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STANDARD FIVE

Term - I

Volume-2

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SCIENCE
SOCIAL SCIENCE

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MATHEMATICS

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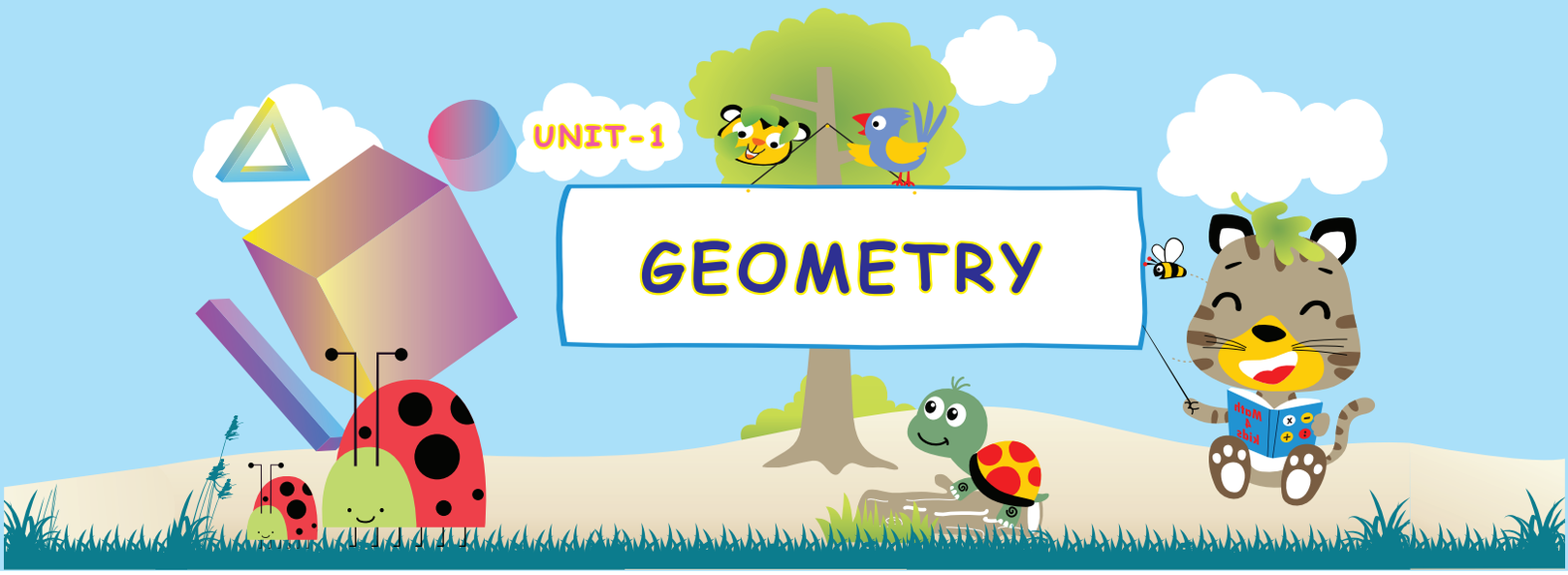


1.1

Able to get the feel of 2-Dimensional perspective while observing drawings of 3-Dimensional objects.

U6IA44

We can identify 2-D and 3-D objects in our day-to-day life.

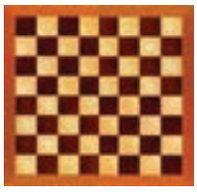


Recall: 2-D shapes

Any shape that can be laid on a flat surface is a 2D-shape.

Examples of 2-D shapes



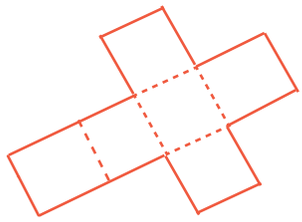



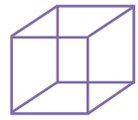
3-D Shapes

3-D Shapes are solid objects that have three dimensions. These dimensions are length, width and height.

Examples of 3-D shapes

1.1a Draw 3-D shapes from 2-D Shapes



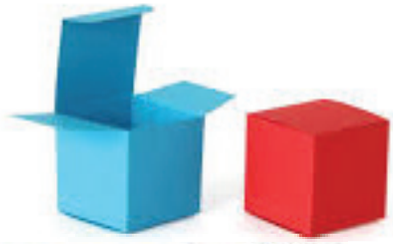


Cube

Properties/characteristics:

- It is a 3-D shape
- It has six faces
- All sides are equal.
- It has 8 vertices and 12 edges.

Examples:



Examples:

Cuboid

Properties/Characteristics

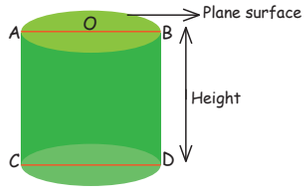
- It is a 3-D shape
- It has six faces
- It's opposite sides are equal
- It has 8 vertices and 12 edges.

Cylinder

Properties/Characteristics

- It is a 3-D shape
- Two bases lie in upper and lower surfaces in a cylinder.
- Height is the distance between the two bases.

Examples:



OA = OB = OC = OD Radius
AC = BD = height

Sphere

Properties/Characteristics

- It is a 3-D shape
- It has one surface
- All points on the surface are at the same distance from the center
- It has no vertices and edges

Examples:

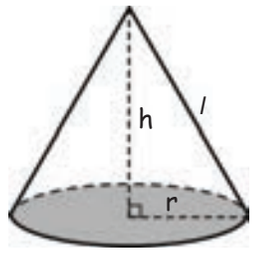
OA-radius
O-Center point

Cone

Properties/Characteristics

- It is a 3-D Shape.
- Base of a cone is circular.
- The distance from the top of the cone to the center of the base is called as height.
- The distance from the apex to any point lying on the circumference of base is called as slant height.
- The height and slant height are not equal.

Examples:



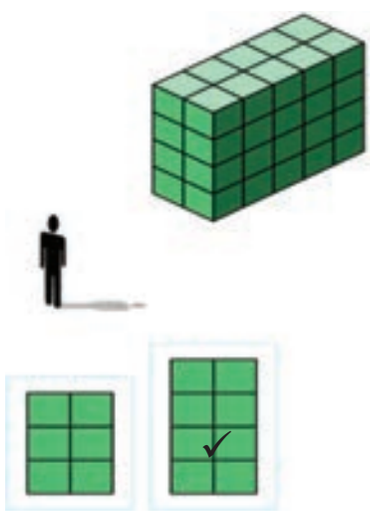
l-slant height
h-height
r-radius

Activity

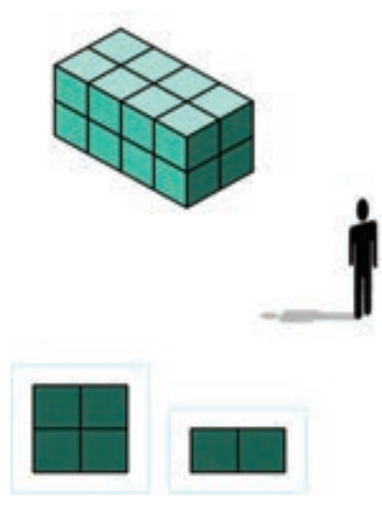
Write the 3-D shapes lying around us

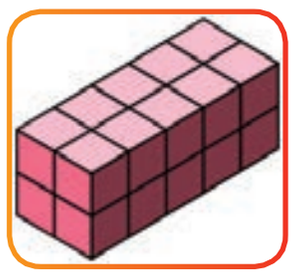
S. No	Objects	shapes	Sides	Corners
1	Dice	Cube	6	8
2				
3				
4				
5				

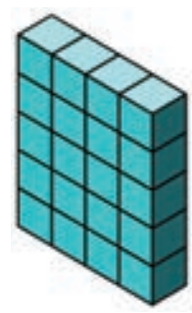
What will you observe, if you look at this object from the front?



What will you observe, if you look at this object from the sideways?







Answer

Answer

Exercise 1.1a

1. Match the following

1. 
2. 
3. 
4. 
5. 

Cuboid

Sphere

Cone

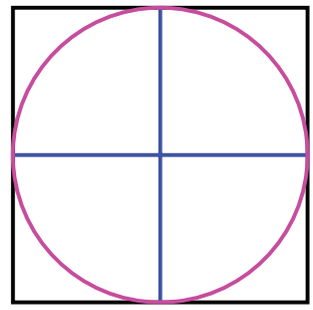
Cylinder

Cube

2. Write/Find True or False

1. Cube is covered by 6 squares. _____
2. The height and slant height of the cone are equal.
   _____
3. The Cuboid has 7 vertices. _____
4. Two bases lie in upper and lower surfaces of a cylinder.
   _____
5. Sphere is a 3-D Shape. _____

1.1b Able to explore rotations of familiar 2-D Shapes intuitively.



Draw two vertical lines in a white paper.
(**By paper folding method**)

Draw a circle with radius 6cm in a chart. Then Cut the circle from the chart. Fold it into four equal parts and spread again. Draw/paste four pictures on the circle as shown in the figure.

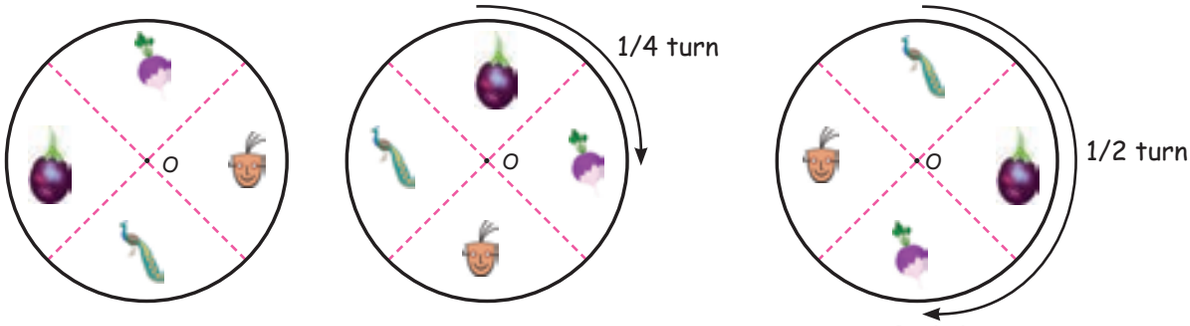


fig (i) fig (ii) fig (iii)

Fix/put the round chart on the white paper by using a pin in center.By rotating the chart we observe that two vertical lines and the center point will lie at the same point. Look at the changes occurred, when the chart is rotated.

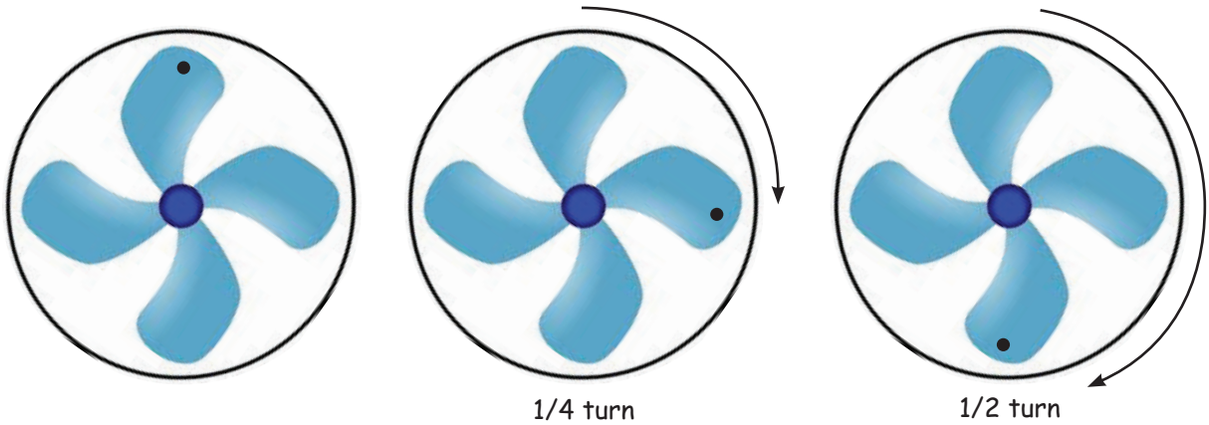
Turn the round chart as shown in the figure (ii). The picture in figure (i) is changed, as in figure (ii) This change is called as "rotation:. "O" is the "center". When we compare the figures (i) and (ii) the pictures are changed as one-fourth turn. When we rotate the chart as shown in the figure (iii) the pictures are changed as half-turn.

To Observe

- When we rotate, the shapes are rotated.
- The images are rotated depending on the point.
- The point is called as "Centre of Rotation"

Think it

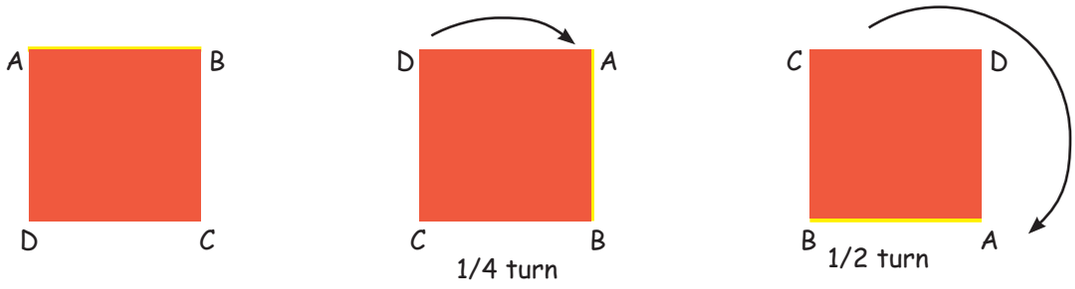
Is there any changes to the wings of the ventilater fan, after rotating one-fourth turn and half-turn.



1/4 turn 1/2 turn

Example

Let's see the rotation of the square.



Exercise 1.1b

1. Among the following shapes, find out which one would look the same after one-fourth turn. put a (✓) mark.

2. Among the following letters, find out which one would look same after half turn.

X, H, A, N, B, O, J, I, D, S

3. Find the numbers which will look same on a half-turn.

1 2 3 4 5 0 8

4. How the following numbers are changed after half-turn.

8 8 8 8 8 _____

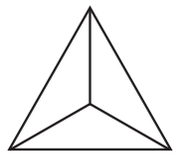
1 0 1 0 1 _____

1 1 1 1 1 _____

8 0 8 0 8 _____

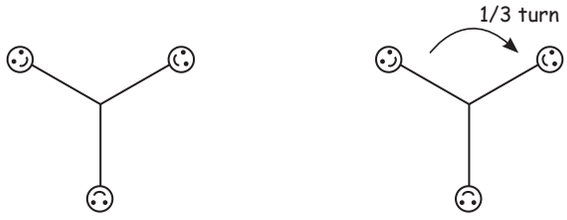
Project:

Prepare, a Gallery of 5 pictures after one fourth and half turns, and show it to your teacher. From the Gallery, prepare a table, that which looks the same after one fourth and half turn rotations.



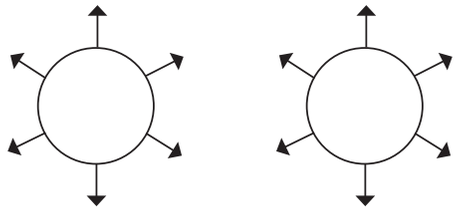
1/3 a turn:

Example: The following picture will look same on 1/3 of a turn.



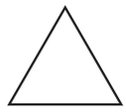
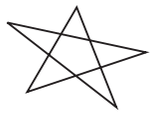
1/6 a turn:

Example: The following picture will look same on 1/6 of a turn.



Practice

1. Look at the following shapes. Draw that how will it be changed after 1/3 and 1/6 of a turn?

S. No	Shapes	1/3 a turn	1/6 a turn
1			
2			
3			

Project:

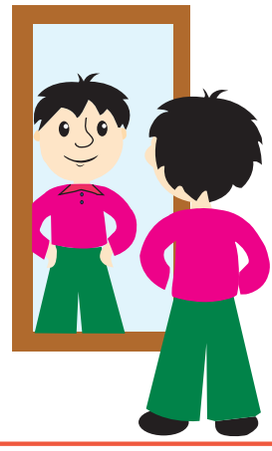
Prepare a Gallery by drawing the various numbers, pictures, Rangoli which will be occurred in 1/3 a turn, 1/6 a turn and show it to your teacher.

Think it

Find the only English alphabet which will not change its shape after $\frac{1}{4}$, $\frac{1}{2}$, 1/3, 1/6 a turn rotations?

1.1c Able to explore reflections of familiar 2D shapes intuitively.

Activity



While standing infront of a mirror, see your image.

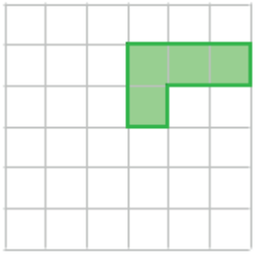
Observe your image in the mirror when moving back and coming front to the mirror again. What do you infer?

