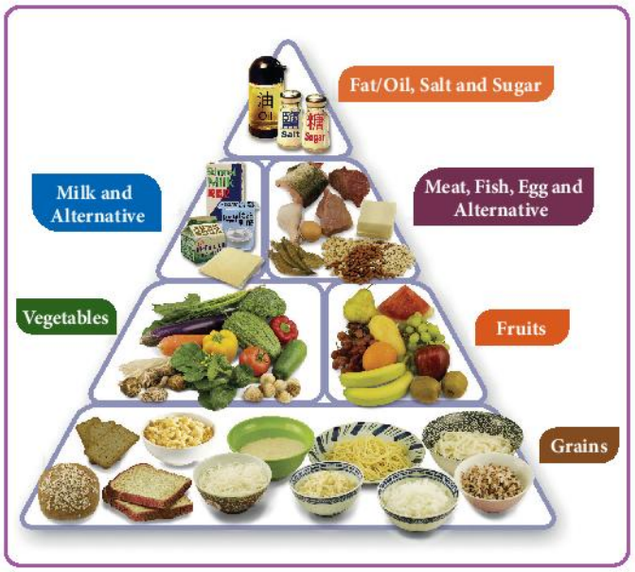
Food pyramid is designed to select healthy foods. Depending upon our work, age and sex, the requirement of various nutrients vary from person to person. For example, growing children need more proteins in their food. People doing hard physical work (labour) need more carbohydrate and fat in their diet. Eating healthy breakfast helps to improve concentration and it boosts metabolism also.

Balanced diet

The food we normally eat in a day is our diet. For growth and maintenance of good health, our diet should have all the nutrients in right quantities. Such a diet is called balanced diet. Pulses, groundnut, soya beans, sprouted seeds, fermented foods, banana, jaggery, seasonal vegetables and fruits provide more nutrients. Therefore, one can have a balanced diet without much expenditure. Some major food items are given in the table below.

Major Nutrients	Sources
Carbohydrates	Honey, Sugarcane, Fruits, Whole grains, Vegetables, Rice
Proteins	Legumes, Pulses, Nuts, Soya bean, Green leafy vegetables, Fish, Egg, Milk
Fats	Egg yolk, Saturated oil, Meat

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Do you know?

Spinach and Ponnanganni are some of the low cost, highly nutritive food materials. They contain more minerals, vitamins, and fibrous nutrients. They are available in all seasons.



Spinach



Ponnanganni

VI. Kitchen Safety

Kitchen is an important place in our home. We prepare our food in the kitchen. We use gas cylinders for cooking. Some of us may use electric stoves. The equipments and the environment in the kitchen may be little dangerous. So we need to be cautious and careful. The dangers related to the things used in the kitchen and the safety measures to be taken are explained below.

Gas

Gas catches fire easily. Once gas is leaked there may be dangerous consequences. So, we need to be careful while handling gas cylinders. The following table gives what should we do and what we should not do while handling gas cylinders.

Do's	Don'ts
Keep the cylinder in vertical position at plain level and in a well aired place.	Do not keep the cylinder in horizontal or inverted position.
Keep the lighter ready and then turn on the gas stove knob.	Do not turn the gas stove knob before lighting the lighter. It may lead to gas leakage.
Keep the windows and doors open to ensure ventilation in case of gas leakage.	Do not turn on electrical appliances in the kitchen, if there is a gas leakage. It may lead to fire.
Always use I.S.I standard gas stoves, regulators and gas tubes.	Do not use low quality gas stoves, tubes and regulators. It may lead to gas leakage.

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Electrical appliances

- Do not operate electrical appliances with wet hands, because it leads to electric shocks.

Fire

- Do not keep the inflammable materials like kerosene etc, near the stoves.
- In case of person's clothes catching fire, cover the person with a thick blanket or carpet.
- If kerosene or oil catches fire, use sand to put out the fire.
- If solid materials like wood catch fire, use water to put out the fire.
- If an electrical appliance catches fire, unplug the appliance and disconnect the electricity.
- Use proper fire extinguishers to put out the fire.

Type of Fire	Type of Fire Extinguisher
Class-A Wood, Paper	Water
Class-B Liquid, Gaseous fuels	Carbon dioxide
Class-C Electrical sources	Dry chemicals (Solid carbon dioxide and Sodium bicarbanote)



Do you know?

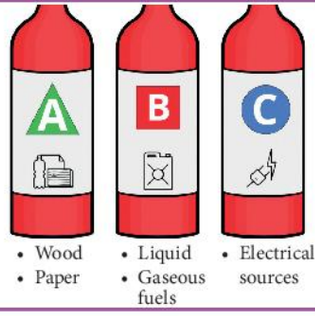
In order to avoid fire any one of the following should be done.

1. Cut off the fuel
2. Cut off the air supply.
3. Lower the temperature.









Burns

- In case of minor burns, the burnt area should be held under cool running water for some time and proper medical treatment should be given.
- Any blister if formed, should not be pricked.



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Evaluation

I. Choose the correct answer.

1. The biotic factor which spoils the food item is

   A) drying B) temperature

   C) humidity D) bacteria

2. Grains are preserved by

   A) drying B) freezing

   C) adding sugar D) adding salt

3. Anaemia is a disease which occurs due to lack of

   A) Vitamin - A B) Vitamin – B

   C) Iron D) Vitamin - D

4. Storage of excess fat in the body is known as

   A) obesity B) head ache

   C) fever D) stomach pain

5. Carbohydrates are rich in

   a) ghee b) fruits

   c) rice d) oil

II Fill in the blanks.

1. Night blindness is caused by the lack of _____

2. Marasmus is a _____ deficiency disease.

3. Bad smell from the food item is due to _____

4. Humidity in air is one of the _____ factor, which spoils food.

5. Using low quality gas tubes in the gas stove may lead to _____ leakage.

III. Match the following.

1. Protein deficiency	-	Vitamin – D
2. Rickets	-	Physical inactivity
3. Obesity	-	Inflammable material
4. Kerosene	-	Fruits
5. Freezing	-	Kwashiorkor

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IV. Say True or False.

1. Vinegar is added as a preservative for pickles.
2. Irradiation affects the taste of the food materials.
3. In case of gas leakage, we can continue to use electrical appliances.
4. Deficiency due to iodine is called as beriberi.
5. Growing children need more proteins in their food.

V. Answer briefly.

1. Define deficiency disease.
2. What is known as balanced diet?
3. How can we prevent obesity?
4. What should we do in case of minor burns?
5. Define spoilage of food.
6. What is the purpose of food preservation?

VI. Answer in detail.

1. Write about food preservation methods.
2. Explain the different types of food.
3. Write about kitchen safety.

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2 Water



Learning Objectives

After completing this lesson, students will be able to:

- know about the sources of water.
- understand the importance of water management.
- get awareness on water pollution.
- know about waterborne diseases.

HFLB1

Introduction

நீர்இன்று அமையாது உலகெனின் யார்யார்க்கும்
வான்இன்று அமையாது ஒழுக்கு. - திருக்குறள்

Thirukkural says, 'If it be said that the duties of life cannot be discharged by any person without water, so without rain there cannot be the flowing of water'. We cannot survive without water. Water was once available in the nature freely. Now it is sold in the shops for money. Water has become scarce nowadays. So, we should preserve it for our basic needs and also for the needs of future generation. In this lesson we will study about the sources of water, how to manage water, how it is polluted and how the polluted water causes diseases.



I. Sources of Water

Water is the most abundant substance on the Earth. It fills the seas, rivers and lakes. Water covers more than two-thirds of the earth's surface. It also exists as snow and ice on mountains. In the atmosphere, water is present in huge quantities as vapour and clouds. The following are the sources of water.

1. River water and lake water
2. Sea water
3. Well water
4. Spring water
5. Underground water

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1 River Water and Lake Water



River is a channel through which fresh water flows. The origin of river is usually hills or mountains. It flows towards lakes, sea and ocean. Lake is an area filled with water. Man-made lakes created when dam is built on a river is called reservoir. Small areas filled with water are called ponds. Rivers, streams, groundwater, rainfall, melting snows or a combination of these are the sources of water in lakes, reservoirs and ponds. As less amount of salt is dissolved in it, it is suitable for drinking and irrigation.

2 Sea Water



Sea water has salinity of approximately 3.5% or 35 parts per thousand. This means that every 1000 ml of sea water contains 35 grams of salts (Sodium chloride) dissolved in it. Due to the presence of more amount of salt, sea water is called saline water. It is not suitable for irrigation as well as drinking.

3 Underground Water



Do you know?

Underground water is free from suspended impurities, because it is filtered by nature as it passes through several layers of the soil.

During rainfall, part of the rain water gets absorbed in the soil. It flows through various layers of the soil till it reaches hard rock, where it gets accumulated to form reservoir. This reservoir of water is the underground water. This water may contain soluble salts of calcium and magnesium. Underground water is made available for human use either as well water or as spring water.

4 Well Water



When the earth's surface is dug deep, water reservoirs are found above the rocks. The depth of a well varies from place to place. Well water contains soluble impurities depending upon the nature of the soil.

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5 Spring Water



Sometimes the accumulated underground water applies pressure on the rocks and comes out of the earth's surface in the form of a spring from any available opening. This water is called spring water. Spring water usually contains dissolved salts and minerals, but it is free from suspended impurities.



II. Water Cycle

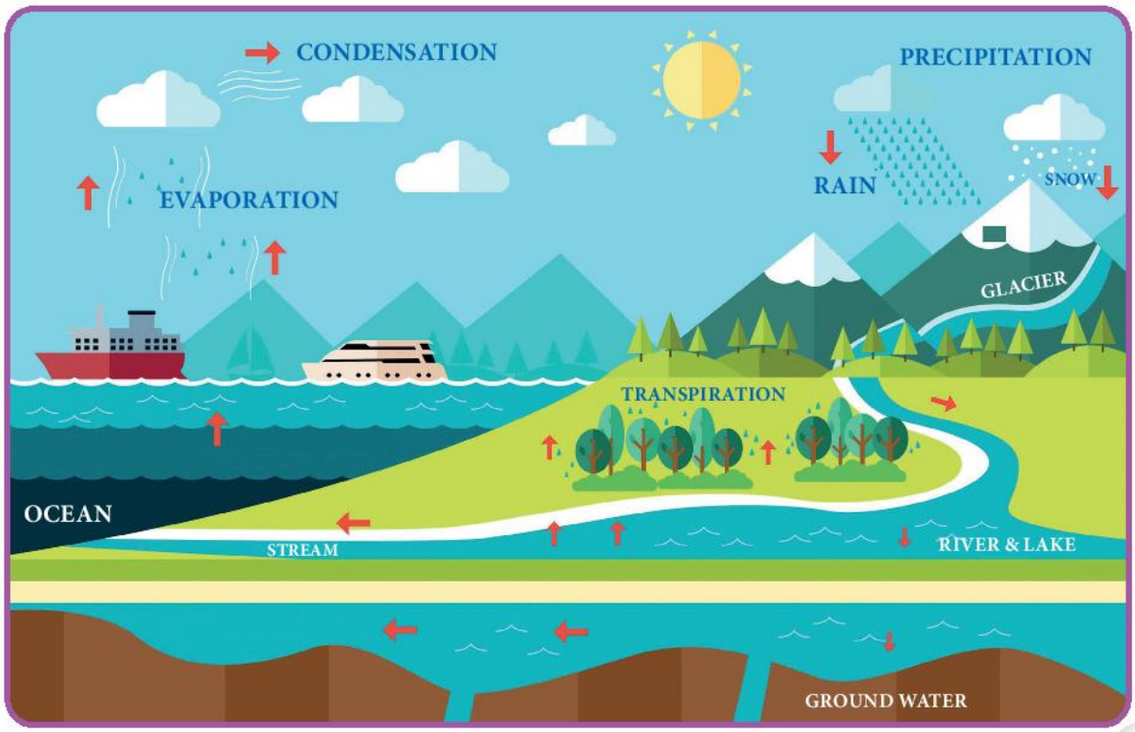
Continuous movement of water from the Earth to the atmosphere and back to the Earth is known as water cycle or hydrologic cycle. Water cycle consists of the following four stages.