1. Your image in the mirror is _____ (bigger, smaller, same size)
2. When you go back, your image is moving _____ (backward, forward)
3. The distance between you and mirror and the distance between you and your image is _____ (equal, unequal)
4. When you come forward to the mirror, your images is moving _____ (forward, backward)

5 When you raise your right hand, the image in the mirror looks like, _____ hand is raising. (right, left)

6 When you raise your left hand, the image in the mirror looks like, _____ hand is raising. (right, left)

7 Look at this shape:

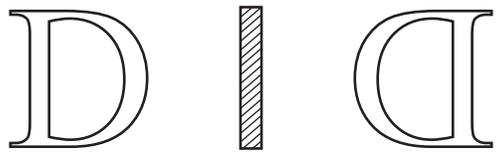


which image shows a reflection? ✓ the answer given below

A B C

Do it yourself:

- Take a mirror. Draw a line in the white paper by using a pencil and place it before the mirror.
- Take a paper draw 'D' and put it in front of the mirror. Observe the image of alphabet 'D' in the mirror.
- If we consider the alphabet 'D' as a "Object". 'ᗡ' is the "image". This event is called Reflection.



Now remove the mirror. The line drawn by pencil is called as the "reflection axis."

Observe:

- The object and image in the mirror are equal in size.
- The object and image are at equal distance from the reflection axis.
- If direction of the object is left to right then the direction of the image on the mirror will be from right to left.

Try yourself

Draw some of your favorite shapes and draw its reflection images on a chart and show it to your teacher.

Let's Enjoy it:

Take a paper in the shape of rectangle and fold it into two equal parts. Drop a thread in the ink-pot and drag it into the folded sheet. Now open and see the folded sheet. What do you see?

Are the designs on both the sides of the folded paper look alike?

Observe the changes of designs and express your ideas/results to your teacher.

1.1d Able to explore symmetry in familiar 3-D shapes like in alphabets intuitively.

For example, if we cut an apple into two equal halves, we observe that two parts are in symmetry.

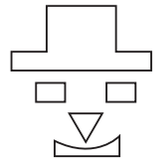
Symmetry is an important geometrical concept commonly seen in nature and is used in every field of our life. Artists, manufactures, designers, architects and others make use of the idea of symmetry.

Symmetry refers to the exact match in shape and size between two halves of an object.

When we fold a picture into two halves, and if both the halves match exactly then we say that the picture is symmetrical.

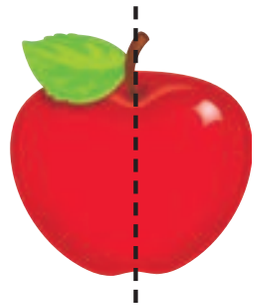




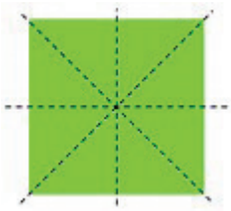


Line of symmetry:

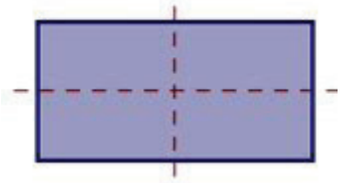
When a line divides a given figure into two equal halves and it matches exactly, then we say that the figure is symmetrical about the line. This line is called the line of symmetry or axis of symmetry.



Example



4 lines of symmetry: We can divide a square in 4 ways symmetrically.

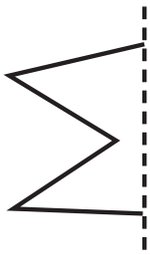


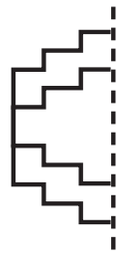
2 lines of symmetry: We can divide a rectangle in 2 ways symmetrically.

Project:

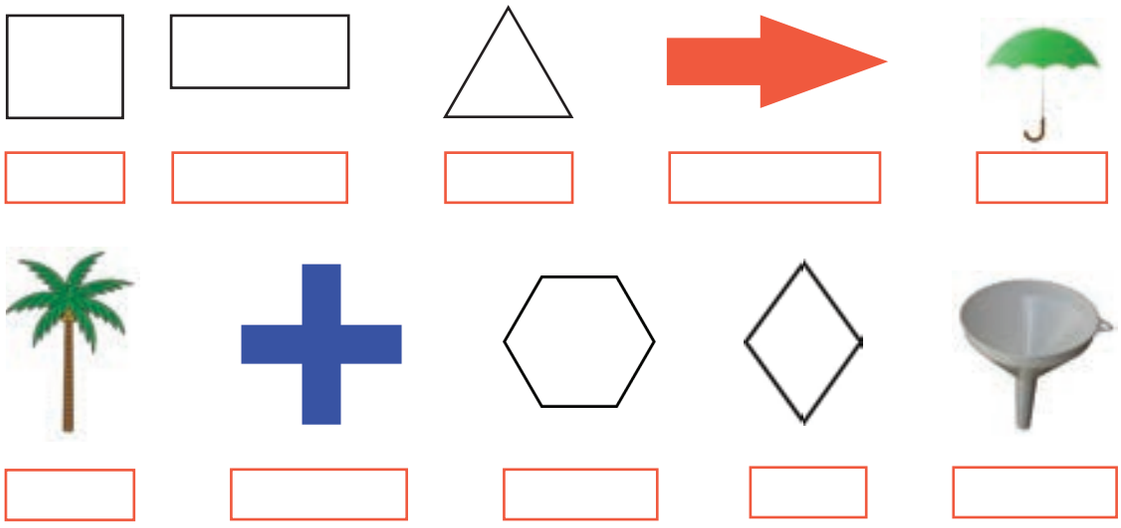
1. List out 2 symmetrical objects that you know.
2. Tick the picture which is symmetrical.

3. Complete the other half to make the given figure symmetric.





4 Draw the lines of symmetry for the following figures.



Think it

1. Can we divide the irregular solids, symmetrically? If no why?
2. Write the english alphabets that can't be divided symmetrically?
3. Write the english alphabets which are divided symmetrically?
4. Circle has many lines of symmetry. Is it true? why?
5. Find the three numbers between 1 and 9 that can be divided symmetrically.
6. Find two numbers between 1 and 9 with two lines of symmetry.

Do you know?

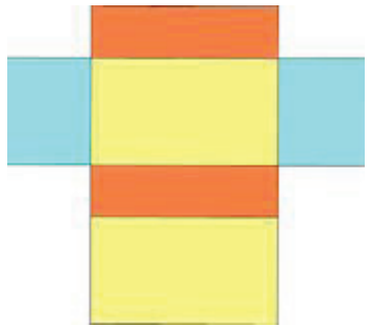
Tajmahal in Agra is a symmetrical monument.

Project:

Write down 26 English alphabets in a chart. Draw the lines of symmetry for the letters. Circle the remaining letters that are not symmetrical.

1.1e Able to make the shapes of cubes, cylinders and cones using nets especially designed for this purpose.

Nets of cuboid:



Open out a match box and layout on the white paper. Draw the base sides of the match box.

Teacher: Do you see, "How many sides are there in a match box?'

Student: yes sir. There are 6 sides.

Teacher: You are right. Can you assemble/create it after dissemble?

Student: Yes sir.

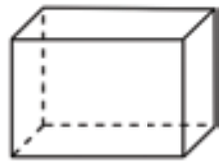
Teacher: Good

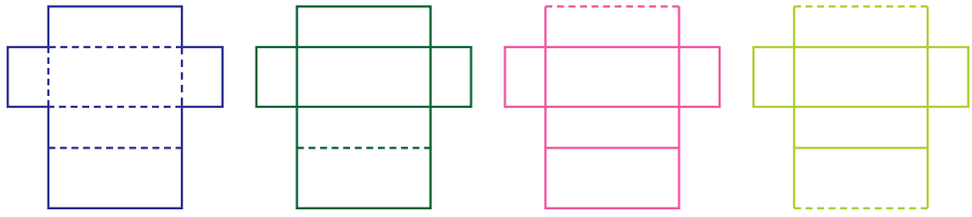
The net is a two dimensional shape and it always forms three-dimensional shape.

A net is a two dimensional figure which can be folded to form a three dimensional figure.

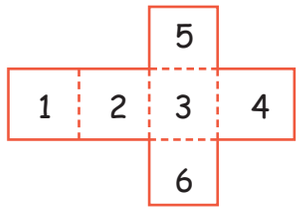
Try these

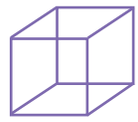
Find out which of these can be made into a box by folding along the dotted lines. Put a tick mark for the correct option.





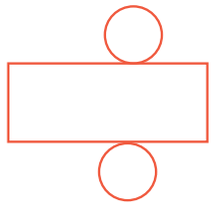
Net of a cube:

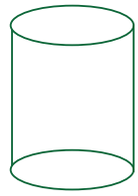




Fold squares along the dotted lines. Hence six equal squares from the net of a cube.

Net of a cylinder:



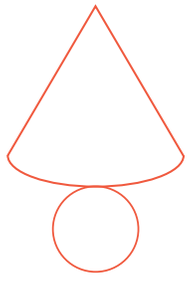


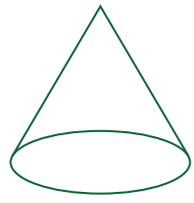
Consider a rectangle and two equal circles. This net thus formed is a cylinder.

Join the two edges of a rectangle breadth wise in such a way that the length of the rectangle forms the boundary of one circle at the top and other circle at the bottom.

The length of the rectangle forms the boundary of the circle. Both of them are equal in length.

Net of a cone:





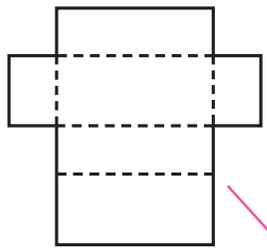
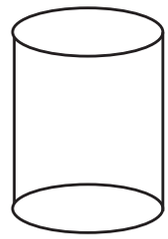
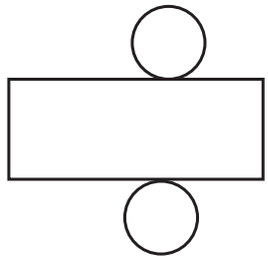
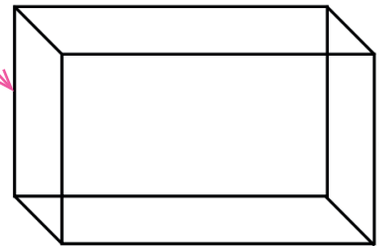
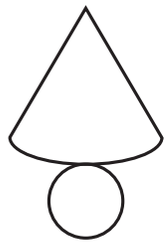
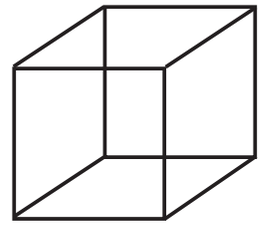
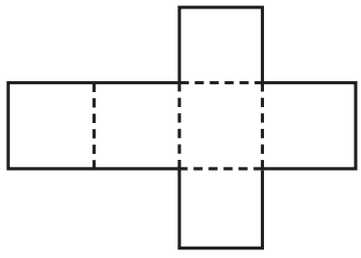
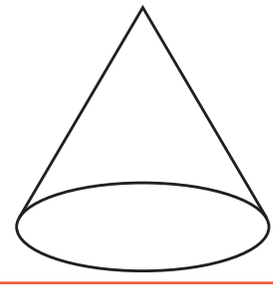
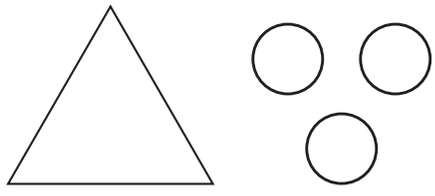
Look at the figure.

Join both the portion of a circle in such way that the arc of the circle falls on the boundary of the circle attached at the bottom.

The length of the arc forms the boundary of the circle. Both of them are equal in length.

Activity

Match the net with the shape you will get by folding.

1		
2		
3		
4		
5		
6	Two dimensions	Shape Cannot be formed.

1.2 Introduction of Angles

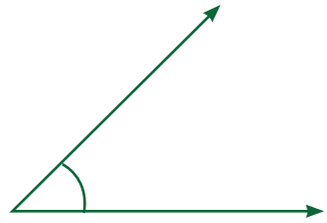
1.2a To get the feel of an angle through observation of objects and by paper folding:

Bridges, buildings, cell phone towers, wings of planes, bicycles, windows doors and things around us have angle in them.

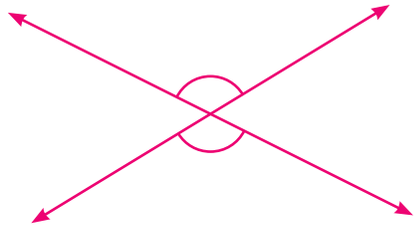



Angle:

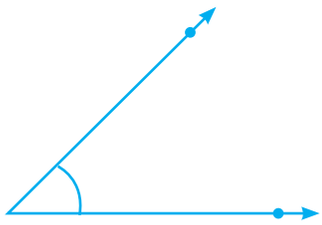
The figure formed by two rays/ with a common point is called an angle.



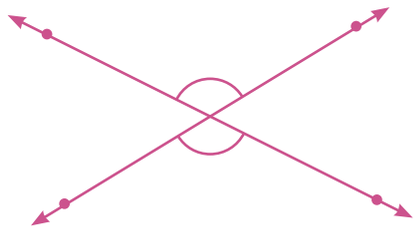
Angle formed by meeting of two rays



Angle formed by intersection of two rays.



Angle formed by meeting of two line segments

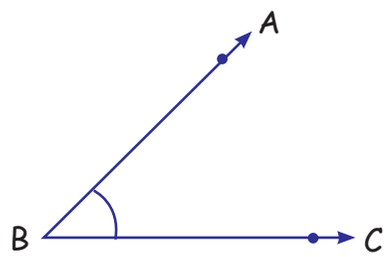


Angle formed by intersection of two line segments

Teacher : What does this the picture show?

Ramu : This picture shows an angle. Does angle have name sir?

Teacher : Yes. Angles have names. Can you see two line segments in this picture? Read the names of that.



Ramu : Sir, This angle has two line segments. They are BA and BC.

Teacher : Which is the common point of the two line segments?

Ramu : B is the common point.

Teacher : These two line segments make an angle. Common point B is vertex. BA&BC are arms of the angle.

Ramu : Then how can we name the angle in the picture?

Teacher : An angle is mentioned by three alphabet. The centre letter of the angle denotes the vertex.

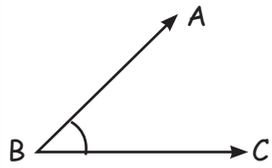
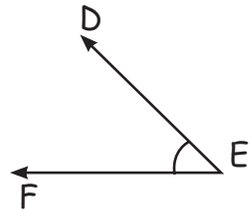
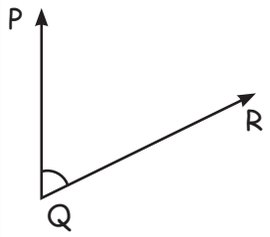
Ramu : Then, ABC is the name of the angle. Am I right sir?

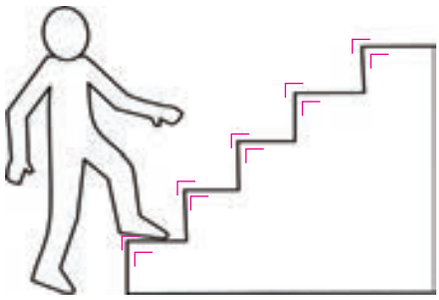
Teacher : Yes, We should mention the angle as angle ABC.

Ramu : Sir, can we write angle CBA instead of angle ABC.

Teacher : Surely. Angle ABC and Angle CBA are same. We use this symbol $\angle$ for angle.

So we can write angle ABC as $\angle$ ABC.

Picture for angle	Name of the angle	Vertex	Two arms of angle
	$\angle$ABC or $\angle$CBA	B	AB and BC
	?	?	?
	?	?	?



Angle between ground and stair case

Angle between ladder and ground

Angle between branches of a tree

Angle in a electric pole

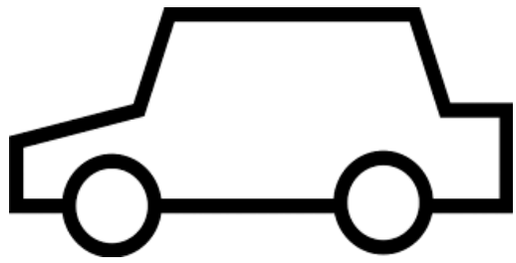
Angle in a bicycle

Angle in a house

Angle in a clock

Find:

In this picture, mark the angles formed inside and outside by using colour pencils.



project:

Collect some pictures having angles, and paste the same in a chart. Draw some angles by using pencil and show it to your teacher.

Activity

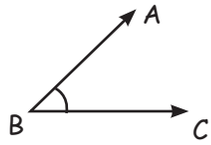
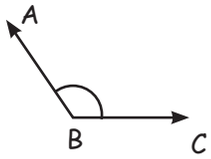
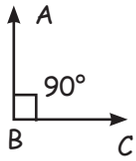
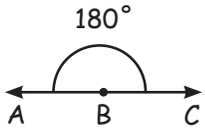
Look at the angles formed by your elbow and draw them as stick picture and show it to your teacher. Please share it with your friends and check.

Word and meaning:

The word angle came from the Greek word "Angilos". It means curved and not straight. Ankle is the place where knee and leg foot is joined.

1.2b Able to learn the names of angle like acute, obtuse and right angle:

We can create the various angles by combining the two wooden frames. Let us see the picture given below, from these shape we can find the types of angles.