❖ Evaporation

The process in which water is changed into water vapour by the heat of the sun is called evaporation. It takes place on the surfaces of rivers, oceans, lakes and ponds. Plants also release water by transpiration.

❖ Condensation

The process in which water vapour is converted into water on cooling is called condensation. Water vapour in the atmosphere being lighter, rises up and cools down. It further condenses to form tiny water droplets.



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❖ Precipitation

The water droplets join together to form clouds. As they get cooler, the droplets become bigger and heavier and fall as rain. If the air is very cold, they freeze to fall as hail of snow.

❖ Flowing back to Oceans

Rain water forms streams and springs which join together to form rivers. Rivers flow finally into the sea and ocean thereby completing the water cycle.



Do you know?

In freezing conditions, water falling from the sky becomes snow or hail. Hail stones are balls of ice.



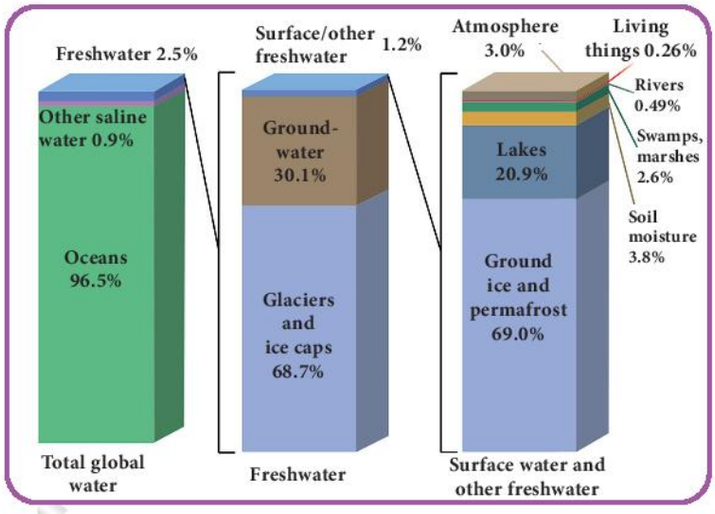
Activity 1

Take half a glass of water. Clean the outside part of the glass. Add few ice cubes and leave it for 5-10 minutes. You will observe drops of water appearing outside the glass. This happens because the water vapour in the air condenses on the cold surface of the glass.



III. Water Management

About 97.5% of total water available on the earth is too salty to be used for drinking and irrigation. The rest 2.5% of water is fresh water. Most of the fresh water i.e., 68.7% of the total fresh water is frozen as ice caps and glaciers and 30.1% occurs as ground water. Out of the remaining 1.2% of water, about 0.9% occurs as moisture in soil, air and in bodies of living organisms. The rest 0.3% constitutes fresh surface water sources, such as rivers and lakes. By this it is clear that a very small fraction of water is available for the use of human beings, animals and plants. The following figure shows the percentage distribution of total available water.





Do you know?

Agriculture is the source of our living. It uses most of the world's fresh water resources. It consumes around 70% of the available fresh water.

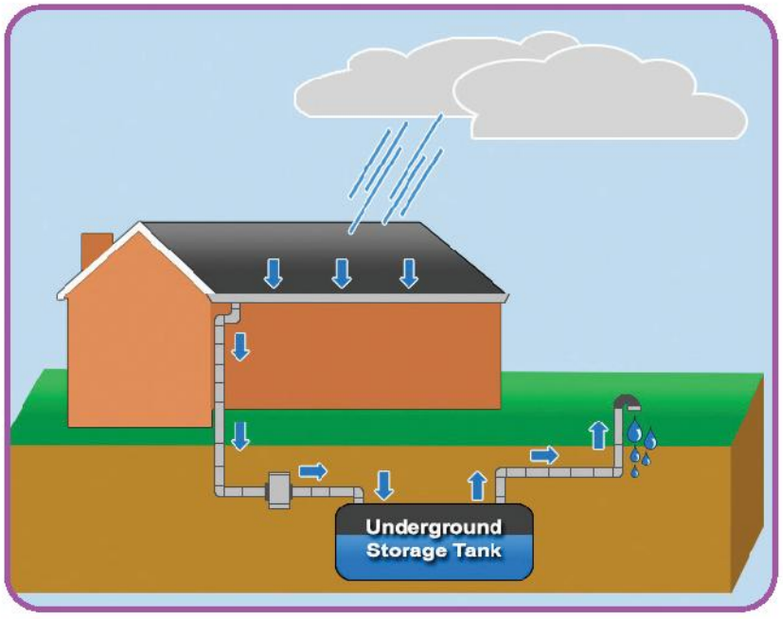
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1 Fresh Water Management

Water management is the activity of planning, developing and managing the optimum use of water resources. Water which is obtained naturally from ice sheets, ice caps, glaciers, ice bergs, ponds, lakes, rivers, streams and underground are called fresh water. Fresh water is having low concentration of dissolved salts. Nowadays we don't get enough rainfall and except few, most of the rivers are drained. Due to recent changes in the climate we don't have water in lakes and ponds. People in many countries suffer because they don't have water even for their basic needs. So, we need to manage the available water.

❖ Rain Water Harvesting

The process of collecting rain water from the roof top of the buildings is called rain water harvesting. In this system rain water is stored into a storage tank for later use. Rain water available in the open spaces around the buildings may also be recharged into the ground. It is another method of rainwater harvesting. The government of Tamil Nadu leads the nation in implementing rain water harvesting programme. It has made it mandatory for all houses and buildings in the state to install rain water harvesting facility.



Advantages

- Rain water harvesting can reduce flooding in the cities.
- Rain water harvesting can reduce top soil loss.
- Ground water level can be increased.
- Ground water can be conserved.
- It can improve plant growth.



Do you know?

March 22 is observed as World Water Day.



Activity 2

Estimate the amount of water used by your family in a day for drinking, brushing, bathing, cleaning vessels, washing cloths, toilets and cleaning the floor. Find out for which activity water usage is more and how it can be minimized.

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❖ Farm Ponds

A farm pond is a structure dug out on the Earth. It is usually square or rectangular in shape. Rainwater is stored in it for irrigation purposes. It is surrounded by a small bund, which prevents erosion on the banks of the pond. The size and depth of the pond depend on the type of the soil, water requirements of the farmer, its uses and the cost of excavation. Water is conveyed to the fields manually, by pumping, or by both.



2 Waste Water Management

Used water from any combination of activities such as domestic (houses), industrial, commercial, agricultural is called waste water. It is the water released after being used for laundry, bathing, dish washing, toilets and industrial purposes. Waste water also includes rain water that has been accumulated pollutants as it runs into the rivers, lakes and oceans. Pollutants are unwanted chemicals or materials that contaminate water. The goal of waste water management is to purify and protect water so that it can be reused. It also must be clean before it flows into rivers, lakes and oceans.

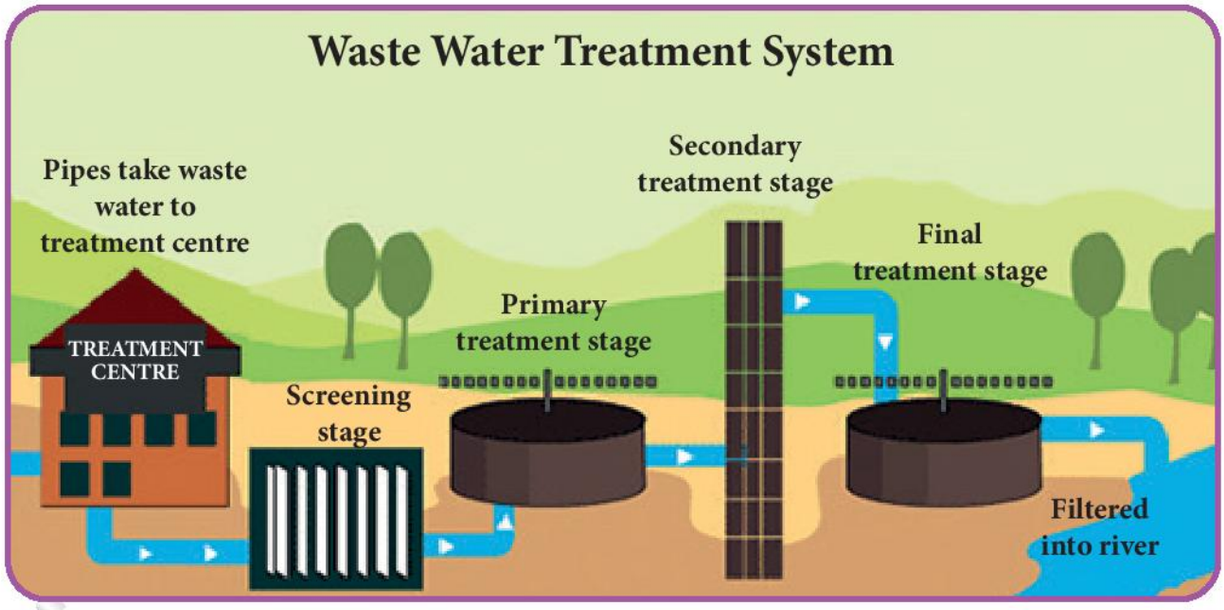
❖ Waste Water Treatment

Generally, waste water is treated by physical, chemical and biological processes using filtration, sedimentation, adding cow dung powder and bacteria. This method is followed in industries.



Activity 3

Visit an industry in your area with the help of your teacher. Observe and note the waste water treatment process.



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Advantages

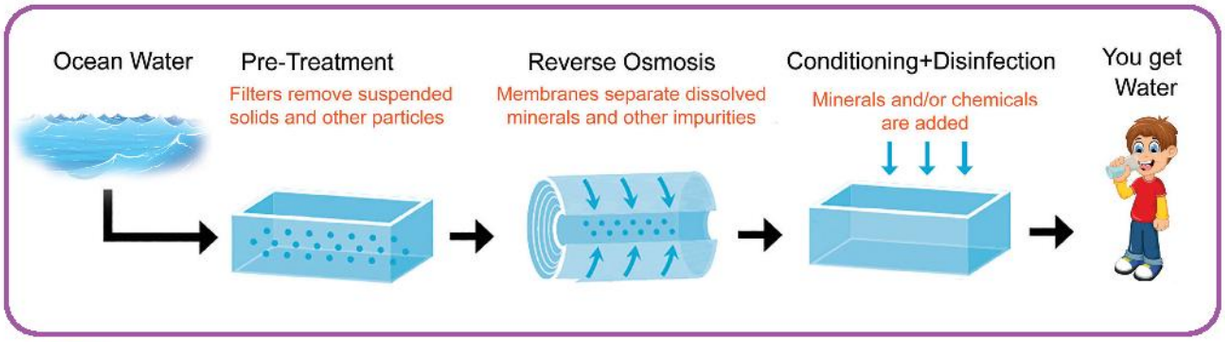
- Waste water treatment ensures that the environment is clean.
- There is no water pollution.
- It prevents waterborne diseases.
- It ensures that there is adequate water for irrigation.

3 Desalination of Sea Water

Desalination is an artificial process of converting saline water (sea water) into fresh water. The common desalination processes are:

- Distillation
- Reverse Osmosis

The process in which both evaporation and condensation go side by side is called distillation. Reverse osmosis is a process of forcing water under pressure through a semi permeable membrane. Tiny pores in the membrane allow water to pass but exclude most salts and minerals. The reverse osmosis process helps to solve the water scarcity problem.





IV. Water Pollution

Contamination of water bodies by human activities is called water pollution. Our water resources (pond, lake, river, canal and well) are polluted by sanitary water, industrial wastes, insecticides, fertilizers, sewages, synthetic detergents, chemical fertilizers, oil, heavy metals and radioactive wastes. These unwanted and harmful substances which pollute water are called water pollutants.

1 Sources of Water Pollution

The major sources of water pollution are industrial waste, sewage, domestic waste, chemical fertilizers and insecticides, synthetic detergents and oil spill.



Do you know?

25% of the world population does not get safe drinking water.

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❖ Industrial Waste

The discharge of untreated industrial wastes from the industries into rivers and lakes is one of the main causes of water pollution. The industrial wastes contain harmful substances such as acids, alkalis and hot water. The chemicals like arsenic, lead, mercury and cadmium are released by the industries and it leads to toxicity in plants and animals.



❖ Sewage

The dumping of sewage into rivers and lakes is the second major cause of water pollution in big cities.



❖ Domestic Waste

Food waste, soaps and detergents, garbage, wrappers, plastics and other materials carried by the flowing water pollute the water bodies.

❖ Chemical Fertilizers and Insecticides

The excess use of fertilizers and pesticides causes water pollution. Because these chemicals are washed into the rivers and lakes with rainwater, they pollute the soil and underground water also. Pesticides like DDT (Dichloro Diphenyl Trichloroethane) enter the bodies of aquatic animals and reach the human body by way of food chain.



❖ Synthetic Detergents

Excess use of synthetic detergents for washing purposes produces foam and they pollute the water.

❖ Oil Spill

Oil leakages on the surface of the sea affect the marine organisms.



2 Prevention of Water Pollution

- ➔ Excess use of fertilizers and pesticides should be avoided in agricultural land.
- ➔ Use of synthetic detergents should be minimized or biodegradable detergents should be used.
- ➔ Trees and shrubs should be planted along the banks of the rivers or lakes.

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➔ Plastic wastes, food materials and vegetables should not be thrown into open drains.

➔ Proper sewage treatment and management should be implemented.



V. Waterborne Diseases

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Illness caused by the micro-organisms present in the untreated or contaminated water is called waterborne diseases. They are responsible for morbidity and mortality in all age groups particularly among children under 5 years of age. It is believed that 80% of all diseases in the world are caused by inadequate sanitation and polluted water. Poverty, illiteracy, overcrowding and low health services are also directly or indirectly responsible for the prevalence of these diseases.

1 Types of Waterborne Diseases

Diarrhoea, dysentery, typhoid and cholera are some of the common waterborne diseases. They are caused by micro-organisms like bacteria and virus. Some of them are spread by mosquitoes. The following table gives the causative agents and the symptoms of few waterborne diseases.

Name of the Waterborne Diseases	Causative Agents	Symptoms
Diarrhoea	Bacteria and Parasites (Salmonella, Shigella and E.coli)	Indigestion, Sweating, Abdominal pain, Vomiting, Stomach cramps
Dysentery (Shigellosis)	Bacteria (Shigella)	Blood in stool, Indigestion, Vomiting, Dehydration, Fever, Weight loss
Typhoid Fever	Bacteria (Salmonella)	High fever, Head ache, Stomach pain, Muscle weakness, Weight loss
Cholera	Bacteria (Vibrio Cholerae)	Severe diarrhoea, Vomiting, Dehydration
Hepatitus -A	Virus (Hepatitus)	Vomiting, Fever, Dark urine, Itching, Yellow skin and eyes, Lack of appetite
Hepatitus - E	Virus (Hepatitus-E)	Vomiting, Fever, Dark urine, Itching, Yellow skin and eyes, Lack of appetite



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Do you know?

People all over the world are worstly affected by diarrhoeal diseases. Three million people die worldwide every year due to these diseases.



Activity 4

Visit a primary health centre in your area and find out the common waterborne diseases prevalent among the people. Also find out the causes for them.

2 Prevention of Waterborne Diseases

- Good personal hygiene should be practiced and basic sanitation should be improved.
- Chlorinated and boiled water should be used for drinking.
- Drink boiled or pasteurized milk.
- Dispose infectious wastes properly.



VI. Other Diseases

Apart from the waterborne diseases mentioned above, there are many other diseases which are spread by vectors which breed in stagnant water in our surrounding. For example, aedes mosquito breeds in stagnant water and it causes dengue fever. Similarly, pigs feed in the stagnant sewage water. The pigs infected by virus spread Swine flu.

1 Dengue Fever

Dengue is a viral disease, spread by aedes female mosquitoes that bite during day time. They breed in clean stagnant water found in containers like vessels and buckets.

Symptoms

- Symptoms may include high fever, severe head ache, muscle and joint pain and a characteristic skin rash.
- Symptoms of dengue fever typically begin three to fourteen days after infection.
- Deficiency of platelets in blood.
- Intense stomach pain.
- Regular vomiting with blood.



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Prevention

- Spray the house with anti-mosquito spray.
- Try to wear cloths that cover skin areas.
- Close the doors and windows during early morning and evening.
- Do not leave stagnant water anywhere in and around the house.



Do you know?

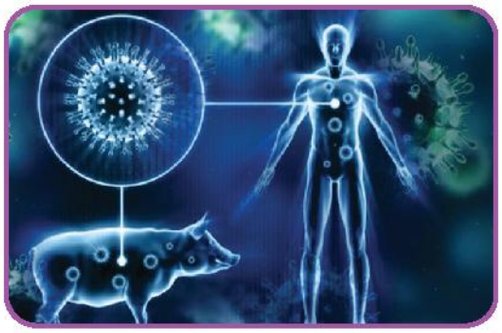
Aedes mosquitoes also transmit Chikungunya and Yellow fever. This can result in death if any treatment is not taken.

Treatment

- Dengue is caused by a virus and so there is no specific treatment or cure.
- A high fever and vomiting can dehydrate the body. So the person should drink clean water (bottle water).
- Rehydration salts can help replace the fluids and minerals lost in the body.
- Taking pain killers like Tylenol or Paracetamol can help to reduce fever and pain.

2 Swine Flu (H_1N_1)

Swine flu is a respiratory disease caused by Influenza virus that infects the respiratory tracts of pigs and results in barking cough. It can be transmitted to human beings. People who are constantly exposed to pigs are at risk of Swine flu infection. By keeping our surrounding free from sewage water, we can avoid exposure to pigs.



Name of the Diseases	Causative Agents	Symptoms
Dengue Fever	Virus (Flavi Virus)	High fever, Severe head ache, Muscle and joint pain, Vomiting with blood and Stomach pain
Swine Flu (H_1N_1)	Virus (Influenza)	Infection in respiratory tracks, Indigestion, Nasal secretions

Evaluation

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I. Choose the correct answer.

1. Which of the following micro-organisms causes waterborne diseases?
   a) Bacteria b) Virus c) Protozoa d) All

2. Water is present in huge quantities as vapour and clouds in the _____
   a) sky b) earth c) atmosphere d) rain

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3. _____ water is free from suspended impurities.

a) Sea b) Well c) River d) Underground

4. _____ of water is found in oceans.

a) 96.5% b) 87% c) 47% d) 77.5%

5. _____ is an artificial process of converting sea water into fresh water.

a) Distillation b) Reverse Osmosis c) Desalination d) All of these

II Fill in the blanks.

1. The accumulated underground water comes out in the form of _____.
2. The process of changing water into water vapour by the heat of the Sun is called _____.
3. Rain water forms streams and _____ which join together to form rivers.
4. The process of collecting and storing rain water is called _____.
5. Cholera is caused by _____.

III. Match the following.

1. Leakage of oil	-	Cloud
2. Reservoir	-	Plant growth
3. Condensation	-	Pollute marine organisms
4. Rainwater harvesting	-	Influenza virus
5. Swine Flu	-	Man-made lake

IV. Answer briefly.

1. Write down the sources of water.
2. What is desalination?
3. What are the processes involved in water cycle?
4. What are reservoirs?
5. How can we prevent dengue fever?

V. Answer in detail.

1. Write the advantages of rainwater harvesting.
2. How can we prevent waterborne diseases?

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3 Plants

Learning Objectives

After completing this lesson, students will be able to

- know about the types of pollination and the agents of pollination.
- understand the life cycle of flowering plants.
- identify different types of soil.
- know how honey bee, earthworm, dragon fly are useful to farmers.

VJ8DE

Introduction

Plants are useful to us in a number of ways. They produce their own food. At the same time they are used as food by men and animals. Plants are not only used as food but also as medicine. Almost all parts of the plants are useful to us. As a natural resource they are beautiful and pleasing to our eyes. They release oxygen, which is essential for our survival, into the atmosphere. Some plants grow in our surrounding naturally and some are grown by us. We need to know about plants which are useful to us in many ways. Let us study in this lesson about the life cycle of plants, agriculture and the types of soil.

I. Reproduction in Plants

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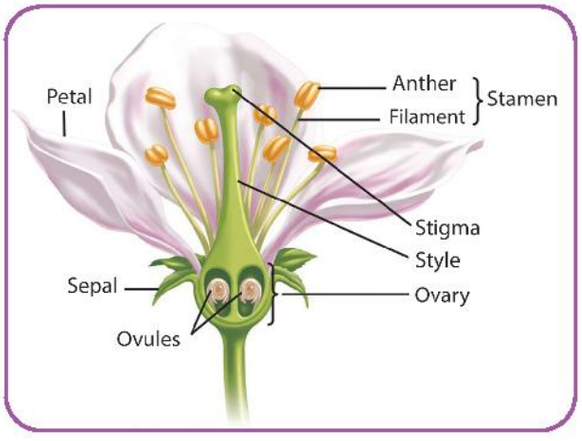
Reproduction is the process by which new plants of the same species are produced. Both plants and animals reproduce. The flowers perform the function of reproduction in plants. There are two kinds of reproduction that take place in plants. They are sexual reproduction and asexual reproduction. In asexual reproduction, new plants are produced from roots, leaves, stems and buds. In sexual reproduction, new plants emerge from seeds.

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1 Flower

Flower is the reproductive part of a plant. It is a modified shoot. Flowers have four important parts. They are:

- Sepal
- Petal
- Androecium
- **Gynoecium**



❖ Sepal

It is the outer part of the flower. Usually it is small and green in colour. It protects the bud in the early stage.

❖ Petal

It is often colourful and it attracts the insects.

❖ Androecium

It is the male reproductive part of the flower. It is composed of stamens. Each stamen consists of a stalk called filament and a small bag like structure called anther at the tip. The pollen grains are produced in the anther within the pollen sacs.

❖ Gynoecium

It is the female part of the flower. It has three parts. They are: ovary, style and stigma. The ovary contains the ovules.

The flowers which contain either androecium or gynoecium are called **unisexual flowers**. E.g. Corn, Papaya, Cucumber. The flowers which contain both androecium and gynoecium are called **bisexual flowers**. E.g. Mustard, Rose.



Papaya (Unisexual flower)



Rose (Bisexual flower)

To attract the pollinators (E.g. Insects) plants are bright in colour and produce smell in their flowers. Plants which are pollinated by the honey bees and butterflies have sweet scents and bigger colourful petals. E.g. Sunflower, Pumpkin. Pigments present in petals give them different colours. Plants which are pollinated by the

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moth and bats release their fragrance mostly at night and have colourless petals. E.g. Mango, Banana, Guava, Jasmine etc. The following table gives the names of the pigment present in petals.