Sl. No.	Picture	Type of angles	Definition
1		Acute angle	Greater than 0° less than 90°
2		Obtuse angle	Greater than 90° less than 180°
3		Right angle	Exactly 90°
4		Straight angle	Exactly 180°

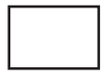
Write the angles generated in the following items. (Obtuse angle, acute angle, right angle)

_____

_____

_____

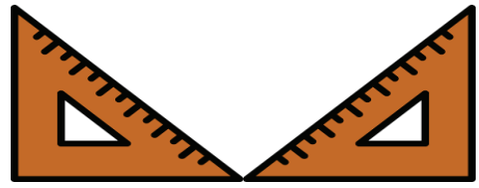
Try this



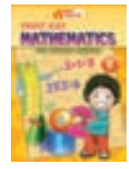
1.2c Able to identify right angles in the environment:

Ram is trying to cut a rectangular piece of wood, from a wooden board. Ram used a tool to cut sides of the rectangle. We call this device as set square.

We can see two set squares in a Geometry Box. It has 90° each.



Examples of right angles:



Do Yourself

Draw 5 objects with right angle.

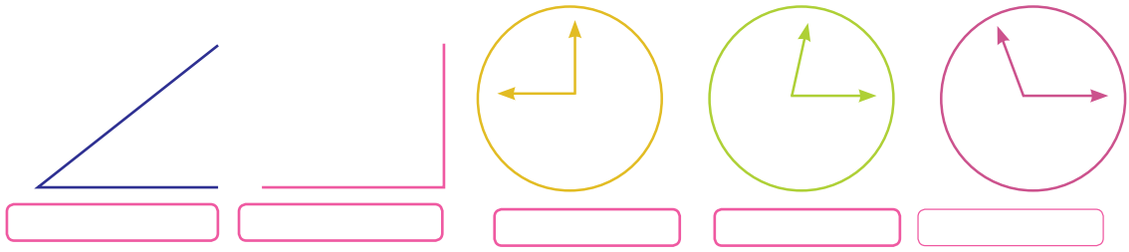
Classify the angles as acute, obtuse and right angle.

Try these

Classify the following angles

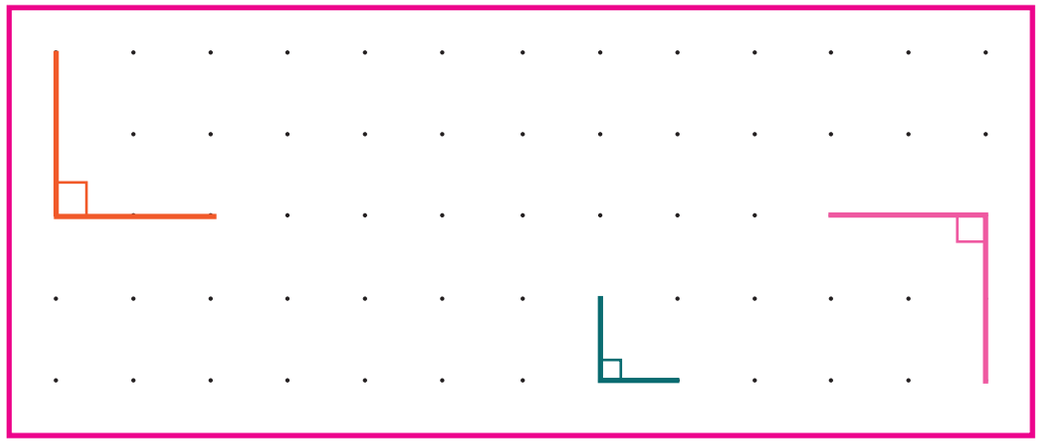
30°, 45°, 60°, 90°, 120°, 130°, 170°, 75°

Observe the following pictures and write the name of the angles in their box.



Activity 1

Draw right angle, acute angle and obtuse angle by tracing.



Project (Art and Craft)

1. Form the angles acute/obtuse/right angle by cutting/folding the papers and paste it in a chart.
2. Write the names of the flowers or animals (or) birds in English capital letter and mention the angles in it.

GIRAFFE

PEACOCK

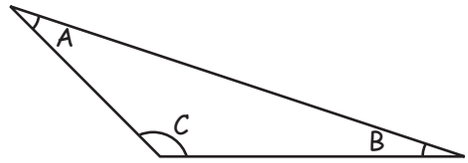
SUNFLOWER

Exercise 1.2

7354SZ

1. The angles below 90° are called as _____
2. The angles above 90° are alled as _____
3. By joining two right angles _____ angle is formed

4. The obtuse angle in ΔABC is _____



a. $\angle A$ **b.** $\angle B$ **c.** $\angle C$

5. Hand of a clock at 3.20 shows _____ angle.

6. In the following letters, which one forms the right angle?

_____

a. L **b.** K **c.** Z **d.** N

7. Circle the right angle.

a.  **b.**  **c.**  **d.** 

8. The angle shown in this picture is

a. more than 120° **b.** Less than 45°

c. more than 180° **d.** 90°

9. The angle formed by the nail cutter is _____

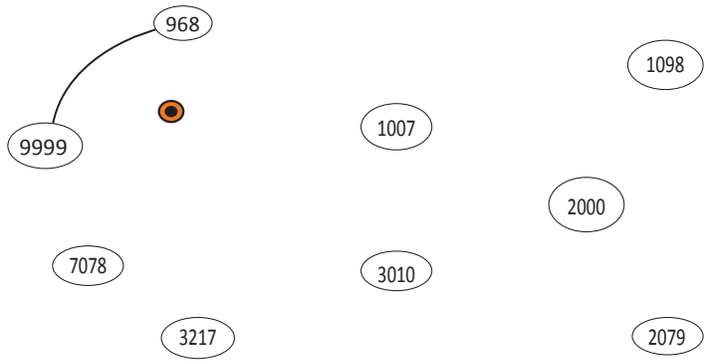
10. Name the angles formed when, the vessels are lifted by tongs in the kitchen.

IYQYHV

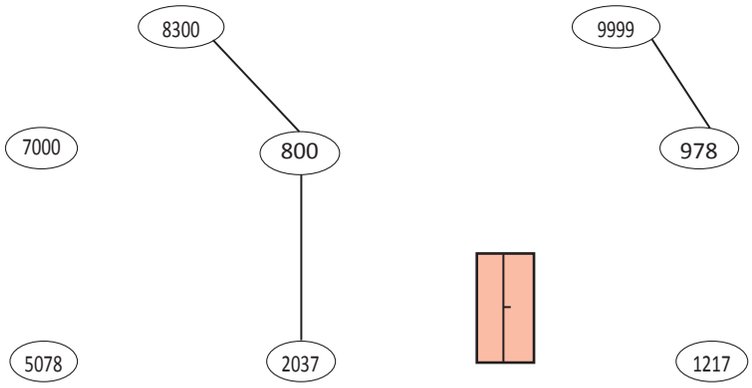
2.1 Numbers beyond 10000.

Recall:

1. Joint the numbers in descending order to get a picture.



2. Joint the numbers in ascending order to get a picture.



2.1 The uses of numbers beyond 10000 in real life situation.

Introduction

The price of television is ₹ 18, 500, the price of cell phone is ₹ 15,250 the price of LPG cylinder is ₹ 975, the price of wooden cot is ₹ 30,000 the price of car is ₹ 4,50,000 the price of bicycle is ₹ 5,250 and the price of pen is ₹ 115.

Tabulate the above data for price more than ₹ 10,000 and the price less than ₹ 10,000.

More than ₹ 10000	Less than ₹ 10000

We have learnt upto 10000 in the fourth standard, Now let us know more than 10000

Fill in the table from 10001 to 10100

10001	10002	10003	10004	10005	10006	10007	10008	10009	10010
10011							10018		
10021									
10031				10035					
10041						10047			
10051									
10061					10066				
10071									
10081		10083							
10091									10100

Activity 1

Add up to ten in the table and practice orally

10010	10020	10030	10040	10050	10060	10070	10080	10090	10100
10110									
10210								10290	
10310									
10410									
10510									
10610		10630							
10710						10770			
10810									
10910									

Exercise 2.1

a) 10,101 ; 10,102 ; 10103; ---------- ; ---------; ---------; ---------

b) 10220 ; 10230 ; ----------; ----------; ----------; 10270

c) 10920 ; ----------; ---------- --; ----------; 10960 ; ----------

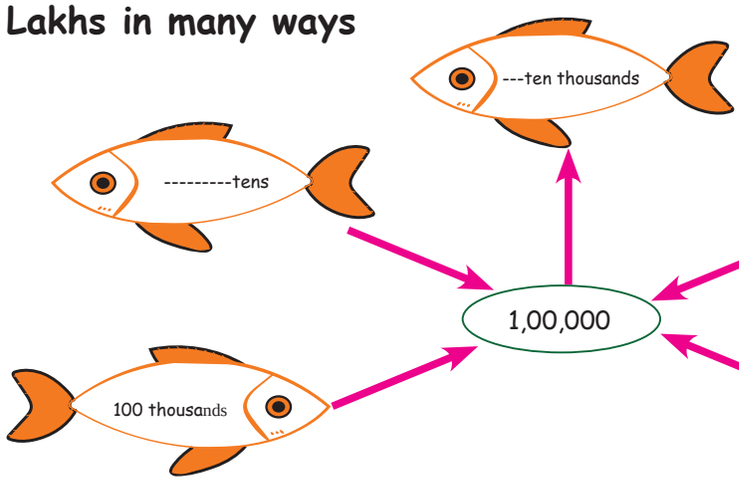
d) 11,101 ; 11,102 ; 11,103 ; ----------; ----------; ---------; -------

Let us Know

9999	9999+1	10000	Ten thousand
99999	99999+1	100000	Lakh
999999	999999+1	1000000	Ten lakhs
9999999	9999999+1	10000000	crore

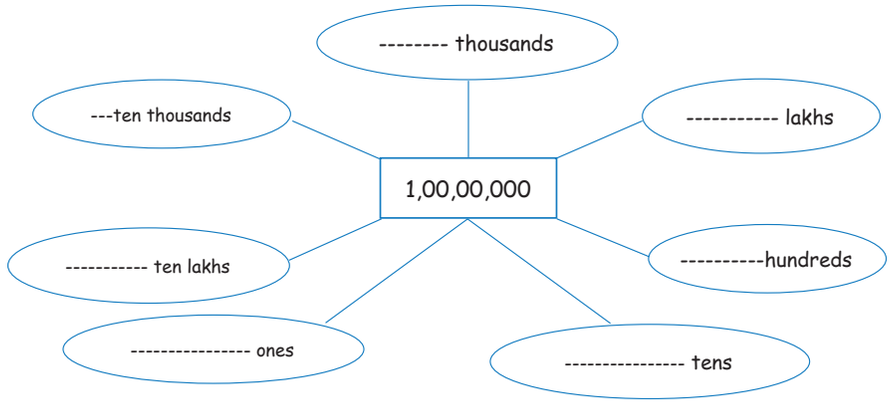
Activity

Lakhs in many ways



Do You Know?
The number of hundred zeroes after 1 is called **Googol**

Crore in many ways



2.2 Place value and comparison of numbers

2.2a Place value chart

Fill the correct numbers in the following table.

	Crore	Ten lakhs	lakhs	Ten thousands	thousands	hundreds	Ten's	ones
In one crore	1	10	100	1,000	10,000	1,00,000	10,00,000	1,00,00,000
In ten lakhs		1						
In one lakh			1					
In ten thousand				1				
In one thousand					1			

Let us learn to use Abacus

Example:1

The abacus shows the number: 7,341.

Number name: Seven thousand three hundred and forty one.

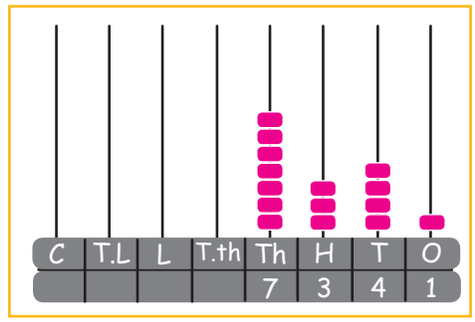
Expanded form: 7 thousands + 3 hundreds + 4 ten +one

= 7000+300 +40 + 1

= 7 x 1000 + 3 x 100 + 4 x 10 + 1

Try this

Add 4 tens 2 thousands to this number 345678.



Activity: 1

The above Abacus shows the number 34,284

Number name: Thirty four thousand two hundred and eighty four.

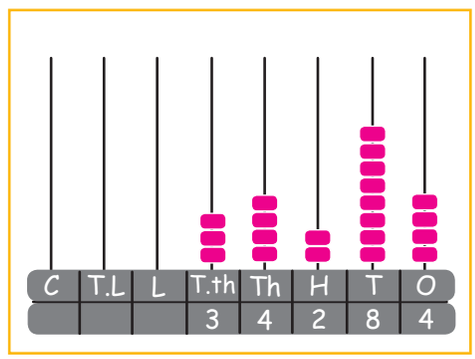
Expanded form: 3 Ten thousands + 4 thousands +2 hundreds + 8 tens + 4 ones.

= 30,000 + -------- + 200 + ----- + ---

= 3 x 10000 + 4 x ------- + 2 x 100+ 8 x ------ + --- x 1

Abacus:

Abacus is a counting device that consists of a frame holding rods on which a specific number of beads are free to move, each rod denotes place values such as units, tens, hundreds, etc...



Activity: 2

Number:----------

Number name: ----------

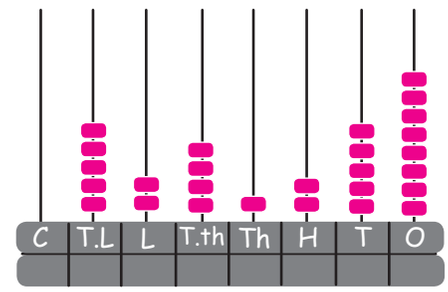
Expanded form: 5 ten lakhs + -----lakhs+ ---- ten thousands +1 ---

---------+ 2 ---------- +5 tens + -----ones

= 5000000 + ---------- + 40000 + ----------+ 200 + 50 + 8.

Try this

How many thousands are there in 3,45,789?



Example:2

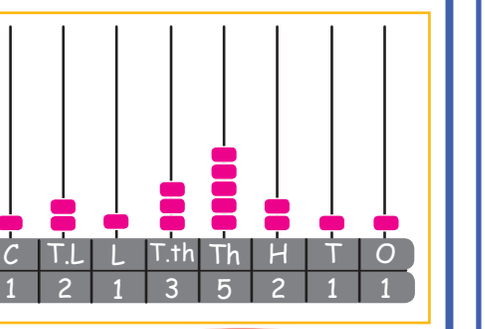
The Abacus shows the number 1, 21, 35, 211

In words. One crore twenty one lakhs thirty five thousand two hundred and eleven.

Expanded form: 1 crore + 2 ten lakhs + 1 lakh + 3 ten thousands + 5 thousands + 2 hundreds +1 ten + 1 one.

= 1,00,00,000 + 20,00,000 + 1,00,000 + 30,000 +5000 +200+ 10 +1

= 1x1,00,00,000 + 2x10,00,000 + 1x100,000 +3x 10000 +5x 1000+ 2x 100+ 1x10+1



Find it yourself.

Find the sum of the place values of 2 7226382

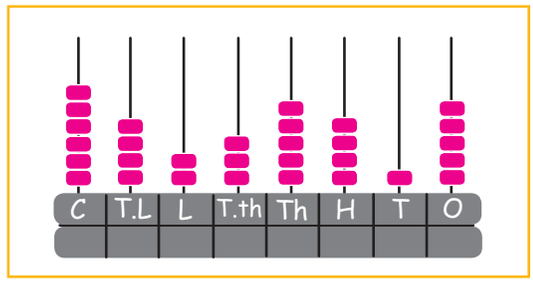
Do you know?

Name the number which has 7 zeros after one.

Activity: 3

Given number: ----------

Number name: ----------



Expanded form: 6 crores +
-----Tenlakhs + ---- Lakhs+ 3
----------+ 5 Thousands + ---------- + 1Ten + 5 ones.

= 6,00,00,000 + 40,00,000 + ---------- + ---------- +
5000 + 400 + ---------- + 5

= 6 x ---------- + 4 x ---------- + 2 x 100,000+ 3 x
10000 + 5 x ---------- + ---------- x 100 + 1 x 10
+ ----------x 1

Example:3

Write the place value of each digit for the given numbers.

For example: 4 34, 56 ,789

C	TL	L	T.tho	THO	H	T	O
4	3	4	5	6	7	8	9

The place value of 9 is 9 x 1 = 9

The place value of 8 is 8 x 10 = 80

The place value of 7 is 7 x 100 = 700

The place value of 6 is 6 x 1000 = 6000

The place value of 5 is 5 x 10000 = 50000

The place value of 4 is 4 x 100000 = 400000

The place value of 3 is 3 x 1000000 = 3000000

The place value of 4 is 4 x 10000000 = 40000000

Let us Know

100 lakhs make 1 crore

Activity

Write the place value of 7 and 1 for the given numbers.

a. 81,70,453 **b.** 3,46,710 **c.** 1,87,13,971

Exercise 2.2a

1. In 15,478

   a. The place value of 7 is_____

   b. The place value of 4 is_____

   c. The place value of 1 is_____

2. Fill the table with the place value for the following numbers.

Place value	crore	lakhs		thousands		ones		
Numbers	1,00,00,000	10,00,000	1,00,000	10000	1000	100	10	1
23,45,172		2	3	4	5	1	7	2
84,701								
2,01,784								
9,04,704			9	0	4	7	0	4
2,07,91,132								
10,07,000								

3. Find the difference between greatest 7 – Digit number and smallest 6-digit number.

2.2b Importance of commas or periods.