Colour of the petals	Name of the pigment
Red, Pink, Blue, Purple	Anthocyanin
Yellow, Orange	Carotenoids
Green	Chlorophyll



Activity 1

Take a hibiscus flower or a rose flower. Display the parts like sepal, petal, gynoecium and androecium in a chart paper and note down their colour and shape.



Do you know?

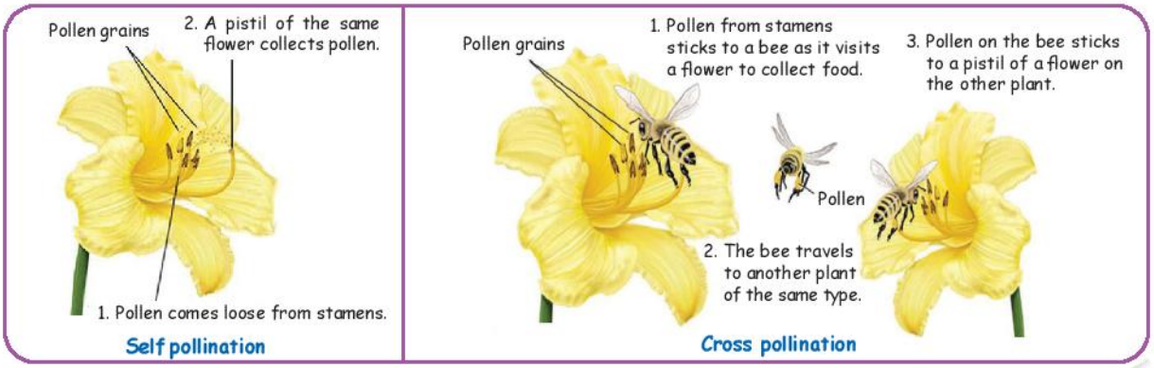
Kurinji or Neelakurinji (Strobilanthes kunthiana) is a shrub that is found in the Chola forests of the Western Ghats in South India. Nilagiri Hills, which literally means the blue mountains, got their name from the purplish blue **flowers** of Neelakurinji that blossoms once in 12 years.



2 Pollination

The transfer of pollen grains from the anther to stigma of a flower is called pollination. Pollination is the first important event in the development of fruit and seed. Pollination is followed by fertilization. Two types of pollination take place in the flowering plants. They are self pollination and cross pollination.

The transfer of pollen grains from the anther of a flower to the stigma of the same flower is called self pollination. The transfer of pollen grains of a flower to the stigma of another flower of a different plant of the same species is called cross pollination.

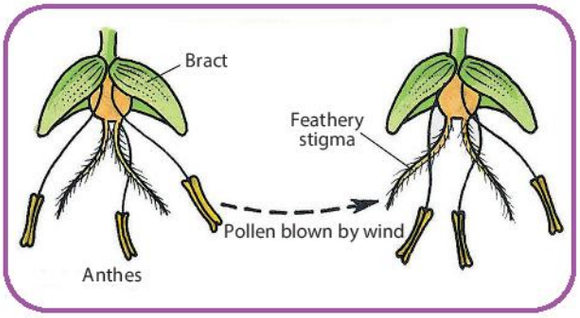


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In self pollination, seeds produce weak plants and new varities of plants cannot be produced. In cross pollination, seeds produce good plants and new varities of plants can be produced. Pollination takes place through different agents. They are explained below.

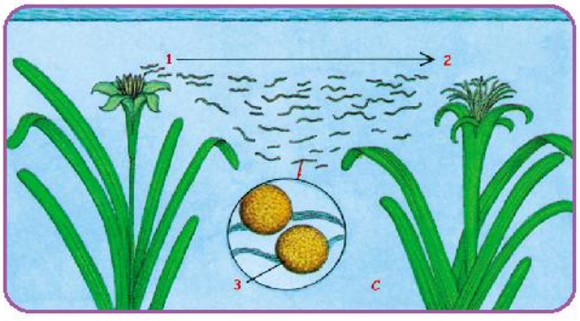
❖ Pollination by Wind (Anemophily)

The flowers pollinated by wind are mostly small in size and do not have any attractive colour, smell and nectar. The pollen grains are non-sticky, dry, light and powdery. Hence, they are easily carried away by the wind. E.g. Grass, Maize, Pine.



❖ Pollination by Water (Hydrophily)

The flowers of water plants are not colourful and they have no nectar. Pollen grains of these plants have mucilaginous covering to protect them from getting wet. They float in water and reach other plant. E.g. Vallisneria, Hydrilla, Zosteria.



❖ Pollination by Insects (Entamophily)

This is the most common type of pollination in plants like sunflower, ladies finger, brinjal and pumpkin. Some flowers are large in size and they have sweet smell. Some of these flowers produce nectar. They attract insects like butterflies and honey bees.





Do you know?

Fruit bats, humming birds and ants may also act as pollinating agents. Pollination by birds is known as Ornithophily.





Activity 2

Classify the plants based on the pollination types.

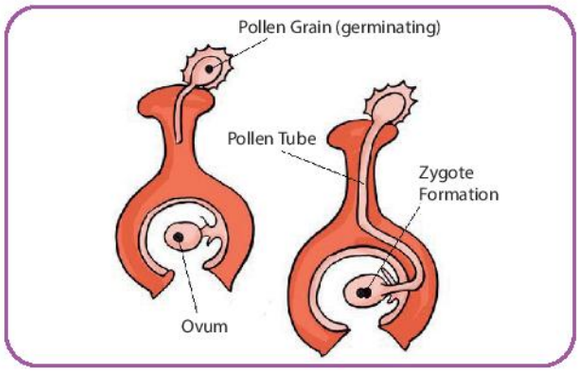
Vallisneria, Hydrilla, Sunflower, Grass, Brinjal, Maize, Pumpkin.

Hydrophily	Entamophily	Anemophily

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3 Fertilization

The process of fusion of male (pollen grains) and female (stigma) gametes is called fertilization. The cell which results after fusion of these gametes is called zygote. The zygote then develops into embryo.



4 Fruits and Seed formation

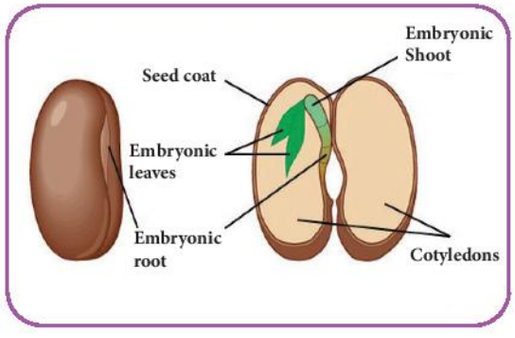
After fertilization, the ovary grows into a fruit and other parts of the flower fall off. The seeds develop from the ovules. The seed contains an embryo enclosed in a protective seed coat. Based on the number of cotyledons in the seed, flowering plants have been divided into two groups namely, dicotyledon and monocotyledon.

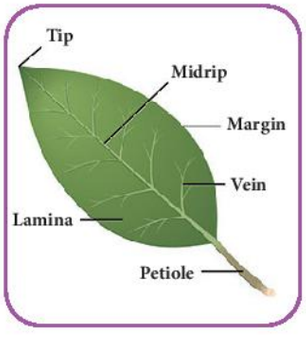


Activity 3

Collect seeds of different plants from your area. Find out whether they are monocotyledons or dicotyledons.

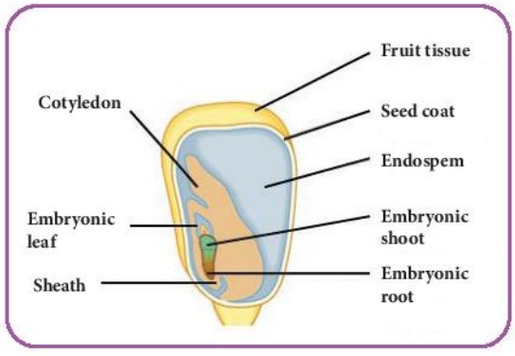
Dicotyledons have seeds with two cotyledons. E.g. Pea, Bean, Castor. They have leaves with netted venation and taproot system.







Mono cotyledons have seeds with one cotyledon. E.g. Maize, Rice, Wheat. They have leaves with parallel venation and fibrous root system.







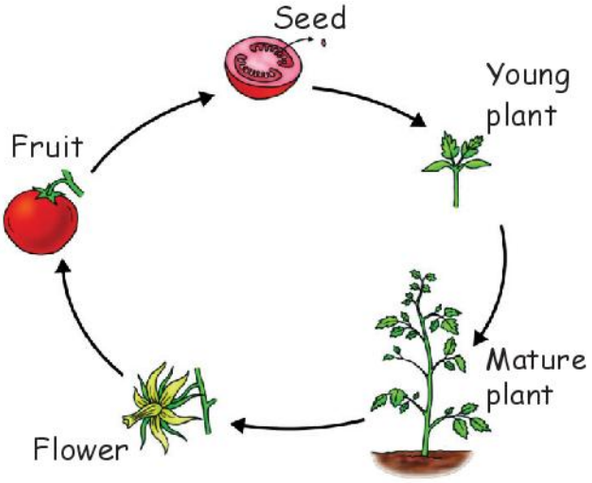
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II. Life Cycle of a Flowering Plant

The major stages of the flowering plants are: germination of seed, growth, flowering, re-production (pollination), seed formation and seed spreading. Every seed has minute plant called embryo. Under favourable conditions like sunlight, water and soil, embryo grows into a new plant. This new plant bears fruits with seeds and multiplies. This cycle continues forming the life cycle of flowering plants.

1 Dispersal of Seeds

Spreading of seeds from one place to another with the help of agents like air, water, animals and birds is known as dispersal of seeds. A single plant produces a large number of seeds. If all these seeds fall directly below the parent plant, the seedlings would have to compete for space, water, oxygen, minerals and sun light. When the seedlings are grouped together in one place, they can easily be destroyed by grazing animals. So, by nature the seeds and fruits of plants are distributed far and wide through various agencies.



❖ Dispersal by Wind (Anemochory)

The seeds which are smaller, lighter and tiny float in air over long distance. Some of them proceed with hairs and membranous wing like structures and so they are carried away easily. E.g. Cotton seed, Drumstick.



❖ Dispersal by Water (Hydrochory)

Fruits which are dispersed by water have outer coats modified to enable them to float. The mesocarp (middle layer) of coconut is fibrous and is easily carried away by water. They reach different places and grow into a new plant. E.g. Lotus, Coconut.



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❖ Dispersal by Animals (Zoochory)

Some fruits have hooks, spines, bristles, stiff hair etc, on their outer coat. These fruits stick on the furry coats or skins of some animals and are carried from one place to another. E.g. Xanthium, Achyranthus.



❖ Dispersal by Birds

While eating fruits like tomato and guava, birds eat seeds along with the edible portion and they are passed out in the excreta later. These types of seeds are protected from the digestive juices by their seed coat.



❖ Self Dispersal Method (Autochory)

Some fruits disperse their seeds in the wind through an explosive mechanism and spread them. E.g. Ladies finger, Balsam.





Activity 4

Collect variety of seeds with hair, wings, hooks and spines. Keep them in a card board box separately. Name them and collect information on how they are dispersed.



Do you know?

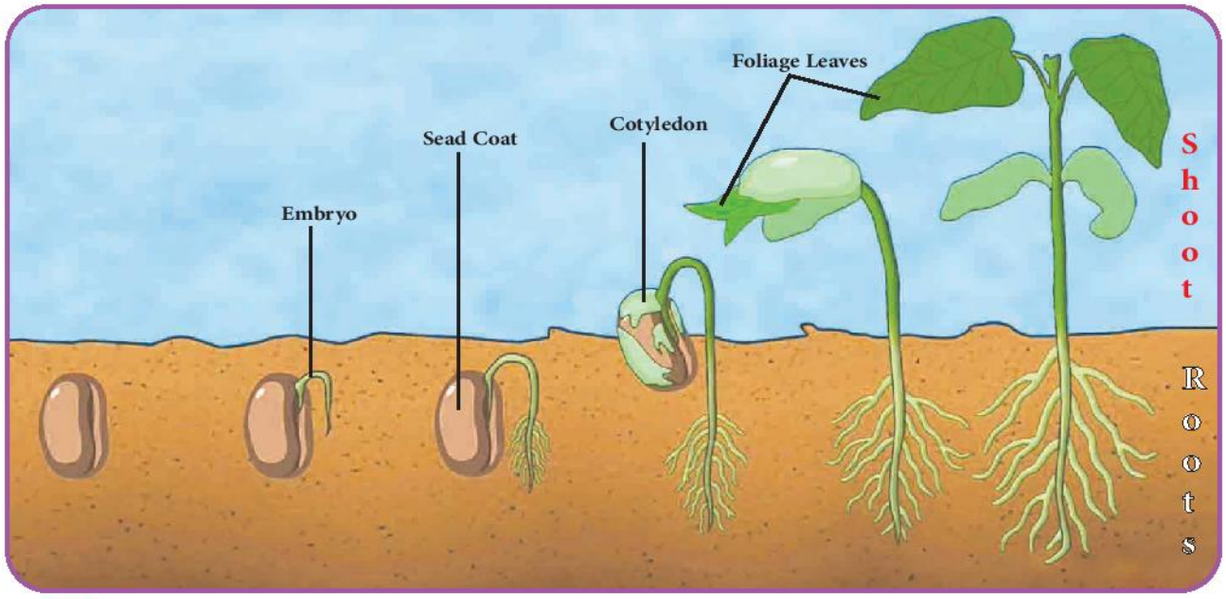
Man is also responsible for the dispersal of many fruits and seeds. Useful plants like cinchona, rubber and eucalyptus have been successfully introduced by men, to the new surroundings far away from their original habitat.

2 Germination of Seeds

The seed is a fertilized ovule. It consists of embryo, food materials which are protected by the seed coat. During favourable conditions, the seed germinates and gives rise to a new seedling. During the early stages of germination, the seedlings get the food required for its growth from the cotyledons. After the food stored in the cotyledons has been used up, the seedling gets its food from the soil. The seedling absorbs water and nutrients from the soil with the help of its roots. It develops leaves and grows into a plant.

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Various stages of germination of seed





III. Agriculture

Man started practicing agriculture thousands of years back. This was one of the developments of civilization. In the modern days agriculture is practiced on a large scale due to the advancement of science and technology. Application of modern technologies like plant breeding and usage of chemicals like fertilizers and pesticides have increased the yield. Major agricultural products are cereals, vegetables, fruits and oil seeds. They are cultivated not only for our basic needs but also for commercial purpose.

1 Soil

Soil is one of the most important natural resources. It is essential for agriculture. It supports the growth of plants by holding the roots and supplying water and nutrients. It is the home for many organisms. Soil is formed by the breaking of rocks by the action of wind, water and climate. The mixture of rock particles and humus is called the soil. The soil is classified on the basis of the proportion of various sizes.







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❖ Sandy soil

It contains greater proportion of big sand particles. They cannot fit closely together. Water can drain quickly through the spaces between the sand particles. So, sandy soils tend to be light, well aerated and dry.

❖ Clay soil

It contains greater proportion of fine particles, packed tightly together, leaving little space for air. It can retain lot of water in the tiny gaps between the particles. Plants like paddy grow well in this soil.

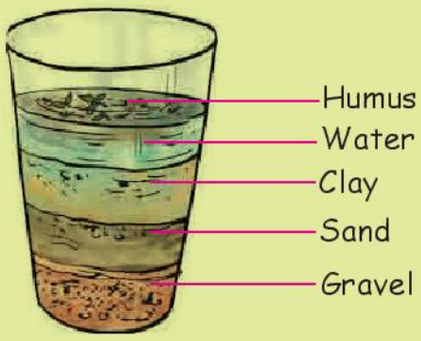
❖ Loamy soil

Loamy soil contains large and fine particles in almost same proportion. It is the best top soil for growing plants. It is a mixture of sand, clay and another type of soil particle known as silt. Silt occurs as a deposit in river beds. It has water holding capacity for the growth of plants. Clay and loamy soil are suitable for growing wheat, gram and paddy.



Activity 5

Take a little amount of soil and powder it. Put this soil in a glass tumbler. Mix it with water and stir it well with a small stick to dissolve the soil. Do not disturb it for some time. Now you can see different layers of soil. The rotting matter floating on the water is called humus. The other layers are clay, sand and gravel. From this we can see that the soil is a mixture of various particles.



2 Classroom Agriculture

Classroom agriculture creates the basic understanding about agricultural practices in the classes. Through this, we come to know about the values and importance of agriculture. To mould us into better members of the society, this programme teaches the connections between agriculture and the environment, food, energy, animals, society, economy, science and technology.



IV. Friends of Farmer

Insects are generally considered to be harmful. But, many of them are helpful to us in a number of ways. Earthworm, honeybee and dragonfly are useful to plants and farmers.

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❖ Earthworm

Earthworms help to increase the amount of air and water that gets into the soil. They break down organic matters like leaves and grass into smaller particles so that plants can use them. When they eat them, they leave behind castings that are a type of fertilizer. The process of decomposing bio-degradable wastes by earthworms is known as vermicompost.



Activity 6

Visit a nursery garden in your area and observe how the varieties of saplings are growing there. Prepare a report about it.

❖ Honey bee

Honey bees are helpful for cross pollination in flowers. They are attracted by the colour and smell of the flowers. They convert the pollen which is the only natural protein source for them into honey. Honey is used as food and also for medicinal purposes. Bees also produce wax, which is used for making candles.

❖ Dragon fly

It destroys the egg and larva of harmful insects and mosquitoes and thus prevents the spreading of diseases. It is also helpful in cross fertilization.





Evaluation

KPR3Y

I. Choose the correct answer.

1. Male reproductive organ of the flower is

   a) sepal b) petal c) androceium d) gynoceium

2. Pollination by wind is also known as

   a) anemophily b) hydrophily c) entamophily d) ornithophily

3. Dispersal of seed by water is known as

   a) anemochory b) hydrochory c) zoochory d) autochory

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4. Entamophily is

a) pollination by insects b) pollination by wind

c) pollination by water d) pollination by animal

5. Pollination takes place by wind in

a) grass b) vallisneria c) hydrilla d) lotus

II. Fill in the blanks.

1. Spreading of seeds from one place to another is known as _____.
2. Autochory is known as _____.
3. The seed is a fertilized _____.
4. Paddy grow well in _____ soil.
5. The soil which contains bigger sized particle is _____.

III. Match the following.

1. Earthworm - Destroys the egg and larva of mosquitoes
2. Birds - Honey
3. Coconut - Ornithophily
4. Bee - Dispersal by water
5. Dragon fly - Vermi-compost

IV. Answer briefly.

1. Define pollination.
2. What is germination of seed?
3. How soil is formed?
4. What is known as vermi-compost?
5. How the seeds are spread by water?

V. Answer in detail.

1. Write a note on parts of flower.
2. Explain the methods of pollination.
3. Draw the picture of a flower and label the parts.

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NOTES

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SOCIAL SCIENCE

TERM - II



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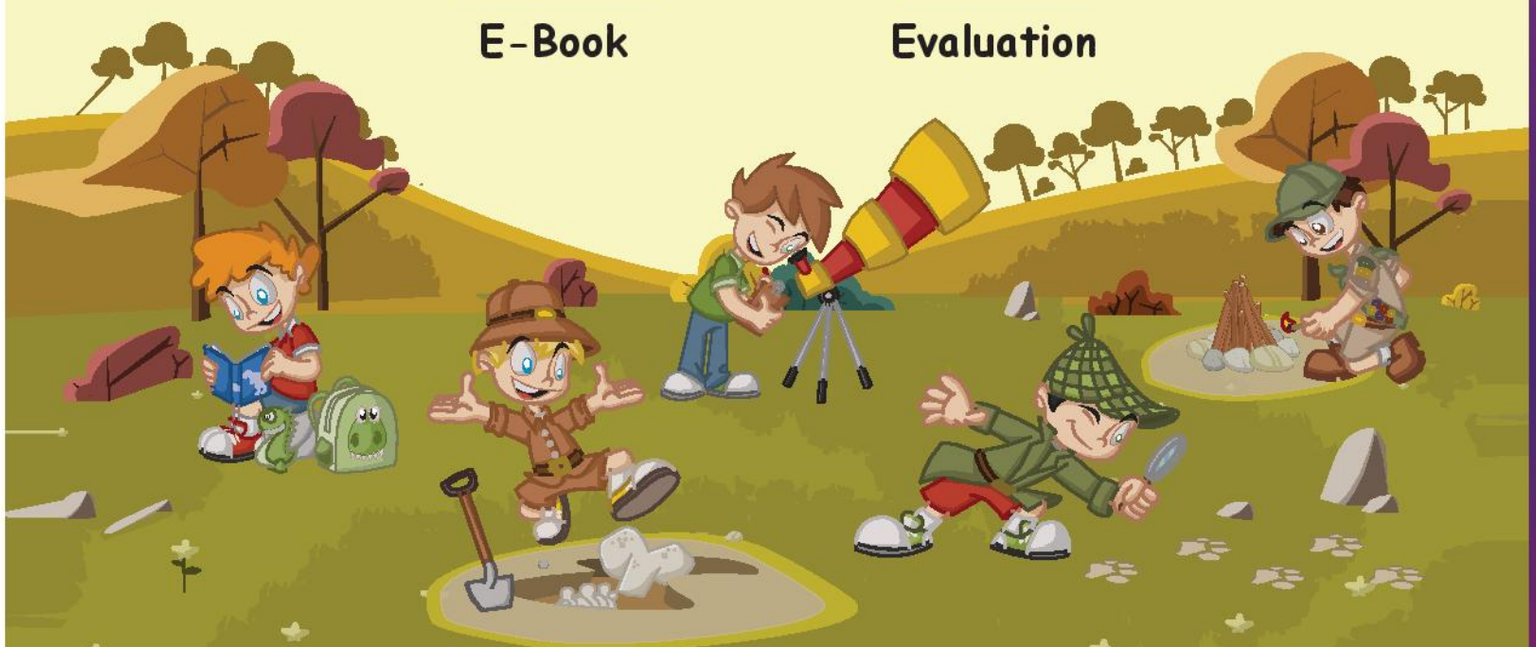
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1	Ancient Excavation	97	October
2	Hydrosphere	109	November
3	Continents of the World	124	November & December

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E-Book

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Evaluation



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UNIT

1

Ancient Excavation

Learning Objectives



Students can :

- understand about excavation.
- know about archaeologists.
- get knowledge about some archaeological sites in Tamil Nadu.

VDI3J



Rekha: It is so hot today. I do not think that I can go out to play.

Grandma: Ah, very true. But, when I was young, I used to play outdoors all the time.



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Rekha: How did you play when it was hot?

Grandma: When I was young, our neighbourhood was full of trees and I used to play under the shade of the trees.





Rekha: Wow! Really? I wonder how people lived in those days!

Grandma: Do you know, there is a way to know and understand how people lived in those days?





Rekha: How is that possible? Tell me more.

Grandma: Have you ever found a seashell while digging in the beach?





Rekha: Yes!

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Grandma: Similarly, there are people who dig the earth at various places to find things which are used by the people of the past. These people are called **Archaeologists!** The process of digging the ground is called **Excavation**.