Numbers having 4 or more digits can be read quickly and easily by putting them into groups using commas.

Crores		Lakhs		Thousands		Ones		
T C	C	T L	L	T.TH	Th	H	T	O

In the place value system, ones, tens and hundreds form the first group under "ones" period. Thousands and ten thousands form second group under "thousands" period, lakhs and ten lakhs form the third group under "lakhs" period and crores and ten crores form the fourth group under "crores" period. Each group is seperated by a comma.

1. 99,15,797 2. 2,30,145 3. 1,34,19,922

Exercise 2.2b

1. Read the following numbers by placing the commas at appropriate periods and write their number names.

   a. 15731997 **b.** 341964 **c.** 29121972 **d.** 347810

2. Write the place value of 5 in the following numbers.

   a. 15731997 **b.** 341964 **c.** 29121972 **d.** 347810

3. Write the following in standard notation.

   a. 30000 + 3000 + 300 + 30 +3

   b. 200000 + 7000 +7

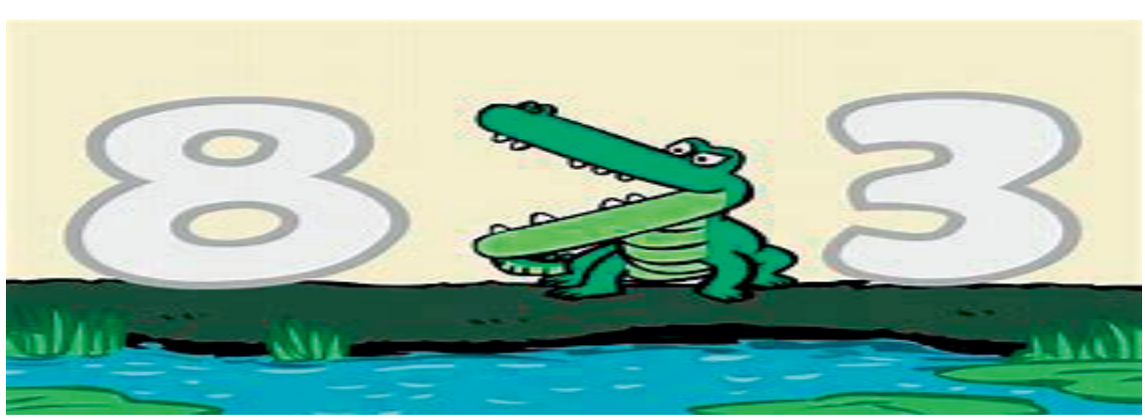
   c. 8000000 + 70000 + 3000 +30 +5

   d. 4000000 + 400 + 4.

4. Write the following numbers in expanded from.

   a. 63,570 **b.** 36,01,478 **c.** 1,45,70,004 **d.** 28,48,387

2.3 Comparison of Numbers.



We use symbols >, < and = to compare any two numbers

Which is smaller **20344** or **3241**?

Number with more number of digits is a **larger number.**

Number with less number of digits is a **smaller number**.

3241	**<**	**20344**
4 digits		5 digits

Which is **greater 73652** or **56372** ?

Here, both the numbers have 5- digits. So the highest digit is to be compared to find the greater number.

T.Th	TH	H	T	O
7	3	6	5	2

T.TH	TH	H	T	O
5	6	3	7	2

Here 7 ten thousands is **greater** than. 5 ten thousands.

Hence,

73652 > 56372

We read it as, seventy three thousand six hundred and fifty two is **Greater than** fifty six thousand three hundred and seventy two.

Which is **smaller 54349** or **53449** ?

Since both are five digit numbers and the digits in the ten thousands place are equal, the numbers in the thousands place should be compared.

T.Th	TH	H	T	O
5	4	3	4	9

T.Th	TH	H	T	O
5	3	4	4	9

When we compare the thousands place, the first number has **4** Thousands and seconds one has **3** Thousand so the second number is the **smaller** number.

Hence.,

53449 < 54349

We read it as fifty three thousand four hundred and forty nine is less than fifty four thousand three hundred and forty nine.

For example:

a) 54,689 **<** 54,869

b) 75,432 **>** 75,412

c) 45,327 **<** 45,321

To think

Find out which digits are compared in each example?

Try this

From the pairs of numbers given below compare them by using < , > and = signs.

1. 3,002 ☐ 8,002

2. 43,731 ☐ 44,371

3. 43,115 ☐ 43511

5. 13,435 ☐ 13,4753

Write the smallest and greatest five digit numbers using the given digits only once.

Example

1. 1,2,3,4,5

Smallest number : 12,345

Greatest number : 54,321

2. 7,6,9,4,8

Smallest number : 46,789

Greatest number : 98,764

Activity

1. **Form the smallest and greatest five digit numbers using the given digits once.**

   a) 7, 1, 0, 5, 4

   b) 3, 4, 7, 0, 9

   c) 9, 7, 1, 6, 4

   d) 4, 5, 9, 6, 7

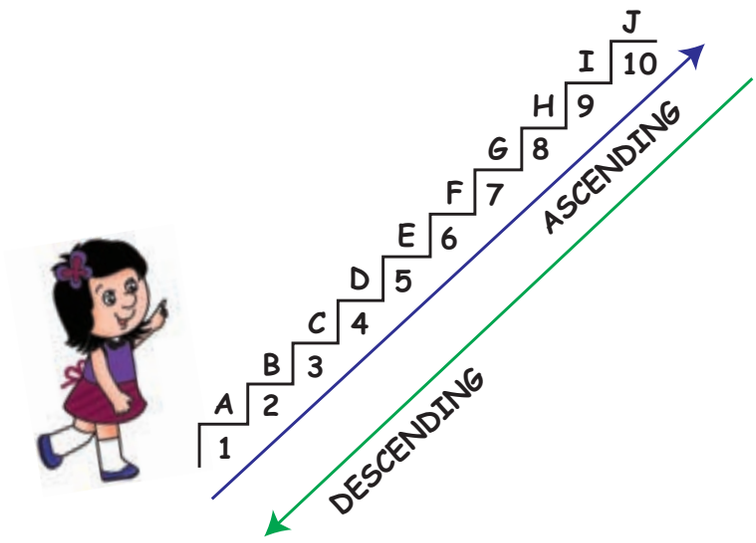
2. **Write the smallest numbers in the fruit and the greatest numbers in the flower.**

   a) 45678, 145, 7829

   b) 23, 8873, 88738, 883




2.3 Ascending and descending order of numbers.



Ascending order of numbers is arranging the numbers from the smallest to the greatest.

Example:1

Arrange the given numbers in ascending number

413, 43, 986, 38490, 8490

Answer: Ascending order:

43, 413, 986, 8490, 38490

Descending order of numbers is arranging the numbers from the greatest to the smallest.

Example:2

Arrange the given numbers in descending order

195, 4090, 81343, 95, 9040

Answer: Descending order:

81343, 9040, 4090, 195, 95

Try this

1. Arrange the following numbers in the ascending order and descending order.

   33,270; 1,078; 137; 27,935

   44, 918; 32,113; 23, 112; 42,231

   75,343; 30,475; 43,452; 13,055

   733; 34,946; 35,945; 23,745.

Exercise 2.3

I. Write the number name:

a. 11000 — Eleven thousand

b. 34000 — ----------

c. 100000 — ----------

d. 98,364 — Ninety eight thousand three hundred and sixty four.

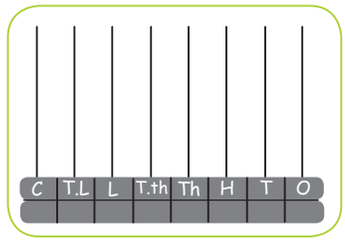
e. 37,689 — ----------

f. 46,763 — Forty six thousand seven hundred and sixty three

g. 4,00,000 — ----------

h. 12,00,000 — ----------

II. Write the following values in abacus.



1. 3 Tens, 7 crores, 60 lakhs, 7lakhs 4 tens and 7 ones.
2. Find the place value of 7 and 4 of this numbers 34578910
3. Write any one number with 6 thousands with 9 tens and 3 ones.
4. Write in numerals
   a. One crore forty thousand and four.
   b. Sixty four lakhs and three

5 Write in words (Figure 1).

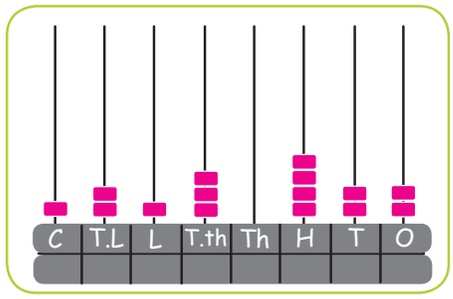


Figure 1

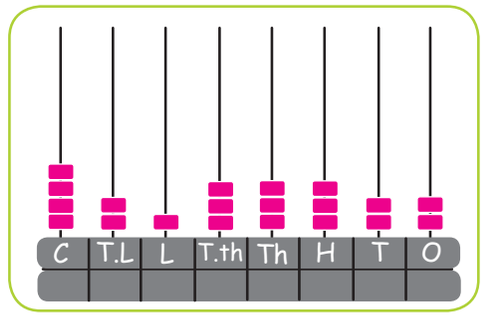


Figure 2

6 How many lakhs and hundreds are there in the Abacus (Figure 2)?

7 Find the sum of greatest 4-digit number and smallest 5-digit numbers.

8 Write the following in ascending and descending orders.

a. 33,058 40,978 97,879 81,421 90,470 47,224

b. 99,999 11,111 22,222 33,333 44,444 66,666

9 Write in standard form: 7 lakhs+ 5 thousands + 4tens +3ones

10 Add 5 thousands and 3 hundreds to this number 1, 34,510

11 Subtract smallest 6-digit numbers from greatest 7 – digit numbers.

2.4 Numbers and Operations

Appreciate the role of place value in addition, subtraction and multiplication algorithm

2.4a Addition

Introduction

"Ananthan come fast" Ananthan's mother shouted. "Bus would come earlier".

"I am here mummy, I am ready" he said. The whole family was very busy for ananthan's sister marriage. They have to buy new clothes for their relatives and family members.

They finished their purchase and returned back home.

Ananthan asked his father 'how much did you spend for our dresses?

His father said, "Cost of dresses for gents is ₹ 25050, for ladies is ₹ 47025 and for kids is ₹ 7125, and for bride and groom dresses is ₹ 17500, Now you can tell the total amount.

Ananthan took a paper and pen, he wrote all the amounts one by one according to their place values.

For gents	-	₹ 25050	
For ladies	-	₹ 47025	
Kids	-	₹ 7125	+
Groom and bride	-	₹ 17500	
		₹ 96700	

Check whether, the above total amount is correct or not.

Yes, ananthan is correct, see the cost of kids, ₹ 7125, There is a empty place in ten thousand's place. So Ananthan wrote down the numbers according to the place value. We learnt about place values of the numbers. Now we are going to use the method of adding different values of numbers.Add the following numbers and write down one by one.

137462 + 4005 + 38 + 56734.

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

Step1: Start by adding the ones. We have 19 ones in ones place.s

Step2: We must regrouping 19 ones to 1 ten and 9 ones.

Step3: Now we can put 1 ten with ten and write 9 in the ones place.

Simillarly we have to do the hundred, thousand … and so on.

Arrange all the given numbers according to their place value .

We can do all the addition problems in this manner.

Note:

When write the numbers, we can avoid mistakes by starting from the right side, that is from the units place.

Exercise 2.4a

1. Find the sum.

	6	8	7	5
		6	3	7
+	5	4	3	0	0
				5	4

	3	2	5	6	7
				7	8
+		4	3	2	4
			5	0	0	0

2. Add the following

a. 19732 + 24105 + 525 + 48

b. 241605 + 34788 + 5003 + 2052

c. 1000 + 250787 + 3574 + 43

d. 7 + 65 + 324 + 52342.

3. In a town panchayat, population of 5 villages are 980, 3254, 4125, 687and 6786. what is the total population?

4. Ramu bought some home needs. The price list of which is given below. What is the total cost ?

Fan	- ₹ 3,250
Fridge	- ₹ 26,437
Television	- ₹ 18,520
Iron box	- ₹ 940
Cot	- ₹ 15,520

5. In a vegetable market, one day sales of Brinjals is ₹ 4500, Tomato is ₹ 7800, Onion is ₹ 26,500, Potato is ₹ 7825 and Beetroot is ₹ 825, What is the total amount of sales on that day?

2.4b Subtraction

We have already learnt how to add the numbers and to write down the numbers with their corresponding place values. In the same manner we have to do subtraction problem .The operation or process of finding the difference between two numbers or quantities, denoted by a minus sign (-).

The result of subtracting one number from another is called the **Difference**

Answer

L	TTH	TH	H	T	O
6	7	5	4	3	2
	3	2	4	5	6
6	4	2	9	7	6

Example

Mathan is working in a construction company. He is getting ₹ 57,385 salary per month. He spent ₹ 48,500 for his family every month. how much does he save per month?

Answer:

			₹
Mathan's Salary	=		57,385
His expenditure	=	-	48,500
His savings			**8,885**

Exercise 2.4b

Subtract

a. 1) 78,347 (-) 59,475 = ____

2) 67,056 (-) 3,748 = ____

3) 1,58,376 (-) 47,978 = ____

4) 89,700 (-) 4,538 = ____

b. Rahul has 3289 stamps. Ravi has 4021 stamps. How many stamps does Ravi have more than Rahul?

c. **Create the story problem by using the pictures given below:**

Figure 1

Figure 2

2.4c Multiplication

Remember the multiplication which you learned in last class.
Now we are going to know the place values under multiplication

Step1: Multiply by the number in the ones place .

Step2: Put a zero below in the one place to hold its place.

Step3: Multiply by the number in the tens place.

Step4: Add them up

35 students are studying in class 5. The The cost of uniform for one student is ₹ 350. What is is the total cost of uniforms for 35 students?

Here, Numbers in the unit place are 5 and 0, first we have to multiply these two numbers.

350 x 35

1750

1050

12250

See the following steps:

Step: 1

O O
350 x 35
0

Step: 2

2
HT O
350 x 35
50

Step: 3

2
H O
350 x 35
1750

Step: 4

350 x 35
1750
0

Step: 5

O T
350 x 35
1750
00

Step: 6

1
HT T
350 x 35
1750
500

Step: 7

1
H T
350 x 35

1750
+ 10500
12250

1750 + 10500 = 12250

2.4d Multiply the three digit numbers by two digit numbers

Example 1

Raveena has planted 15 rows of coconut trees in her garden Each row has 112 trees. How many coconut trees were planyed in total?

Using multiply method

Number of rows planted by Raveena = 15

Number of trees in one row = 112

Total number of coconut trees in her garden = 112X15

= 1680

112x 15
560
+ 1120
1680

Example 2

One kg of Apple is sold by Bathri for Rs 165.
Find the total cost of 12 Kgs of Apple?

Cost of 1Kg of Apple = Rs 165.

Total cost of 12 Kgs of Apple = 165 × 12

= Rs 1980

165x 12
330
+ 1650
1980

Exercise 2.4c

1. Multiply:

a. 473 x 48 **b.** 4052 x 19 **c.** 876 x 25 **d.** 854 x 21
e. 417 x 39 **f.** 870 x 28

2. Answer the following :

1. In a Basket there are 55 mangoes. Cost of one mango is ₹ 15. What is the total cost of 55 mangoes?
2. In a Bus, there are 55 passengers. Each of them get tickets of ₹ 25. What is the amount is collected by the conductor?
3. A classroom has 23 benches, each bench cost is ₹ 725. What is the total cost for 23 branches?
4. In a village there are 675 people are living. Each person uses 25 L of water daily. How much water is need for the village everyday?
5. In a building, there are 26 rooms, cost of painting for one room is ₹ 950 What is the total cost of painting the building?

2.4e Division Algorithm

Mr. Sabari lives in kovalur village. He is a farmer and has a cow. He gets milk from it and sells the milk to 8 houses daily. His cow gives 8 L of milk daily. So it gives 240 L of milk for 30 days.

If so, how much of milk is bought by each house. In a month Mr. Sabari shares 240 L of milk to each 8 houses

So we have to split 240 in 8 parts.

240 - **Numerator**

8 - **Denominator**

We can find this by long division (or) standard division algorithm.

Step: 1

$$\overline{)\,2\ 4\ 0}$$

240 is whole part
We are going to divide 240, Here 240 is the **dividend**

Step: 2

$$8\overline{)\,2\ 4\ 0}$$

We have to split 240 into 8 equal parts, Here 8 is the **divisor**

Step: 3

$$\begin{array}{r} 3 \\ 8\overline{)\,2\ 4\ 0} \\ 2\ 4 \\ \hline \end{array}$$

There are three 8's in 24.
(8 + 8 + 8 = 24)
Write 3 on the top of the line.
3 x 8 = 24
Write the product 24 below the 24, starting from the left side.