Now let us learn more about excavation.

EXCAVATION

2IXZ8

Excavation is a controlled exploration of what lies under the surface of earth. All forms of archaeological excavations require great skills and careful preparation. Excavations are classified based on the purpose like **planned**, **accidental** and **rescue**. Most excavations are properly pre - planned and their purpose is to find buried evidences from the site.

Excavation



Archaeologists



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The things that Archaeologists find during excavation are called **artefacts.** Archaeologists can tell a lot about people who lived there by looking at the remains of their houses, clothes, bones and other artefacts.











ACTIVITY

Let us do

Teacher divides the class into 3 groups and instructs the students to plant the saplings in the school premises.



If I dig the ground near my house, will I get artefacts?



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Who is an Archaeologists?

Archaeologists: The people who study the history of ancient humans and places through excavation and analysis of artefacts are called archaeologists. Excavation gives us a glimpse of the past.

Some of the excavations from the world

Pyramids in Egypt : When the Pyramids were excavated it was found that the small pyramids were made for the Queens.They found huge tombs with super structures which were built for the burial of the royal family. Skeletons found in the pyramids gave information about the average height and age of the people.

Indus Civilisation : Indus Civilisation is also called **Harappan Civilisation**. This was the first site to be excavated in the early 20th century. Baked bricks were found underground. The city had a well planned houses with wells and proper drainage system that provide a way to direct waste water to closed drains. There were advanced **granaries**, **Great bath** and **protective walls**. It was found that the city and its civilisation were very advanced for their time.

Pyramids in Egypt



Indus Civilisation excavation



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Think



How do archaeologists identify the places with artefacts in it?

Some interesting excavations from Tamil Nadu

There are many places in Tamil Nadu where excavations had held and many interesting things were found.

Adichanallur

BLNX6

Adichanallur - Thoothukudi District

- The artefacts unearthed were urns, pottery of various kinds (Red Ware, Black Ware), iron implements, daggers, swords, spears and arrows, some stone beads and a few gold ornaments.
- Bronze objects representing domestic and wild animals like tiger, antelope and elephant have been unearthed.
- The artefacts prove that people were skilful in making pottery and in working stone and wood.

Adichanallur



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LET US KNOW

An **archaeological site** is a place where there are physical remains of past human activities.











ACTIVITY

Let us write

Imagine yourself as an archaeologist and list down the things that you would collect during an excavation.



Where are the artefacts kept after the excavation?

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Arikamedu

Arikamedu is an archaeological site situated near Puducherry. We have come to know through excavations that the coastal village Arikamedu had trade relationship with Rome. An archaeologist found **Roman lamps, glass, stone beads, gems, cutlery and crockery, wine containers** etc there. He mentioned that those antiques were new for the local fishermen of the village.

Arikamedu





Dinosaur eggs were discovered at Senthurai in Ariyalur district.

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Keeladi

Keeladi – Sivagangai District

The Archaeological Survey of India (ASI) excavated an ancient town dating to Sangam Age in **Keeladi** village at Thiruppuvanam taluk. Excavations have produced evidences for brick buildings and well laid - out drainage system. **Tamil-Brahmi inscripted pottery, beads of glass, carnelian, quartz, pearl, gold ornaments, iron objects, shell bangles and ivory dice** have been unearthed. The Roman artefacts found at the site add to the evidence of ancient Indo-Roman trade relations.

Keeladi



Glossary



Archaeologist: A person who learns about human history through excavation.

Excavation : Digging the earth to find the remains of the past.

Unearthed : Find (something) in the ground by digging.

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Recap

- Excavation is the process in which people dig the Earth to find things that were used long ago.
- Archaeologists study the history of ancient humans and places through excavation and analyse artefacts.
- Pyramids of Egypt and Great Bath of Indus Civilisation are excavational sites in the world.
- Adhichanallur, Keeladi and Arikamedu are important excavational sites in Tamil Nadu.



EVALUATION



9H2B1

I. Choose the correct answer.

1. _____ study the history of humans and places through excavation.

   a) Archaeologists b) Scientists c) Geologists

2. Small pyramids were made for the _____in Egypt.

   a) Prince b) King c) Queen

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3. Indus civilisation is also called as _____ Civilisation.

a) Egypt b) Harappan c) American

4. Adichanallur is in _____ district.

a) Thoothukudi b) Chennai c) Puducherry

5. Keeladi revealed the _____era.

a) Modern b) Sangam c) Middle age

II. Match the following.

1	Pyramids	Arikamedu
2	Baked bricks	Adichanallur
3	Pottery	Sendurai
4	Dinosaur eggs	Indus civilisation
5	Roman lamp	Egypt

III. True or False.

1. During excavations many artefacts were found. ( )
2. Indus Civilisation is also called Harappan Civilisation. ( )
3. Adichanallur is an archaeological site in Coimbatore district of Tamil Nadu. ( )
4. Keeladi excavation revealed that it was not a developed city. ( )
5. Roman lamps, glass, stone beads, gems etc. were found in Arikamedu. ( )

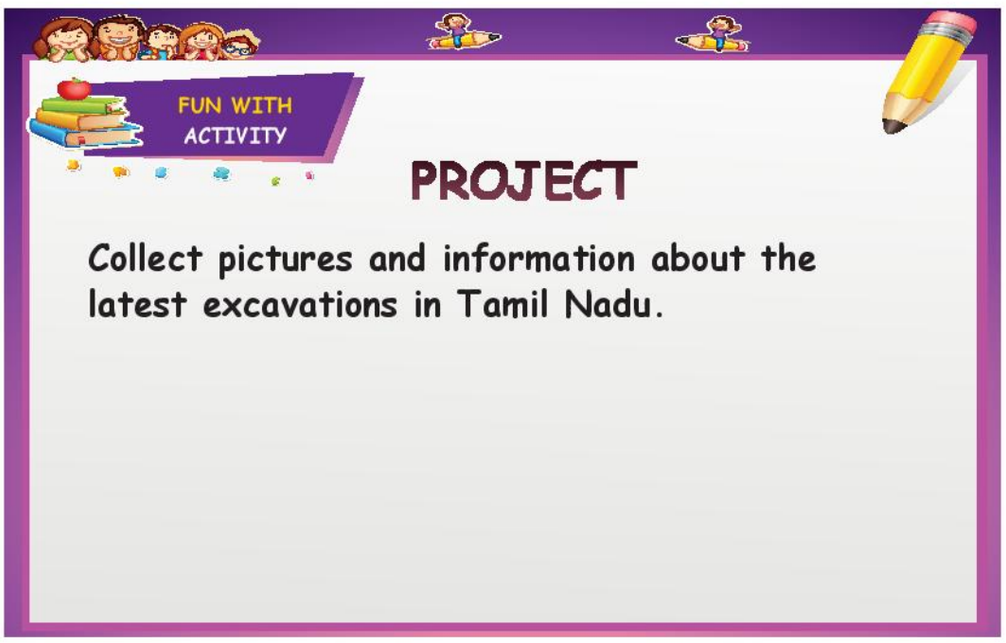
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IV. Answer the following.

1. What is excavation?
2. Who is an archaeologist?
3. Write a short note on pyramids.
4. What are the artefacts that were found in Adichanallur?
5. Where is Keeladi located?

V. Answer the following in detail.

1. Describe the Indus Civilisation.
2. Give a detailed study of Keeladi.
3. Write about Arikamedu in detail.



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UNIT

2 Hydrosphere



Learning Objectives

Students can:

- describe the features of Hydrosphere.
- define each type of water body.
- list out the steps to be taken to conserve water.
- explain the steps involved in the water cycle.

L9I38



Rani: Sundar! Our earth is huge, isn't it?

Sundar: Yes Rani. It is huge. Do you know what does it consist of?



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Rani: No, can you tell me?

Sundar: Sure! The earth consists of Lithosphere, Hydrosphere and Atmosphere.





Rani: Oh ! Such big words! What does this mean?

Sundar: This means that the earth consists of land, water bodies and air respectively.





Rani: Oh! Is it?

Sundar: When we visited Marina Beach, did you notice the quantity of water in the sea? The water from oceans, seas and other water bodies are called Hydrosphere.





Rani: Wow! Can you tell me more about Hydrosphere, Sundar?

Sundar: Sure



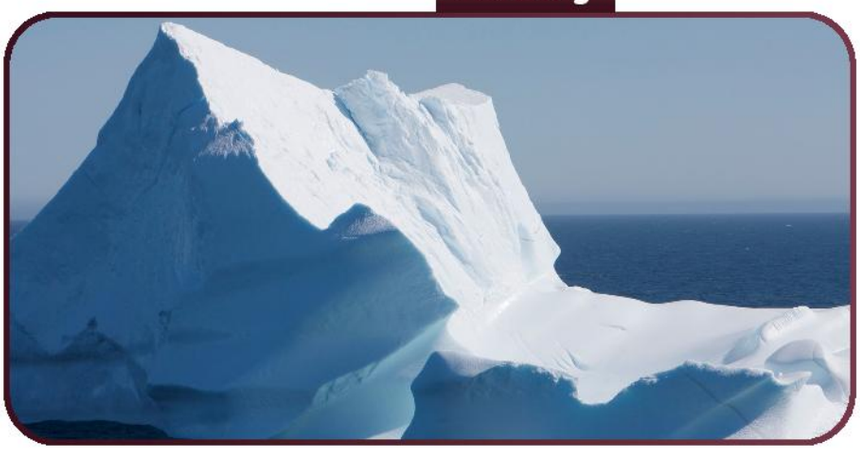
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Hydrosphere

Hydrosphere is the total amount of water present on the earth which includes water on the surface, under the ground, and in the air. Hydrosphere is in the form of **liquid**, **vapour** and **solid** (ice).

Hydrosphere covers about **71%** of the planet Earth. **97%** of water is salt water and rest of the **3%** of water is fresh water that found in ground, lakes, rivers and also frozen as ice in the form of glaciers and icebergs.

Iceberg



4MHXJ

Glacier



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LET US KNOW

There is no aquatic life in **Dead Sea** because it is too salty.





Do not throw plastic garbage on the beach. It is very dangerous for the aquatic life.











ACTIVITY

Let us write

Construct Rain Water Harvesting system in your school with the help of your teachers.

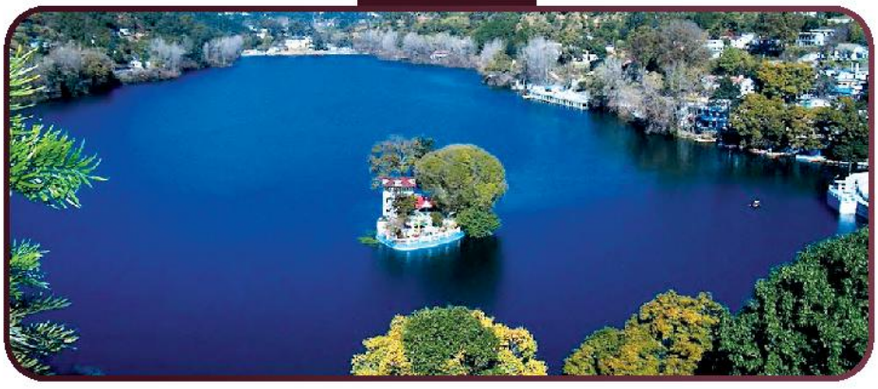
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Importance of Hydrosphere

We need water to carry out many **activities** in our day to day life. We need water to drink, take bath, cook food etc. **Animals** and **plants** also need water for their survival. If there were no water, the clouds would not be formed and there would be no rain.

Types of water bodies

Lake



Pond



Stream



River



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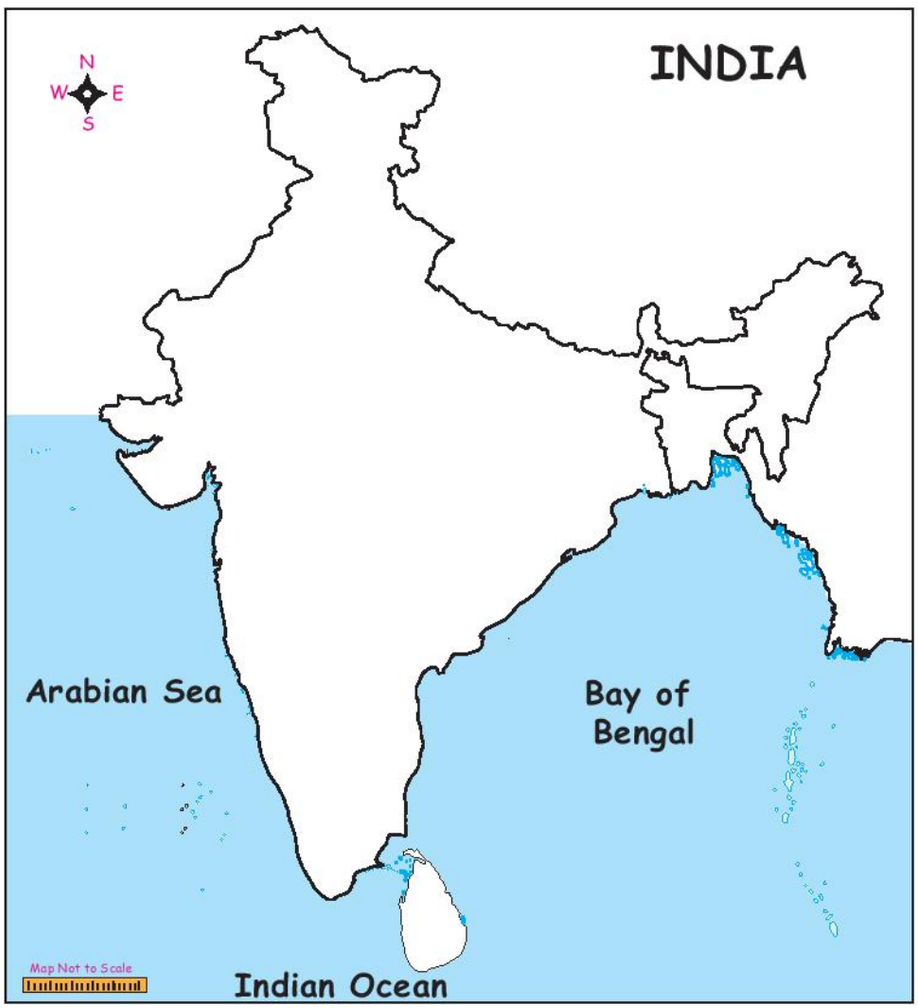
Oceans:

Oceans are vast water bodies that usually separate continents from one another. Ocean water is salty in nature. There are five oceans on earth. They are: **the Pacific Ocean, Atlantic Ocean, Indian Ocean, Southern Ocean** and **Arctic Ocean**.

Seas:

Seas are also vast water bodies but smaller than oceans in size. They are partly closed by land and opens up to the ocean. Sea water is **salty** in nature.

Example: Arabian Sea



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LET US KNOW

It is incredible that a wide variety of earth's living organisms exist within the oceans.



Some of the longest flowing rivers in India are the Ganges, Yamuna, Godavari, Krishna and Cauvery.











ACTIVITY

Let us write

Describe a water body that you have visited.

River/ lake/ waterfall/ sea etc.

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Rivers:

Rivers are large streams that flow over the land. They are fresh water bodies which generally orginate at mountainous areas. They usually drain in oceans or seas.

Example: Ganga and cauvery.

Lakes:

A **Lake** is a water body surrounded by land on all sides. They are either fresh or salt waterbodies.

Example: Kolleru lake in Andra Pradesh (fresh water) Sambar lake in Rajasthan (salt water).

Gulf:

Gulf is a deep inlet of the sea surrounded by land with a narrow mouth.

Example: Gulf of kuchch.

Bay:

Bay is a broad inlet of the water body where the land curves inwards.

Example: Bay of Bengal.

Lagoon:

A stretch of salt water separated from the sea by a low sand bank.

Example: Lake Chilika in Odisha.

Strait:

A **strait** is a narrow stretch of water which joins two larger water bodies.

Example: Palk Strait connects Bay of Bengal and Indian Ocean.

Waterfall:

Waterfall forms when a river stream flows from a great height.

Example: Courtallam Waterfall

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LET US KNOW

Sambhar Salt Lake in Rajasthan is one of the important inland salt water lakes in India.



Name some water bodies in your locality. ?

Courtallam Waterfall



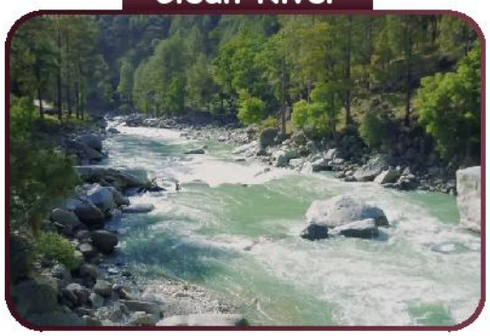
5th Social Science Term II Unit 2.indd 117 02-06-2024 11:23:55



Sundar: We should be very careful about how we use the water. We have the choice to conserve water resources or pollute them further. **Water pollution** is a common phenomenon around us. The garbage that we throw in water bodies makes them impure and not fit for use. This increases the scarcity of water for household use.

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Clean River



Polluted River



Think



Is it correct to pollute our rivers?





Rani: Oh! water scarcity!



Sundar: Yes, We face it too Rani.



Rani: You are right. we should overcome this problem with steps to use water thoughtfully.

Children you can easily do these.

- Take water in a bucket for bathing instead of shower.
- After washing vessels check if the taps are closed.

Can you help Rani to come up with more steps?

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Think



How can we save water?

Sundar: Rani, Do you know water continuously moves on, below and above the surface of the earth?





Rani: Really! How?

Sundar: There is a water cycle that occurs continuously. Water changes its state from solid to liquid, liquid to gas again gas to liquid in this cycle.



The stages involved in a complete water cycle are:

Stage I: Evaporation - The heat energy of the sun falls on the water bodies like oceans, seas, lakes, rivers etc. The water slowly evaporates as vapours into the air.

Stage II: Condensation - As the vapours rise high, the cooler temperatures make them cool down and turn back into liquid. This is called condensation. Wind moves the liquid around, leading to the formation of clouds.

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Stage III: Precipitation - Wind movements cause the clouds particles to collide. They become rain bearing clouds and fall back onto the earth's surface by the process known as precipitation. This may occur in the form of rain, hail, snow or dew depending upon the temperature conditions.

Stage IV: Runoff and Infiltration - The water either runs off into oceans, rivers and ground surface or is absorbed into the soil (infiltration). This cycle continues.

Glossary



Collide : Crash

Phenomenon : Remarkable situation

Scarcity : Shortage



Recap

- Earth is made up of land, water and air.
- Water is necessary for all life forms.
- 3% of water is fresh water that is found in ground, lakes, ponds, streams and rivers .
- There are five major oceans in the world: The Pacific, Atlantic, Indian, Southern and Artic ocean.
- Waterfall forms when river falls from great height.
- We should use water carefully.

5th Social Science Term II Unit 2.indd 121 02-06-2024 11:23:56



EVALUATION



I. Choose the correct answer.

1. Hydrosphere is the total amount of _____ present on earth.
   a) Air b) Water c) Land d) Plants

2. Find the odd one.
   a) Ganga b) Atlantic
   c) Arctic d) Pacific

3. Water body that is surrounded by land on all side is called _____
   a) River b) Gulf c) Lake d) Bay

4. Evaporation is the _____ stage of the water cycle.
   a) First b) Second c) Third d) Fourth

5. _____ is a broad inlet of the water body where the land curves inwards.
   a) Sea b) Strait c) Bay d) Pond

II. Match the following.

1	Fresh water	Sambhar lake
2	A lagoon	Palk Strait
3	Joins Indian Ocean and Bay of Bengal	Formation of cloud
4	Inland salt water lake	Chilika in Odisha
5	Condensation	Kolleru lake

III. Write True or False.

1. About 97% of water on the earth is salt water. ( )
2. Water is not necessary for our basic needs. ( )

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3. Water in the sea is sweet. ( )

4. We should keep the tap open throughout while washing utensils. ( )

5. We should save water. ( )

IV. Answer the following.

1. Define Hydrosphere.
2. Why is Hydrosphere important?
3. Name the different types of water bodies.

V. Answer the following in detail.

1. What are the different stages of water cycle?
2. Give few steps to save water.











FUN WITH ACTIVITY

PROJECT

Collect pictures of water bodies and write one sentance about each.

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UNIT

3

Continents of the world



Learning objectives



Students can :

- describe the key features of each continent.
- know about some countries in each continent.

DAQJG

Introduction

Where do we all live? We all live on the **Earth**. Earth is our home. The total land on the earth is formed of **seven continents** of various sizes. Some are connected to each other while others are not. Each continent has different number of countries. The seven continents of the world are: **Asia, Africa, North America, South America, Antarctica, Europe and Australia.**

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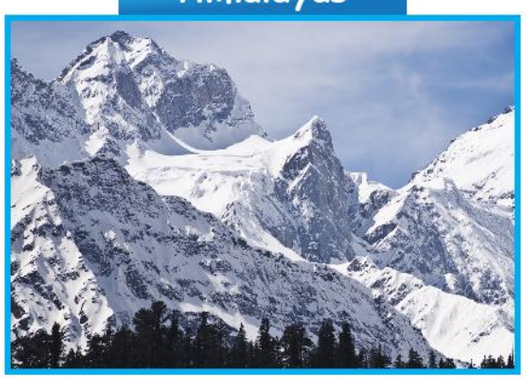


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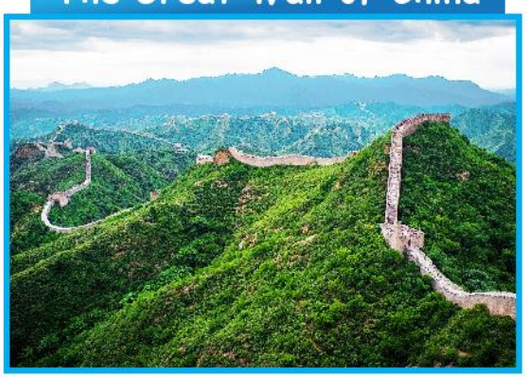
Asia

Asia is the world's largest continent in size and population. The world's two most populous countries, **China** and **India** are in Asia. The Mount Everest which is in the Himalayas, is the highest point on the earth. It is located in Asia. Asia is the birth place of great ancient civilisations: **Indus civilisation, Chinese civilisation** and **Mesopotamian civilisation.**

Himalayas



The Great Wall of China





The Great Wall of China is the only man made structure that can be seen from space.



Millions of years ago, the seven continents of the world were joined together as a single huge landmass called **Pangaea.** But it slowly broke apart and separated as seven continents.