Step: 4

$$\begin{array}{r} 3\ 0 \\ 8\overline{)\,2\ 4\ 0} \\ -2\ 4\ \downarrow \\ \hline 0 \end{array}$$

Next write down '0'. We Cant divide 0 by 8

So, write '0' on the top near 3.

So 30 is quotient

It means, each house bought 30 L in a month.

Note:

Generally, when we are doing addition subtraction and multiplication , we are starting from units place.
But in division , We do in opposite manner.
First choose the highest digit.
Here 2 is smaller than 8 so take 2 from Ten's place. Now we have 24.

2. Find Quotient and Remainder 53675 ÷ 8

```
      6 7 0 9
   ┌──────────
 8 |  5 3 6 7 5
     -4 8 ↓
     ------
        5 6
       -5 6
       ----
          0 7 5
         -7 2
         ----
            3
```

Dividend	=	**53675**
Divisor	=	**8**
Quotient	=	**6709**
Remainder	=	**3**

Note:

Magic Math's

Dividend ⇨ Divisor × quotient + reminder

Exercise 2.4e

1. Find quotient and remainder

1. 5732 ÷ 9
2. 47345 ÷ 5
3. 3032 ÷ 7
4. 43251 ÷ 10
5. 2532 ÷ 4

2. Answer the following:

1. In a town there are 3057 families.
   The town panchayat plans to split the town into 3 wards equally. How many families will be there in one ward?
2. A water Board shares 28, 049 liters daily to 7 lorries. How much of water is given to each lorry?
3. A company gives ₹ 93,300 as salary for 6 workers. Find the salary of one worker?

2.4f Divide 4 digits by 2 digits

We learnt how to divide a single digit in last class. Now we are going to learn how to divide a 4 digit number by a 2 digit number.

On that day 5th std students are very excited, as the bus came to school for educational tour. The class teacher asked the students to get in the bus. Students got into the bus happily. The bus reached Arignar Anna Botanical garden. The class teacher paid ₹ 1530 as Entrance fee for all the students. If there are 34 students, what is the entrance fee for one student?

So, we have to divide the total amount ₹ 1530 by 34.

1530 ÷ 34

Step: 1

	Th	H	T	U
34)	1	5	3	0

When dividing by 2 digit number, we have to choose first two digit from the dividend.

34) 15

But 15 is smaller than 34,

So choose 3 from tens place with 15, we get 153

34) 153

Step: 2

			4	
34)	1	5	3	0
	-1	3	6	
		1	7	

Now divide 153 by 34

Calculate how many 34's are there in 153.

4 X 34 = 136.

Step: 3

			4	5
34)	1	5	3	0
	-1	3	6	↓
		1	7	0
	-1	7	0	
			0	

Next write down the '0' in the unit place

We have 170.

Calculate how many 34's are there in 170

5 X 34 = 170

Quotient = 45,
Remainder = 0

Therefore, the entrance fee for one student is ₹ 45

Divide and find the quotient and Remainder.

Example 1: 4 9 2 5 ÷ 25

Step: 1

```
      1
25 | 4 9 2 5
   -2 5
   ------
     2 4
```

We know that when divide by 2 digit number have to choose first 2 digit from the dividend

Here divide 49 by 25

```
25 | 49
```

25 is one time in 49

1 x25 = 25

Step: 2

```
      1
25 | 4 9 2 5
   -2 5 ↓
   ------
     2 4 2
```

Subtract 25 from 49 we get 24,
Next write down 2 from the ten's place

Step: 3

```
      1 9
25 | 4 9 2 5
   -2 5 ↓   |
   ------   |
     2 4 2  |
   -2 2 5   ↓
   ---------
       1 7 5
```

Divide 242 by 25
Calculate how many 25's in 242
9 X 25 = 225
Subtract 225 from 242 we get 175.

Step: 4

```
      1 9 7
25 | 4 9 2 5
   -2 5 ↓   |
   ------   |
     2 4 2  |
   -2 2 5   ↓
   ---------
       1 7 5
     - 1 7 5
     -------
           0
```

Next write down 5 from unit place.
Now we have 175
Calculate how many 25's in 175
7 X 25 = 175

Quotient = 197,
Remainder = 0

Example 2: Divide 4327 by 18 and find quotient and remainder

Solution :

```
        2 4 0
    ┌─────────
18  │ 4 3 2 7
    │-3 6 ↓ |
    ├─────────
      7 2   |
    - 7 2   ↓
    ─────────
          7
```

Dividend	=	**4327**
Divisor	=	**18**
Quotient	=	**240**
Remainder	=	**7**

Example 3:

A car factory produces 3750 cars per month (30 days). Find the number of cars produced per day.

Divide 3750 by 30 days.

3750 ÷ 30

Step: 1

```
        1
    ┌─────────
30  │ 3 7 5 0
    │-3 0
    ├─────
      7
```

Choose first 2 digits. 37 from the dividend
Divide 37 by 30
Calculate how many 30's in 37
1 X 30 = 30

Step: 2

```
        1
    ┌─────────
30  │ 3 7 5 0
    │-3 0 ↓
    ├─────────
      7 5
```

subtract30 from 37, we get 7
Next down the 5 in ten's place

Step: 3

```
        1 2
    ┌─────────
30  │ 3 7 5 0
    │-3 0 ↓
    ├─────────
      7 5
    - 6 0
    ─────
      1 5
```

Divide 75 by 30.
Calculate how many 30's in 75
2 X 30 = 60
Subtract 60 from 75 we get 15

Step: 4

```
      1 2 5
   ┌─────────
25 │ 3 7 5 0
   - 3 0 ↓
   ─────────
     7 5
   - 6 0 ↓
   ─────────
     1 5 0
   - 1 5 0
   ─────────
         0
```

Next write down the '0' from unit place.
In 150, calculate how many 30's
5 X 30 = 150

Quotient = 125,
Remainder = 0

The remainder is zero. The remainder could not be zero for all problems.

2E5DID

Exercise 2.4f

I. Answer the following questions:

1. A cement factory produces 37500 bags of cements in a month (30 days). How many cement bags are produced in one day?
2. 8075 mangoes are harvested in a mango garden. 95 mangoes are packed in a bag. How many mango bags will be there?
3. In a street there are 25 families. They need 1625 liters of water per day. How much of water is needed for a family?
4. In a tempo van 6750 bananas were loaded. Those bananas were arranged in 15 baskets equally. Then how many bananas were arranged in one basket?

II. Divide the following

1. 4525 ÷ 15
2. 3448 ÷ 24
3. 7342 ÷ 18
4. 3626 ÷ 37
5. 4872 ÷ 56

3.1 Patterns in Shapes.

EAR889

Observe the image below. How the boats are designed?

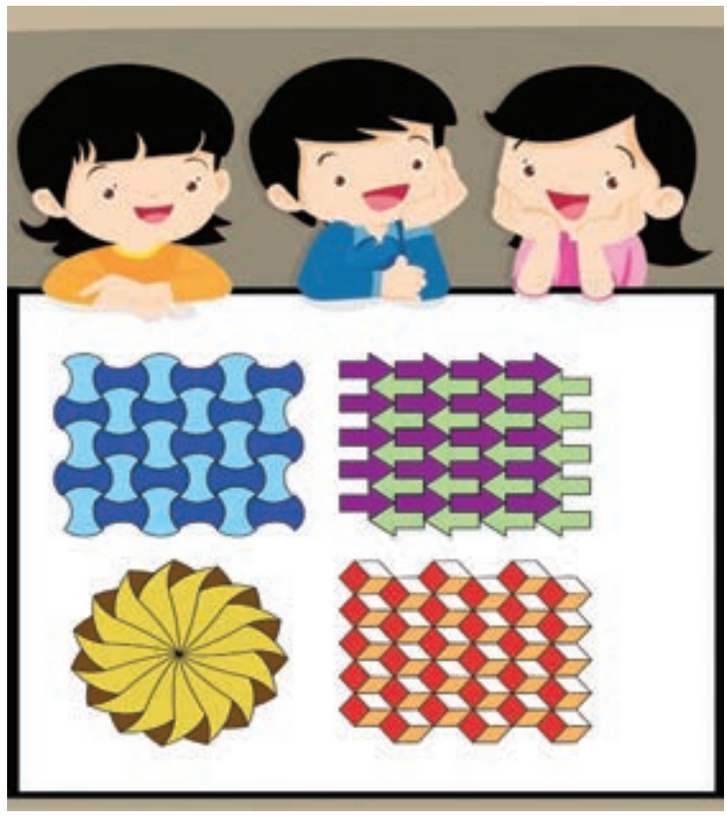
Patterns are present everywhere around us.Patterns are regularly repeated arrangement of colours ,shapes,designs ,lines etc. on a surface

Examples

Observe the below patterns of colours and shapes.

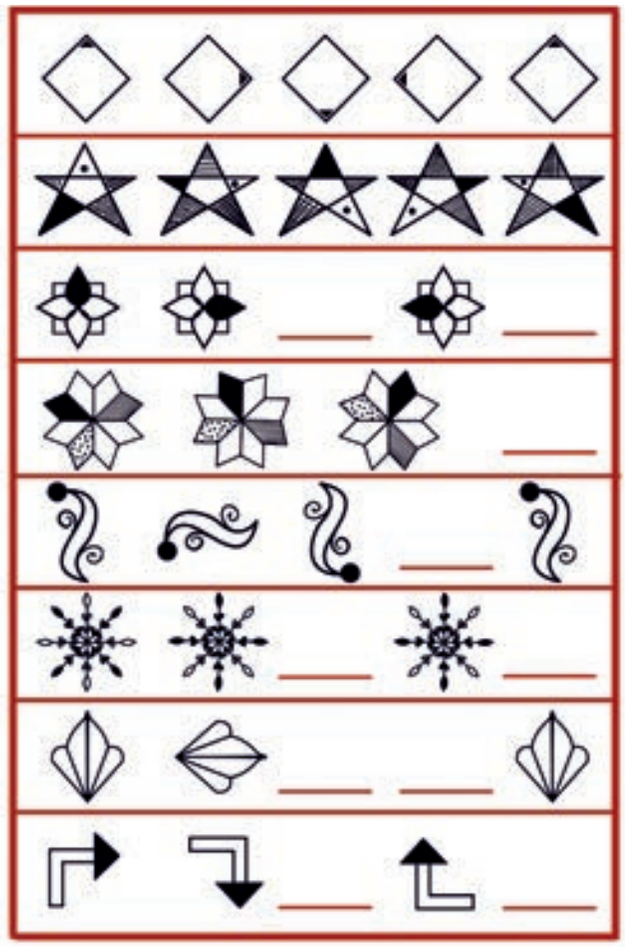
Examples

Observe the below patterns of shapes.



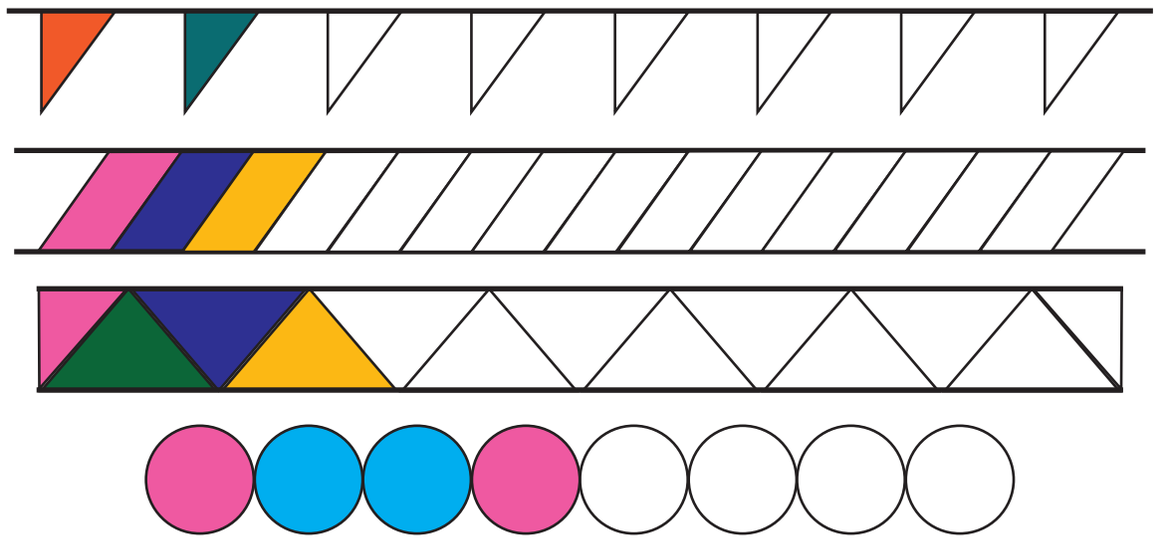
Exercise

Fill in the blanks:



Activity

I. Continue the colours as shown in starting level



3.2

Patterns in Numbers

3.2a To Identify patterns in square numbers and triangular numbers.

Square numbers

Introduction:

For finding the square of a number we multiply the number by itself. A square number is always positive. The numbers like 4, 9, 25... can be expressed as the product of a number and itself.

$1 \times 1 = 1^2 = 1$

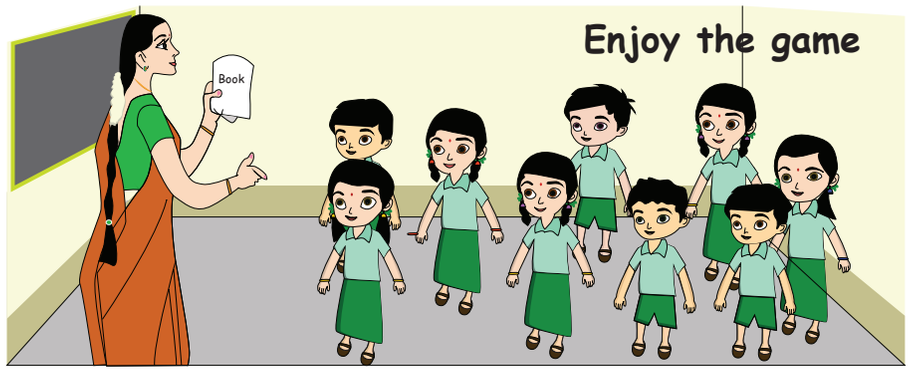
$2 \times 2 = 2^2 = 4$

$3 \times 3 = 3^2 = 9$

$4 \times 4 = 4^2 = 16$ and so on..

When you multiply a number by itself, the result is a square number.

Activity



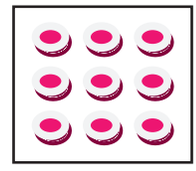
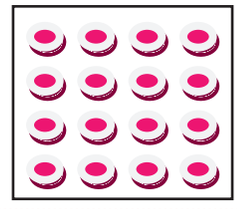
The teacher should say square number in order. All the students of the class should form groups according to their numbers.

Remaining students are runners up due to failure.

For example if a teacher say 4, if 33 students are in a class. All the students should create group of 8 students in the form of a square each of having 4 persons. One student will remain without a group

Likewise we can play the numbers **9, 16, 25** .....

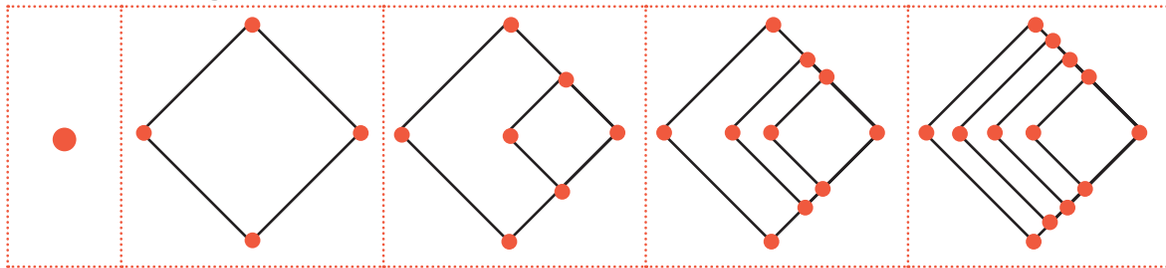
A number that can be shown using a pattern of dots in a square using flowers or small balls.
We can arrange by counting below numbers, that will make a square shape.

1 x 1 = 1	
2 x 2 = 4	
3 x 3 = 9	
4 x 4 = 16	

Think it

Two square numbers are added together to make another square number.
Ex. 9 + 16 = 25
Can you find other one?

Look at the figures shown below



1	4	9	16	25

Do you know

Square of number	Sum of digit of square
$1^2 = 1$	1
$(11)^2 = 121$	$1 + 2 + 1 = 4 = 2^2$
$(111)^2 = 12321$	$1 + 2 + 3 + 2 + 1 = 9 = 3^2$
$(1111)^2 = 1234321$	$1 + 2 + 3 + 4 + 3 + 2 + 1 = 16 = 4^2$

Let us know

Joshua formed a square using 12 bindis. is it 12 is a square number?

No because there are so many gapes in the square.

Though the number 12 made the square. But it is not a square number.