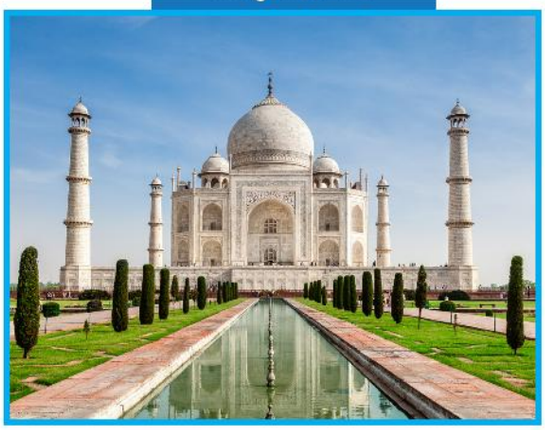
Some other countries in Asian continent are **Japan, Singapore, Malaysia, Saudi Arabia, Sri Lanka, Nepal, Pakistan, Maldives,Philippines, Afghanistan, Thailand and Indonesia.** Now let us learn more about our country which is the part of Asia.

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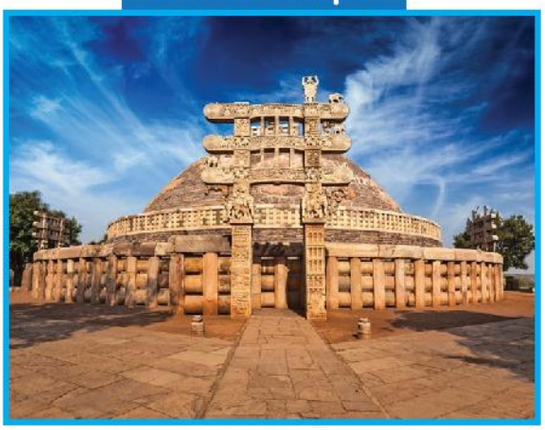
India

India is our country. India is known as the Land of **unity in diversity** as people from different religions, languages, cultures live together. India has 28 states and 8 union territories. New Delhi is the capital of India. India has several historical monuments. **Taj Mahal** is one such monument. It is situated in Agra on the bank of river Yamuna. Taj Mahal is built completely using white marble stones. This most beautiful monument is recognised as one of the seven wonders of the world.

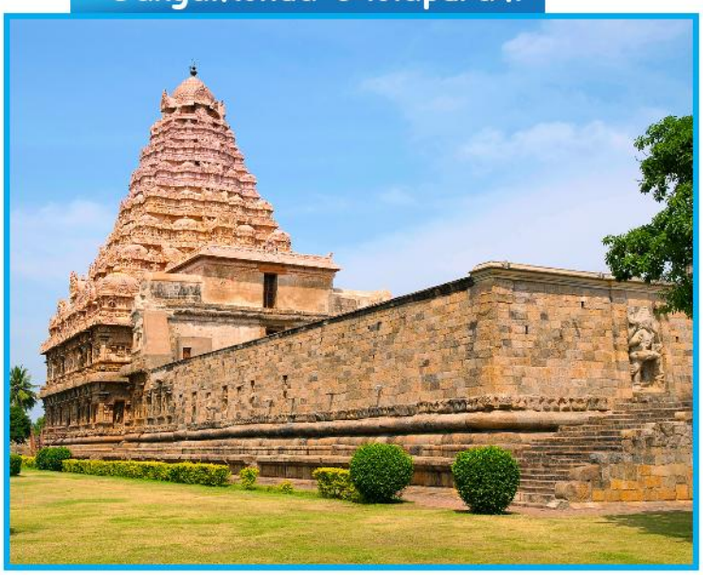
Taj Mahal



Sanchi Stupa



GangaiKonda Cholapuram



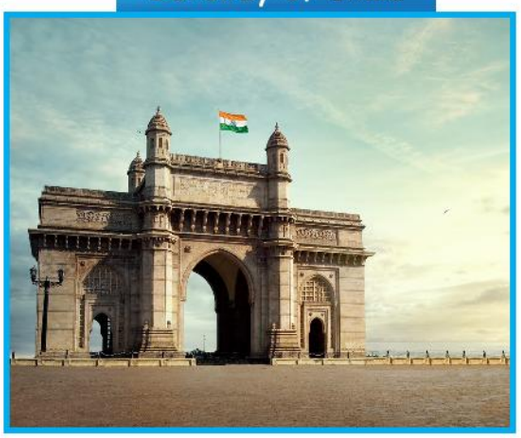
St George Fort



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Other historic monuments in India include **India gate** in New Delhi, **Sanchi Stuba** near Bhopal, **Gateway of India** in Mumbai, **St George fort** and **GangaiKonda Cholapuram** in Tamil Nadu.

Gateway of India



India gate





ACTIVITY

Let us Paste

Collect and paste pictures of seven wonders of the world.

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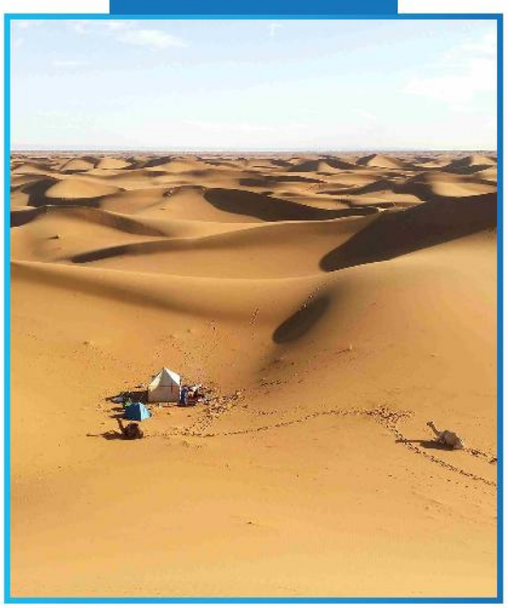
Africa

Africa is the second largest continent of the world. The world's longest river the **Nile** and the world's largest desert the **Sahara**, both are situated in Africa.

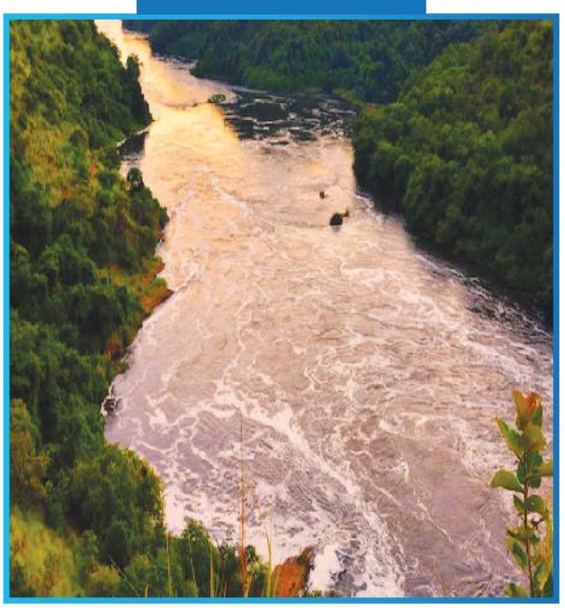
More than 50% of the world's **gold** and **diamonds** come from the mineral rich continent of Africa.

Some of the countries in African continent are: **Sudan, Libya, Egypt, Kenya, Zimbabwe, Ethiopia and Guinea.**

Sahara



Nile River





The continent was uninhabitable (Not fit for habitation) and remained unknown for thousands of years, earning the name **Dark Continent.**

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North America

North America is entirely within the Northern Hemisphere. North America is the third largest continent by area, following Asia and Africa.

The largest fresh water lake, **Lake Superior** is located in this continent. The **Mississippi - Missouri,** is the fourth longest river in the world, located in North America. The world largest mountain range **Rockies** are located in North America.

Some of the countries in North American continent are: **Canada, Mexico, Nicaragua, Honduras, Cuba, Guatemala, Panama, Costa Rica** and **United States of America.**

New York (America)



Ottawa (Canada)



LET US KNOW

North America is the only continent in the world that has **all climatic types.**

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South America

South America is located mostly in the Southern Hemisphere and a small portion in the Northern Hemisphere. **Amazon** is not only the largest river, but also the second longest river in the world. It is flowing in South America. **Brazil**, a country in South America, is one of the largest coffee producer in the world. **The Andes** are the world's longest continuous mountain ranges located in South America. They are also the second highest mountain ranges in the world. **Andes** are example of fold mountain. **Mt. Aconcagua** is the highest peak in the **Andes.** One of the highest volcanoes of the world, **Mt. Cotopaxi** is found in this continent.

Some of the countries in South American continent are **Argentina, Bolivia, Brazil, Colombia, Ecuador, Paraguay, Peru, Uruguay** and **Venezuela.**

Andes



Mt. Cotopaxi





The **Amazon rainforest** covers most of the Amazon Basin in South America.

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Antarctica

Antarctica is the coldest continent on the Earth. It is also called the White Continent or the Frozen Continent.

Antarctica experiences half a year of sun light and half a year of complete darkness. Penguins are found in Antractica.

There are many research stations from different countries in Antarctica.

Penguins in Antarctica.



LET US KNOW

Bharati and **Maitri** are the active Indian research stations in Antarctica. India's first research station **Dakshin Gangotri** is used as a supply base.



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ACTIVITY

Let us write

Write the name of the country and its continent in the table below.

Sl.No	Country	Continent

Europe

Europe and **Asia** are parts of the same major landmass called **Eurasia**. Europe is separated from Asia by the Ural mountains and the Caspian Sea. The world's smallest country, the **Vatican City**, is in Europe. **Volga** is the longest river in Europe. Europe is considered a desertless continent.

Some of the countries in European continent are: **France, Spain, United Kingdom, Germany, Norway, Austria, Greece, Spain, Portugal and Italy.**

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LET US KNOW

Finland, in Europe, is called the **'Land of Lakes'** because melting ice sheets have created a lot of lakes here.

Vatican City (Italy)



London (England)



LET US KNOW

Russia, the country stretches over a vast expanse of Eastern Europe and Northern Asia.



Ukraine's Steppe region is called the **Bread Basket of Europe** because it produces a large amount of wheat.

Think



Which state is called the **Bread Basket of India?**

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Australia

Australia is the Island continent covered by a single country with unique landscapes and natural wonders. Australia is also called smallest continent. **The Great Barrier Reef,** the pride and joy of Australia is the world's largest barrier reef system and it is made up of over 2,500 individual reefs and visible from space. Australia includes the islands of **Tasmania** and **numerous small islands.**

The Great Barrier Reef



Kangaroo



Glossary



Civilisation : A society in an advanced state of social development.

Island : Land surrounded by water.

Monument : A building that is of historical importance and preserved as public property.



Recap

- The total land on the earth is formed of **seven continents** of various sizes.
- The names of the seven continents of the world are: **Asia, Africa, North America, South America, Antarctica, Europe and Australia.**

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EVALUATION



I. Choose the correct answer.

KM4VX

1. There are_____ continents in the world.
   a) Five b) Seven c) Nine
2. The largest continents is_____.
   a) Africa b) Asia c) North America
3. _____ is the longest river in the world.
   a) Kaveri b) Ganga c) Nile
4. Lake Superior is located in _____.
   a) North America b) Australia c) Europe
5. Penguins are found in _____ continent.
   a) Asia b) Antarctica c) Africa

II. Match the following.

1	Asia	Vatican city
2	Africa	Amazon rainforest
3	Europe	Sahara desert
4	South America	Kangaroo
5	Australia	Biggest continent

III. Write True or False.

1. Asia is the third largest continent. ( )
2. India has one of the seven wonders of the world. ( )
3. Brazil is one of the largest coffee producer in the world. ( )
4. The great barrier reef is in India. ( )
5. Antarctica has half year of light. ( )

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IV. Answer the following.

1. Name the continents of the world.
2. Where is the Taj Mahal located ?
3. Describe North America's important features.
4. Which continent is called the Frozen continent?
5. Where is the Great Barrier Reef located?

V. Answer the following in detail.

1. Write about any two continents.
2. Write a note on the monuments of India.
3. Give a detail study of Australia.









PROJECT



Stick the flags of any five countries.

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