Do yourself

1. Count and write the tiles :

Figure					
Number of Tiles					

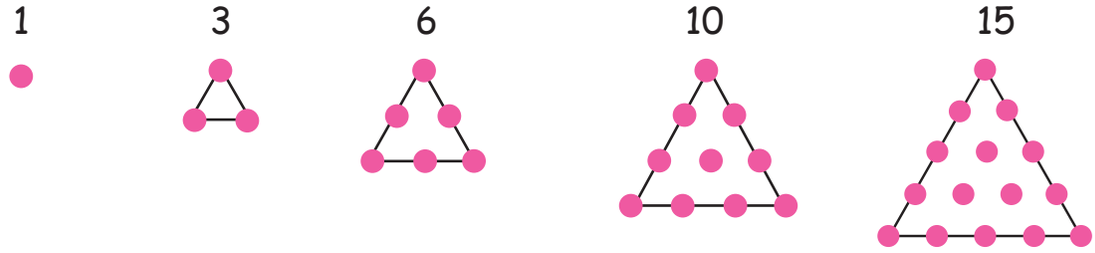
2. Circle the square numbers

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

Triangular Numbers

Any of the series of numbers obtained by continued summation of the natural numbers.

A number that can make a triangular dot pattern.



By adding another row of dots and counting all the dots we can find the next number of the sequence.

The first triangle has just 1 dot.

The second triangle has another row with 2 extra dots, making 1+2=3

The third triangle has another row with 3 extra dots, making 1+2+3=6

so, the fourth has 1+2+3+4=10. And the series goes on,

Here 1, 3, 6, 10, 15, ... are called triangular numbers.

These numbers 1, 3, 6, 10, 15, 21... etc. are in triangular shapes.

Note

Picture form of a triangular numbers can make a equilateral triangle or right angle triangle.

Do you know

What is the relationship between triangular numbers and natural numbers?

$1 = 1$

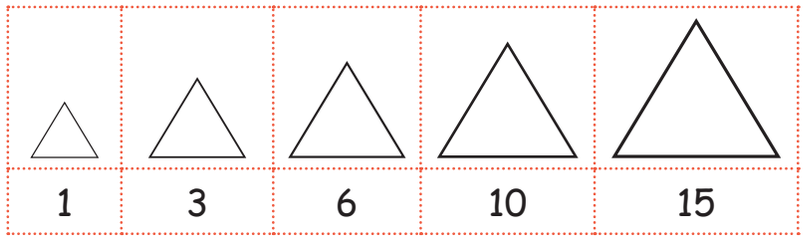
$1 + 2 = 3$

$1 + 2 + 3 = 6$

$1 + 2 + 3 + 4 = 10$

$1 + 2 + 3 + 4 + 5 = 15$ → Triangular numbers

Can you understand now? Yes, The sum of consecutive natural numbers make the triangular numbers.



Do yourself

Make the triangle shapes in the form of series of the triangular numbers by nuts

Exercise

a. Answer the following:

1. Square of the number 7

   a. 14 b. 49 c. 21 d. 28

R7D2X5

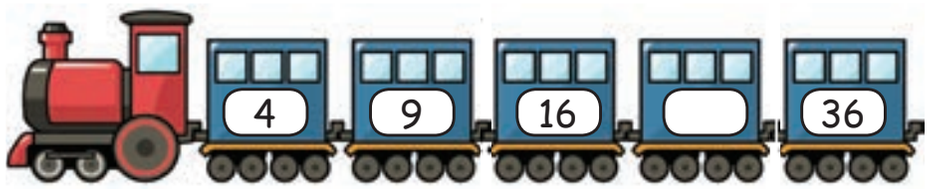
2. 64 is the square number of _____

   a. 4 b. 16 c. 8 d. 32

3. Is 24 square number?

4. A number, multiply by _____ is called square of the number.

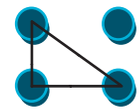
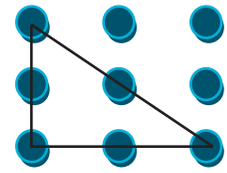
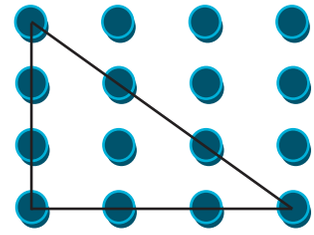
5. Fill in the blank box.



6. 1, 3, 6, _____, 15, _____, 28

Do you know

The result of the sum of two triangular numbers is square number.

1 + 3 = 4	
3 + 6 = 9	
6 + 10 = 16	

3.2b To relate sequences of odd numbers between consecutive square numbers.

Relationship between consecutive square numbers and odd numbers.

We have already learnt about the relationship between square numbers and triangular numbers.

Now we are going to know the relationship between consecutive square numbers and odd numbers.

When we add the consecutive odd numbers from 1, we will get the square numbers.

1	=	1
1 + 3	=	4
1 + 3 + 5	=	9
1 + 3 + 5 + 7	=	16
1 + 3 + 5 + 7 + 9	=	25

Square numbers

Note

1 is common number among square and triangular numbers.

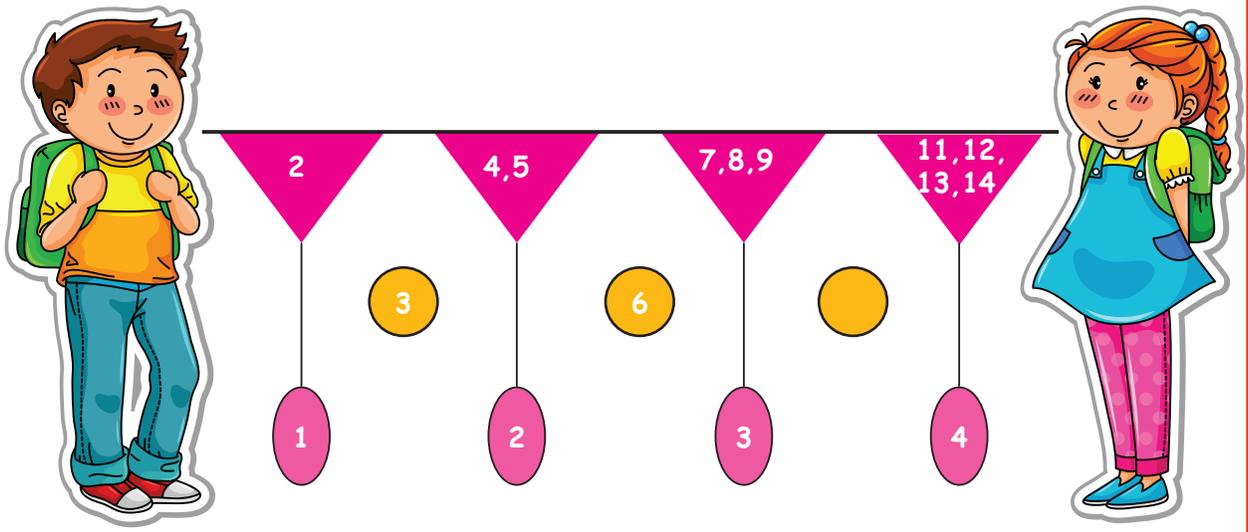
Try this

a. 1 + 3 + 5 + 7 + 9 + 11 = 36 = 6 x 6 = 6^2

b. 1 + 3 + 5 + 7 + 9 + 11 + 13= ____ = ____ = ____

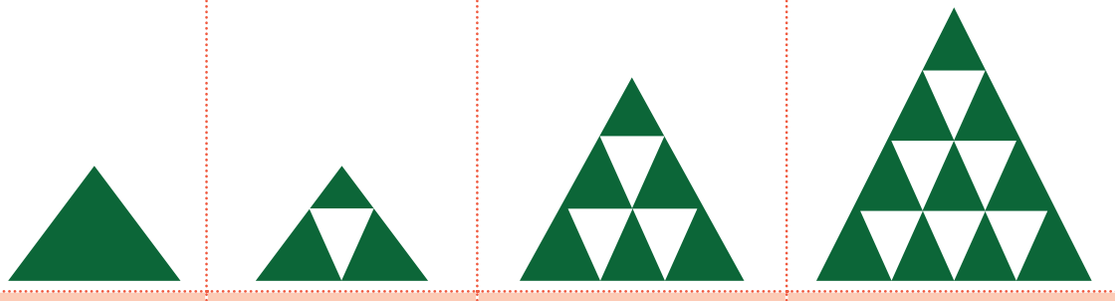
c. 1 + 3 + 5 + 7 + 9 + 11 + 13 + 15 = ____ = ____ = ____

Find the missing number!



Relationship between Square number and Triangle numbers

In mathematics, a square triangular number (or triangular square number) is a number which is both a triangular number and a perfect square. There are infinitely many square triangular numbers.



Green : 1	3	6	10
White : 0	1	3	6
Sum : 1+0=1	3+1=4	6+3=9	10+6=16

The sum of green and white triangles is denote the square number.

Let us Know

'36' is triangular and square number.

4.1 Length

43YWM1

4.1a Able to apply the four operation in solving problems involving length.

Introduction

In day to day life ,we are measuring many small things by standard and non standard units . But how can we measure the distance .

The metric units are used to measure the length and distance.

I am measurika. I would like to measure:

1. What is the length of the table?
2. How tall am I?
3. How far is my school from my home?

How do I measure it? What kind of measurements are they?

Ponni explained her that how long things are, how tall they are, or how far apart they might be. These are all the examples of length.

Measaurika, you should know the following measurements:

a. **Millimeter (mm): Millimeters is the smaller unit of length. A millimeter is about the thickness of a plastic id card (or Debit/ credit card). Or about the thickness of 10 sheets of paper on top of each other.**

This is a very small measurement!

S.no	Name of the object	Thickness in mm
01	Cell phone	
02	Maths Book	
03	Eraser	

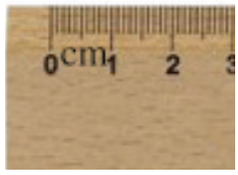
b. **Centimeter: 10 millimeters is equal to 1 centimeter**

1 centimeter = 10 millimeters

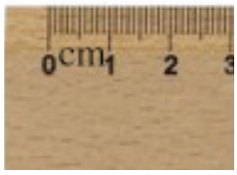
A fingernail is about one centimeter wide.

We can use millimeters or centimeters to measure how tall we are, or how wide a table is. But to measure the length of football field, it is better to use meters.

Measurika, could you please mark 5mm in the scale? Children could you please help measurika.

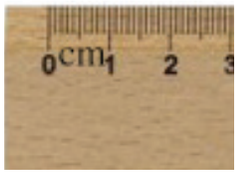


Could you please mark 4mm in red colour and 10mm in Green colour?



10 milli meter = 1 centi meter
10 centi meter = 1 deci meter
10 deci meter = 1 meter
10 meter = 1 deca meter
10 deca meter = 1 hecta meter
10 hecta meter = 1 killo meter

Could you mark 1cm and 3mm (1.3cm)?



S.no	Measure the length	Length in cm
01	Composition Note	
02	Your height	
03	Geometry box	

c. Meter

A meter is equal to 100 centimeters

The length of this guitar is about 1 meter

Meters are used to measure the length of a house, or the size of a play ground.

One meter is approximately the length from your shoulder to your fingertips. A meter is also approximately the distance of one large step or jump.

A Measuring tape has centimeter and meter units marked on it. Measuring tapes are useful for measuring lengths of cloth, or large household objects like furniture and rooms.

S. no	Measure the length	Length in meter
01	Classroom	
02	Distance between school entrance and your classroom	

d. Kilometer

When you need to get from one place to another, you can measure the distance using kilometers. A kilometer is equal to 1,000 meters.

The distance from one city to another or how far a plane travels is measured using kilometers.

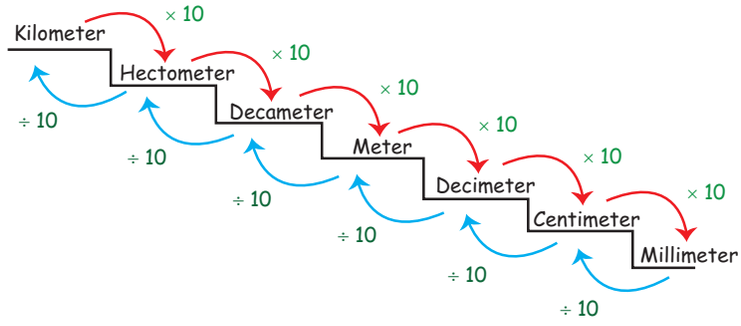
We can ride a Two wheeler/ Four wheeler to go from one place to the other. The distance travelled is measured using the speedometer.

1Km = 1000m

S.no	Calculate the distance	Distance in Km
01	Distance between school and your home	
02	School and your taluk head quarters	
03	School and your District	

4.2

Conversion



Let us know

To convert upper scale into lower scale the number should be multiplied.

To convert lower scale into upper scale the number should be divided.

100 centimeter = 1 meter

$\frac{1}{2}$ meter = 50 centimeter

$\frac{1}{4}$ meter = 25 centimeter

$\frac{3}{4}$ meter = 75 centimeter

1000 meter = 1 kilometer

Activity

Measure the things using a tape or a scale.

S.NO	Name of the object	Length			
		Km	Meter	Cm	mm
1.	Your's Shoulder length				
2.	Your's height				
3.	Thickness of the chess board				
4.	Distance between your house and uncle's house				

Examples 1

Convert into millimeter

(i) 70 cm

70 cm = 70 x 10 mm 1 cm = 10 mm

=700 mm

(ii) 65 cm 6 mm = (65 x 10) + 6 mm

= 650 + 6

= 656 mm

(iii) 7 m

7 m = (7x1000) mm 1 m = 1000 mm

= 7000 mm

Note:

1. To convert meter into millimeter multiply the given meters by 1000.
2. To convert centimeter into millimeter multiply the given centimeter by 10.

Try this

Convert into millimeters

1. 90 cm
2. 5 cm 8 mm
3. 5 m 9 mm

Examples 2

Convert into centimeters

(i) 5 m

5 m = (5 x 100) cm

= 500 cm

(ii) 7 m 40 cm

7 m 40 cm = (7 x 100) + 40 cm

= 700 + 40

= 740 cm

(iii) 110 mm

110 mm = 110 ÷ 10 cm

= 11 cm

Note:

To convert meter into centimeter multiply the given meters by 100

Try this

Convert into centimeters

1. 8 m **2.** 6 m 4 cm **3.** 80 mm

```
      11
   ┌──────
10 │ 110
   │ 10
   ├──────
     10
     10
   ├──────
      0
```

Examples 3

Convert into meter

(i) 7 km 50 m

1 km = 1000 m

7 km 50 m = (7 x 1000) + 50 m

= 7000 + 50

= 7050 m

(ii) 850 cm

850 cm = 850 ÷ 100 m

= 8 m 50 cm

(iii) 2005 mm

2005 mm = 2005 ÷ 1000 m

= 2 m 5 mm

Note:

1. To convert kilometer into meter multiply the given kilometer by 1000.
2. To convert millimeter into meter divide the given millimeter by 1000.

Try this

Convert into meter

1. 8 km 400 m
2. 900 cm
3. 3500 mm

```
      8 m
   ┌──────
100 │ 850
    │ 800
    ├──────
      50 cm
```

```
      2 m
   ┌──────
1000 │ 2005
     │ 2000
     ├──────
       5 cm
```

Examples 4

Convert into kilometer

(i) 9000 m 1000 m = 1 km

9000 m = 9000 ÷ 1000 m

= 9 km

```
        9 km
1000 | 9000
       9000
       ----
          0 m
```

(ii) 2300 m

2300 m = 2300 ÷ 1000 m

= 2 km 300 m

```
        2 km
1000 | 2300
       2000
       ----
        300 m
```

Note:

To convert meters into kilometers divide the given meters 1000.

Try this

Convert into kilometer

1. 5430 m
2. 7500 m
3. 8000 m

4.3 Addition

Example

1. Find the sum of the following.

(i) 7 m 25 cm + 15 m 50 cm

	m	cm
	7	25
+	15	50
	22	**75**

Sum =22 m 75 cm

Step:1 Start from centimeter
25 cm + 50 cm = 75 cm

Step:2 Add meters
7 m + 15 m = 25 m

(ii) 5 km 700 m + 12 km 450m

	km	m
	❶	
	5	700
+	12	450
	18	**150**

Sum = 18 km 150 m

Step:1
Add meters 700 + 450 = 1150

Step:2
Convert meter into kilometer
1150 ÷ 1000 = 1 km 150 m

Step3:
Add 1 km to the km column
1 km + 5 km + 12 km = 18 km
1 + 5 + 12 = 18

Example

2. The length of three ropes are 1 m 20 cm, 2 m 15 cm and 1 m 25 cm. What is the total length of three ropes?

Solution:

		m	cm
The length of the first rope	=	1	20
The length of the second rope	=	2	15
The length of the third rope	=	1	25
Total length of ropes		**4**	**60**

Total length of the ropes = 4 m 60 cm

4.4 Subtraction

Examples

Find the difference

(i) 75 km 500 m – 40 km 250 m

	km	m
	75	500
-	40	250
	35	**250**

Difference = 35 km 250 m

(ii) 55 km 75 cm – 23 m 40 cm

	m	cm
	55	75
-	23	40
	32	**35**

Difference = 32 m 35 cm

Try this

Subtract the following

1. 1075 km 400 m- 27 km 350 m
2. 250 m 25 cm- 127 m 18 cm
3. 27 km 900 m- 18 km 850 m

Example

Kannan bought 90 m 80 cm of cloth .He used to stich uniform of 43 m 75 cm. How much cloth is left?

Solution:

		m	cm
Total length of cloth	=	90	80
The length of cloth used to stich uniform	=	43	75
The length of remaining cloth		47	05

The length of the remaining cloth is 47 m 05 cm.

4.5 Multiplication

Example 1

(i) 12 km 225 m x 6

	km	m
	12	225
x		6
	73	**350**

225m x 6 = 1350m
= 1km 350m

12 km 225 m x 6 = 73 km 350 m

(ii) 75 m 15 cm x 5

	m	cm
	75	15
x		5
	375	**75**

75 m 15 cm x 5 = 375 m 75 cm

Try this

a. 7m 20cm x 6
b. 15m 75cm x 5
c. 15km 200m x 4
d. 35km 500m x 5

Example 2

The length of a ribbon is 4 m 25 cm. Find the total length of three ribbons.

Solution:

Length of one ribbon = 4 m 25 cm

Length of three ribbons = 4 m 25 cm x 3

= 12 m 75 cm

Length of three ribbons = 12 m 75 cm

4.6 Division

Example 1

(i) 84 m 40 Cm ÷ 4

```
          m    cm
          21   10
    4 |   84   40
      | - 8
      |    4
      | -  4
      |         4
      | -       4
      |         0
```

84 m 40 cm ÷ 4 = **21 m 10 cm**

(ii) 360 km 540 m ÷ 9

```
          km    m
          40    060
    9 |   360   540
     -|   36
      |    0    54
      |    -    54
      |          0
```

Answer = **40 km 060 m**

Try this

a. 750 m 45 cm ÷ 5

b. 49 km 630 m ÷7

c. 770 km 550 m ÷ 11

Example 2

If the total length of 4 pieces of clothes is 8 m 60 cm. What is the length of one piece of cloth?

Solution:

Total length of cloth = 8 m 60 cm

Length of one piece = 8 m 60 cm ÷ 4

Length of one piece = 2 m 15 cm

Length of one piece = **2 m 15cm**

	m	cm
	2	15
4	8	60
	-8	
		6
		-4
		20
		-20
		0

Exercise 4

A. Fill in the blanks

1. 7 m 5 cm = _____cm
2. 505 mm = _____cm _____mm
3. 326 m = _____cm
4. 5 km 30 m = _____m
5. 650 cm = _____m _____cm

B. True or False

a) 600 m is 6 mm.

b) 7000 m is 7 km.

c) 400 cm is 4 km.

d) 770 mm is 77 cm.

e) 9000 m is 90 mm.

C. Find the sum of the following.

1. 17 m 450 cm + 52 m 300 cm
2. 75 km 400 m + 37 km 300 m + 52 km 750 m
3. 4 cm 8 mm + 5 cm 9 mm

FZKRBW

D. Subtract the following

1. 15 km 450 m - 13 km 200 m.
2. 750 m 840 mm -370 m 480 mm.
3. 5 km 400 m - 3 km 350 m

E. Multiply the following.

1. 350 m 45 cm x 7
2. 25 km 300 m x 6
3. 37 m 350 mm x 8

F. Divide the following:

1. 950 km 800 m ÷ 5
2. 49 m 770 mm ÷ 7
3. 172 m 48 cm ÷ 4

LIFE ORIENTED PROBLEMS

G. Answer the following:

1. Saravanan had chosen to drive his vehicle from puducherry to Chennai for a distance of 165 Kms. While starting his vehicle, his odometer showed 00015. What will be the reading of the odometer, When he reaches Chennai?
2. Karthik Raja decided to travel from A. He moves 1Km east to reach B. Then he goes 2Km towards north and reaches C. Then he goes 1 Km towards west and reaches D. If he goes 2Km towards South, Where would he reach? Draw a Diagram and Justify it. Also find out the total distance he travelled.
3. Sangeetha has just finished building a new house with garden area. She measured the garden area and found it to be 6m x 6m. Suppose she has to put a pole every 1m, how many poles are required? Each pole is of height 1.5m from the ground. What should be the total length of the fencing material to fence the garden?
4. A students needs 1m 25 cm cloth to stich a shirt. What is the total length of cloth need to stitch 22 shirts?
5. The distance from village A to village B is 3 km 450 m. The distance from village B to village C 5 km 350 m. How long will be the road laid from village A to village C?

H. Create the story problem using the pictures given below:0




YEZ6CE

Recall

Draw the hour Hand and write the time.

Yesterday when you went to bed?_____

When will you get up in the morning? _____

When will you go to school? _____

See the clock and write the time		Write the time in the Clocks	
			11:40
			04:55
			01:40

5.1 Railway time

We are using 12 hours time generally. To avoid confusion, we use railway time in railway station, television. airport, internet, etc. When we are going to railway station we cannot see or hear announcements in a.m. or p.m. Because railway uses 24 hours time?

Generally railway time is written in 4 digits.
The first two digits show the hour and the last two digits show the minutes.

24-Hours Clock

We can write,

Mid night 12 O Clock is 0000 hour or 24 hours		Noon 12 O Clock – 12.00 hours
9. am – 09.00 hours		1. p. m – 13.00 hours (12+1) hours

While converting the 12 hour time to 24 hour time during p.m. we should add 12 to hours and keep the minutes same.

5.2 Conversion

12 hours Clock	24 hours Clock	12 hours Clock	24 hours Clock
12 Mid night	0000 hours or 2400 hrs	12:01 p.m.	12:01 Hours
0:20 a.m.	00:20 Hours	12:59 p.m.	12:59 Hours
0:49 a.m.	00:49 Hours	1:00 p.m.	13:00 Hours
1:00 a.m.	01:00 Hours	4:00 p.m.	16:00 Hours
4:00 a.m.	04:00 Hours	5:20 p.m.	17:20 Hours
5:30 a.m.	05:30 Hours	9:45 p.m.	21:45 Hours
11:15 a.m.	11:15 Hours	11:30 p.m.	23:30 Hours
12:00 Noon	12:00 Hours	12 Mid night	00:00 hrs or 24:00 hrs

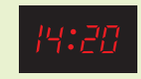
Try this

Standard time	Railway time
1. 3.30 a.m.	_____ Hours
2. 4.15 p.m.	_____ Hours
3. _____	12.50 Hours
4. _____	20.15 Hours
5. 12.25 p.m.	_____ Hours
6. 01.55 p.m.	_____ Hours

24 hour Clock 12 hour Clock

2:20 am  2:20

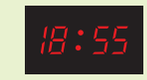
Mid night 2 hours 20 minutes

2:20 pm  

After noon 2 hours 20 minutes

6:55 am  6:55

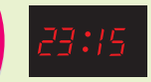
Morning 6 hours 55 minutes

6:55 pm  

Evening 6 hours 55 minutes

11:15 am  11:15

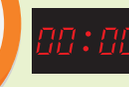
Morning 11 hours 15 minutes

11:15 pm  

Night 11 hours 15 minutes

12:00  12:00

Noon 12 hours

12:00  

Mid night 12 hours

Try this

Write the A.M./P.M.

1. Ravi starts to school at 8:45 ___
2. Ramya eats her lunch at 1:00___
3. Afrin sees the moon at 8:20_____
4. Kavi goes to bed at 9:00____
5. The sun rises at 6:10____

5.3 Use addition and subtraction in finding time interval

Addition

Example

Add : 4 hours 30 minutes and 2 hours 45 minutes

	Hours	Minutes
	4	30
+	2	45
	6	75
	7	15

75 minutes = 1 hour 15 minutes

7 Hour 15 minutes

Example

Krishna goes to his village. He travels 4 hours 35 minutes in bus and 1 hour 55 minutes in two wheeler. What is his total time of travel?

			Hours	Minutes
Travel in bus	=		4	35
Travel in two wheeler	=	+	1	55
			5	90
Total time	=		6	30

90 minutes = 60+30 minutes
60 minutes = 1 hour
30 minutes = 30 minutes
∴ 5+1 = 6 hour 30 minutes

∴ Krishna travels totally for 6 hour 30 minutes

Subtraction

Example

Subtract : 3 hours 45 minutes from 5 hours 30 minutes

	Hours	Minutes
	5	30
-	3	45

	Hours	Minutes
	4	60+30
	~~5~~	30
-	3	45
	1	45

1 Hour 45 minutes

We can't Subtract 45 minutes from 5 hours 30 minutes so we change the 5 hours in to (60 + 30) 90 minutes and subtract 45 minutes from 90 minutes. We can get 45 minutes.

When we subtract 3 hours from 4 hours balance is 1 hour

Example

Ram works on his Computer from morning 10' O Clock to Evening 3.30. How long does he work on his computer?

		Hours	Minutes
Ram work on his Computer at Evening	=	3	30
His work at Morning	=	10	00

	Hours	Minutes
	15	30
-	10	00
	5	30

Subtract from a.m. to p.m., we add 12 hours.

Add 3.30 hours + 12 hours we can get 15:30

∴ Ram works 5 hours 30 minutes on his computer

Example

SCHOOL TIME TABLE			
First bell	9:30 a.m.	**Lunch time**	12:40 p.m. to 2:00 p.m.
Morning prayer	9:15 a.m.	**Afternoon school starting time**	2:00 p.m.
Class starting time	9:30 a.m.	**Afternoon break time**	3:20 p.m. to 3:30 p.m.
Morning break time	11:00 a.m. to 11:10 a.m.	**Evening school closing time**	4:10 p.m.
Morning school closing time	12:40 p.m.		

1. Find the time interval between First bell and morning break.

		Hour	Minutes
Morning break time	=	11	00
First bell time	=	- 9	00
		2	00

The time interval between First bell and morning break is **2 Hours.**

2. Find the time interval between the time of class starting and the time of morning break.

		Hour	Breaking time
		10	(60 + 10)
Morning break ending time	=	~~11~~	10
Class starting time	=	- 9	30
		1	40

The time interval between class starting time and morning break ending time is 1 hour 40 minutes.

We can't subtract 30 minutes from 10 minutes so we convert to hour into minutes 1 hours to 60 minutes and add.

60+10 = 70 now we subtract 30 minutes from 40 we can get 1 hour 40 minutes.

3. Find the total time from starting of morning class to Closing of Afternoon class.

	Hour	Minutes
Afternoon class ending time =	4	10
Morning class starting time =	9	30

Hours	Minute
	(60+10 = 70)
15	
~~16~~	10
9	30
6	40

Add 12 hours, 4.10 + 12.00 = 16 Hours + 10 minutes.

The total time from starting of morning class to closing of afternoon class is 6 hours 40 minutes.

Try this

Find the time interval between starting of afternoon class and closing of evening class.

		Hour	Minutes
Evening school ending time	=	4	10
Afternoon school starting time	=	- 2	00

Subtract from am to pm, we add 12 hours and then subtract the a. m time

Exercise 5

a. Write down your school time table for the following:

- Morning school break time to morning school ending time.
- Morning school working time.
- Afternoon school working time.
- Afternoon Lunch break time.

BBL12A

b. Match the following:

12 hours time	24 hours time
9:40 a.m.	23:40 Hours
3:20 p.m.	6:25 Hours
6:25 p.m.	15:20 Hours
11:40 p.m.	9:40 Hours
6:25 a.m.	18:25 Hours

c. Addition

1. 4 hours 30 minutes +2 hours 50 minutes = _____
2. 4 hours 50 minutes +2 hours 30 minutes = _____
3. 3 hours 45 minutes +1 hours 35 minutes = _____
4. 1 hours 50 minutes +3 hours 45 minutes = _____
5. 2 hours 25 minutes +4 hours 50 minutes = _____

d. Subtract

1. 5 hours 10 minutes – 2 hours 35 minutes = _____
2. 4 hours 20 minutes – 2 hours 40 minutes = _____

3. 4 hours 25 minutes – 1 hours 20 minutes = _____

4. 6 hours 55 minutes – 2 hours 20 minutes = _____

5. 5 hours 45 minutes – 3 hours 55 minutes = _____

e. Answer the following:

1. An office works from morning 10' O clock to afternoon 6' O clock. What is the working hours of the office in a day?

2. A school works from 9 a.m. to 4.10 p.m. What is the working hours of the school?

3. A circus starts at 2:15 p.m. and end after 2:30 hours. At what time the circus ends?

4. A bank works from morning 9:30 to evening 4:30. What is the working hours of the bank?

5. A man comes to his village from abroad. He travels 2 hours 15 minutes in Aeroplane and 4 hours 40 minutes in Car. What is his total time of travel?

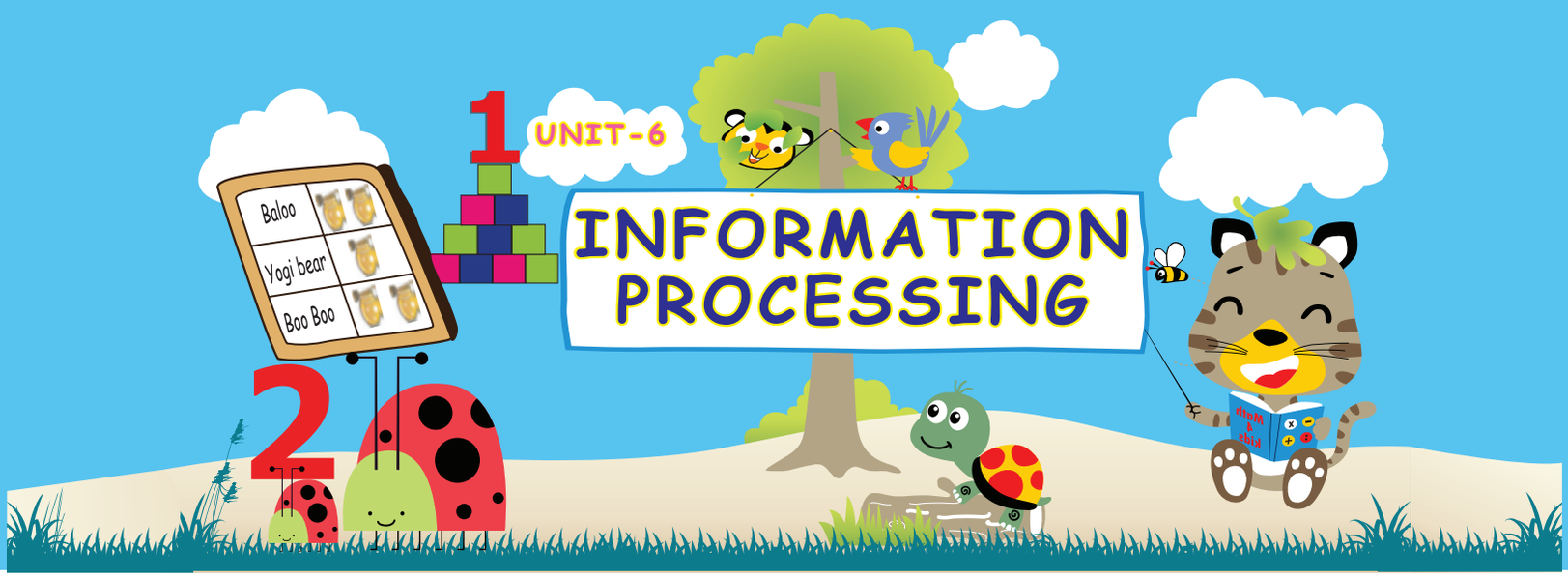
6. A painter paints a house for 3 hours 15 minutes in the morning, and 2 hours 50 minutes in the evening. What is his total time of work?

Project / Activity

[24 hours Clock]

Write down the time of travel.

Train Name	Starting time Chennai	Reaching time	Travelling time
Sarkar Express Kakkinoda	17:20	09:50	
Rameswaram Express train Rameswaram	19:15	08.35	
Ananthapuri Express Kollam	06:50	08.20	
Sozhan Express Train Trichirapalli	08:00	16.00	



UNIT-6

INFORMATION PROCESSING

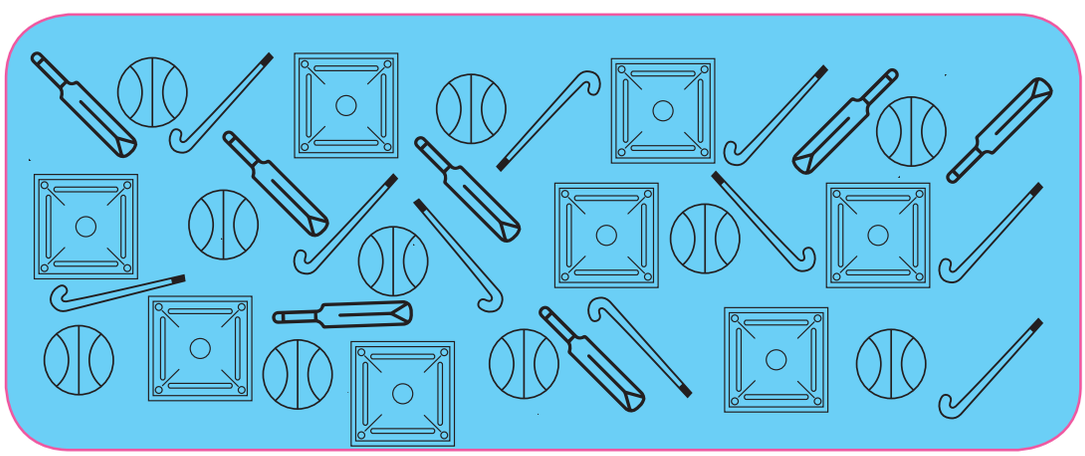
N87UR6

Introduction

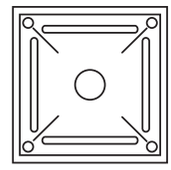
The main aim of information processing is to enable the learners to count, compare and assume information such as invitees coming to attend a birthday party, sort out the library books, food production, the number of pupils taking food in the mid-day meal scheme and the various occupations of their parents.

Example

The teacher asked a student named Dinu to collect the pictures of his favourite sports articles and Dinu collected the same and handed it over to the teacher quickly. Let us see how is it possible for him to do it quickly.



He tabulated the same as follows, then the teacher asked questions to classify the details of sports articles.

Sports article				
Numbers	7	10	8	10

Let us know what the teacher asked dinu?

1. Find the total number of pictures?
2. How many students like cricket bat?
3. How many students like football?
4. How many students draw Carrom board?
5. How many students like hockey stick?

6.1 Systematic Listing

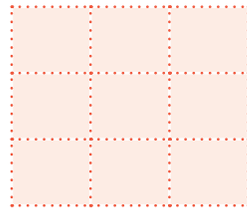
Number puzzle is considered to be one of the unique games in mathematics. These types of games create more interest and involvement to learn mathematics in a very easy manner.

It is very happy to note that most of the number puzzles contain the basic knowledge of mathematics.

Here is a game of number puzzle with a systematic rule and with a specific property.

i. Choose any one number
ii. Add the next number to this
iii. Then add 9
iv. Divide by 2
v. And then subtract the assumed number
vi. **Answer 5** (common for all)

Let us know



The above diagram (grid) shows rows and columns, horizontal squares are called **Rows** vertical squares are called **Columns**.

Example 1

3×3 Sudoku

The object is to fill all empty squares so that the numbers 1 to 3 appear once in a row and column.

Step: 1

1	2	3

Step: 2

1	2	3
2	**3**	**1**

Step: 3

1	2	3
2	**3**	**1**
3	**1**	**2**

Try this

In how many ways can we arrange the numbers 1 to 3 in first Row?

[**Answer:** (1 2 3), (1 3 2),(2 1 3),(2 1 3),(3 1 2)]

Example 2

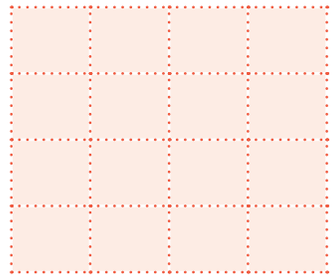
4×4 Sudoku

1	4	3	
3			
	1		3
2		4	1

Answer:

1	4	3	**2**
3	**2**	**1**	**4**
4	1	**2**	3
2	**3**	4	1

Try it



In how many ways can we arrange the numbers from 1 to 4 in first row?

Let us know

5, 3, 2 = 15 10 22

9, 2, 4 = 18 36 52

8, 6, 3 = 48 24 66

5, 4, 5 = 20 25 41

therefore 7, 2, 5 = ?

Answer: 14 35 47

Hint:

(i) Multiply of 1st and 2nd numbers 7 x 2 = 14

(ii) Multiply of 1st and 3rd numbers 7 x 5 = 35

(iii) Add the 2 products and subtract the middle number

= 14 + 35 = 49 - 2 = 45

Exercise 6.1

a. Fill the suitable number in the boxes

1

1		3
	5	
7	8	

2

1		2
3		1

3

2		
	2	
		2

4

3		
	3	
		3

b. Solve 3×3 magic square using the numbers from 1 to 9

			15
			15
			15
15	15	15	

c. Complete the following 4×4 Sudoku using the numbers 1, 2, 3, 4

1			
	4		
4			
	3		1

		1	
	4		
3			2

	1	3	
2			1

d. Can you spot the duplicate?

DEF, EFD, FDE, EFD, FED, DFE, EDF

e. Can you find the mistake? Explain

ABC, ACB, BCA, BAA, CAB, CBA

6.2 GRAPHICAL REPRESENTATION OF DATA

6.2a Collection of two – dimensional quantitative Data

The easy method to calculate is to tabulate the collected 2 – dimensional information and represent it in pictures.

Example 1

Sports day celebration

After the Sports day Celebration, the students kept all the used sports articles in a room. The physical director asked the students Dinesh & Ganesh from Fifth Standard to arrange the sports article in order. They tabulated the sports articles as below

Note:

Rows are horizontal arrangements whereas column are vertical arrangements.

Let us know

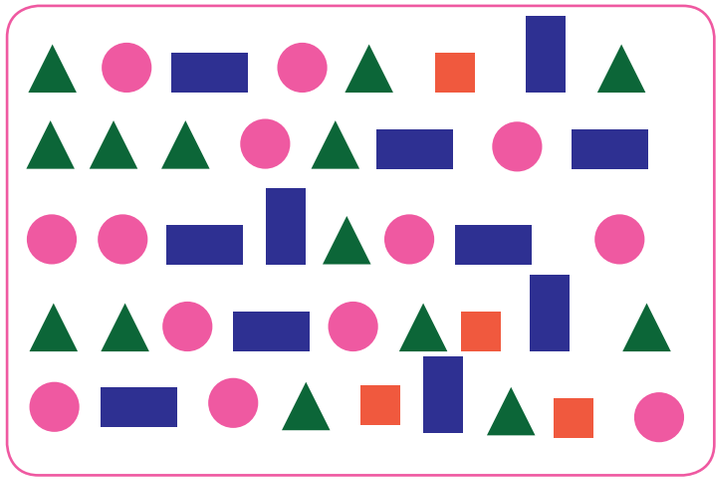
The process of arranging classified data in table form is known as tabulation.

Let us see how they arranged in a proper way

Shapes										
Numbers	4	1	2	6	11	3	2	1	1	10

Activity 1

In a Sports day celebration. The Fifth standard students were given a competition of collecting mathematical shapes. Shakuntaladevi team won the competition.



Try this

Can you make a rectangle using the triangles taken from a square?

Let us count the shapes collected by the winning team.

Shapes	▲	▬	●	■
Numbers				

Example 2

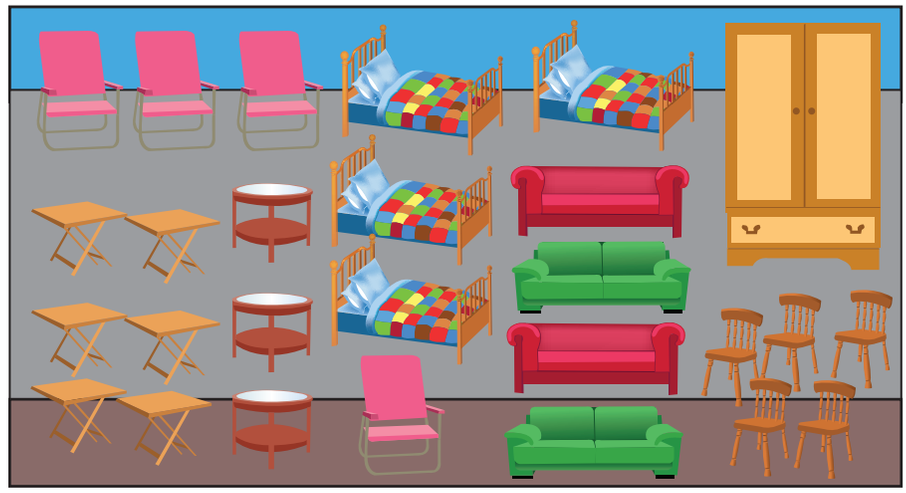
Prabu would like to present some gifts on his birthday party. He collected the details from his friends.

Friends name	Favourite item	Friends name	Favourite item
Mathavi	Pen	sangavi	Eraser
Arul	Eraser	Priya	Pencil
Anjali	Eraser	Vishal	Pen
Malar	Pen	John	Colour Pencil
Vembu	Pencil	Ravi	Pencil box
Selvi	Scale	Albert	Water bottle
begam	Pencil	Periasamy	Pencil box
		Senthil	Water bottle

Items	Pencil box	Pen	Eraser	Pencil	Scale	Water bottle	Colour Pencil
Numbers	2	3	3	3	1	2	1

Activity 2

In a house hold articles mart, total stock was calculated at the end of the month as given below. Answer the following question.



Questions:

1. How many chairs were there in the stock list?
2. Name the articles which are lesser than the number of cots.
3. What is the total number of things in the stock?
4. How many tri footed stools were there?
5. Mention the articles which are 3 greater than tri footed stool?

Do it your self

List & tabulate the furniture in your school.

6.2b Pictograph

Information can be easily understood when they are represented in pictures.

A **pictograph** is the representation of data using pictures. Pictographs represent the frequency of data while using symbols or images that are relevant to the data. This is one of the simplest ways to represent data.

Example

This is information collected from 150 students about their favourite subjects. Make a pictograph based on it:

Subject	Number of students
Tamil	25
English	20
Maths	55
Science	35
Social sciences	15

 = 5 students

Subject	Number of students
Tamil	
English	
Maths	
Science	
Social sciences	

Activity

The following information shows the number of literates in a village of 200 people. Draw a pictograph for the data.

Education	Numbers
Up to Eigth standard	20
Up to Tenth standard	50
Up to Twelveth standard	70
Under Graduate	10
Post Graduate	10
Up to Fifth standard	10
Illiterates	30

Exercise 6.2b

1. The following table shows the weight of paddy Cultivated in a particular village between 2010 and 2015

Year	Paddy production
2010	
2011	
2012	
2013	
2014	
2015	

 = 100 kg

Observe the pictograph and answer the following questions.

1. In which year the paddy production was maximum?
2. In which years the paddy productions were equal?
3. Find the paddy production in 2015,.
4. Find the total quantity of paddy production in 2013, 2014, and 2015.

2. The total number of pupils studying in class 5 are as follows

GHSS: 1000 PUPS: 200 BHSS: 400

PUMS: 400 Private nursery School: 800

Prepare a pictograph using the symbol  to represent 100 Pupils and answer the following question:

1. Which school has the maximum number of pupils?
2. Which school has the least number of pupils?

6.2c Graphical Representation or Data

Any collection of information in the form of numerical figures giving the required information is called Data.

In olden days, primitive man used to count and verify his livestock using stones.This is the first data gathering method. Nowadays we use many methods to collect information the most efficient method is to keep a **"tally stick"**.

Example 1

An information was collected about the number of vehicles which crossed a school on a particular time.

Car	11111111111
Van	1111111
Lorry	1111111111111
Two wheelers	111111111111
Bus	1111

'1' is called a 'tally mark'. It is difficult to count if there are more number of tally marks.

Therefore to make it easier to count, we change it as follows.

11 - 2	~~1111~~ 11 – 7
111 – 3	~~1111~~ 111 – 8
1111 – 4	~~1111~~ 1111 – 9
~~1111~~ – 5	~~1111~~ ~~1111~~ – 10
~~1111~~ 1 – 6	~~1111~~ ~~1111~~ 1 – 11

Note:
We can use tallymark to record data with large numbers.

Solution

Vehicles	Tally mark	No. of vehicles
Car	~~1111~~ ~~1111~~ 1	11
Van	~~1111~~ 11	7
lorry	~~1111~~ ~~1111~~ 111	13
Two wheelers	~~1111~~ ~~1111~~ 11	12
Bus	1111	4

Answer the following questions:

1. Which vehicle crossed the school maximum in numbers?
   Answer: lorry
2. Find the total number of vehicles which crossed on a particular time? Answer: 47

Example 2

Information was collected by Balu from 20 students of class five regarding their favourite snacks. Tabulate the given information.

Students	Favourite snacks	Students	Favourite snacks
1	Chocolate	11	Apple
2	Cake	12	Chocolate
3	Biscuit	13	Cake
4	Chocolate	14	Chocolate
5	Chocolate	15	Chocolate
6	Banana	16	Cake
7	Biscuit	17	Banana
8	Biscuit	18	Chocolate
9	Biscuit	19	Apple
10	Chocolate	20	Chocolate

Tabulate the above information by using Tallymark. Here, all the students have chosen any one of the snacks we can tabulate it as follows.

Name of the snack	Tallymark	No.of students
Chocolate	~~1111~~ 1111	9
Cake	111	3
Biscuit	1111	4
Apple	11	2
Banana	11	2

Activity 1

The number of two-wheelers sold during a week in a show room is given below. Represent the data using tally marks.

Sunday-6	Wednesday-5
Monday-11	Thursday-16
Tuesday-3	Friday-16
	Saturday-4

Activity 2

In a mathematics test, the following marks were obtained by 30 students. Arrange these marks in a table using tallymarks.

8	1	3	2	6	4	2	8	4	9
2	9	5	7	6	2	7	10	2	4
3	4	7	5	5	5	6	3	8	6

(a) Find how many students obtained marks equal to or more than 8?

(b) How many students obtained marks below 4?

Mark	Tally marks	Number of students
1		
2		
3		
4		
5		
6		
7		
8		
9		
10		

Try this

Ask the students to collect the information about the number of students present in a particular day of the school. Tabulate the above information using tallymarks.

Do it yourself

Ask the students to collect information about the different types of houses in their villages and complete the following table.

Type of the house	Tally mark	Total number of houses
Thatched house		
Tiled house		
Asbestos house		
Concrete house		

Try yourself

Choose any five cities and record their temperature from the TV (or) Newspaper.

Try this

Collect information based on the points given below and prepare a table using tally marks

(a) Which story book do your classmates like?

Clue [Fairy tales, Moral stories, Comics, picture stories, fictions and animal stories]

(b) What do your classmates want to become when they grow up?

Clue [Doctor, Farmer, Engineer, Pilot, Politician, Teacher]

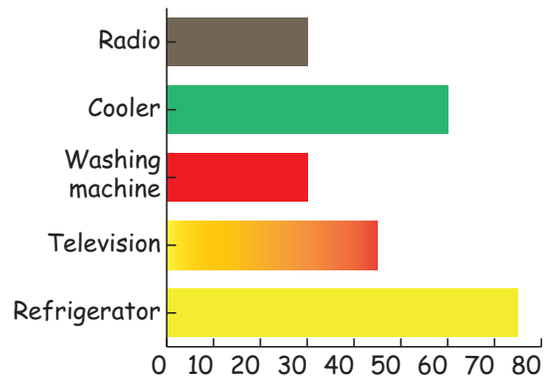
6.2d Bar graph

A Bar graph is a chart that uses bars to show comparisons between categories of data. The bars can either be horizontal or vertical.

Example 1

The number of things sold in a month of January in a particular shop is shown below. Draw a bargraph.

Home appliance things	No. of things sold
Refridgerator	75
Television	45
Washing machine	30
Cooler	60
Radio	30



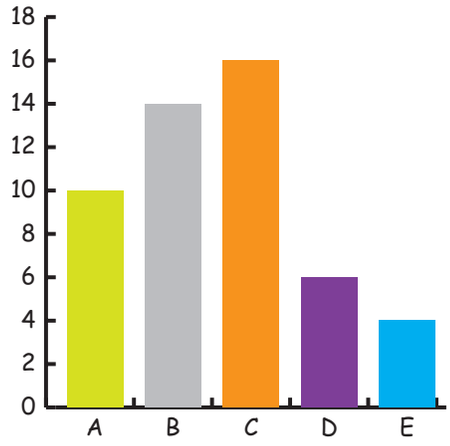
Activity 1

1. Take a survey among your friends and family on their favourite pets. Use the information to draw a bargraph.
2. Take a survey among your school friends or their favorite colour. (key: Purple, Green, Red, Brown, Blue)
   Draw a bargraph to represent your data.

Activity 2

The following information is collected from 50 students of class 5 about their grades in exams. Complete the following table.

Grade	Tallymark	No. of students
A	𝍸 𝍸	10
B	𝍸 𝍸 1111	14
C	𝍸 1	
D		
E		



Example 2

In Trichy, a GHSS has five different clubs. The data shows the number of students in each club. Use the information to draw a bargraph and answer the questions.

Art club	Debate club	Dance club	Drama club	Sports club
28	80	150	100	120

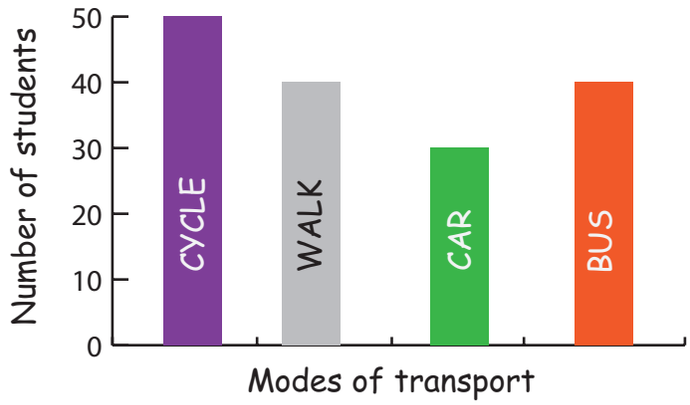
1) Which club has the fewest students? How many?
   Answer: Arts club 28
2) How many students are there in art and debate clubs?
   Answer: 28+80=108
3) Find how many students are there in the sports club more than the drama club?
   Answer: 20
4) How many students are there in all clubs together?
   Answer: 478

Activity 3

Take a survey among your classmates on their favourite hobby.
[Clue: Reading, Painting, Gardening, Cooking, Fishing]
Draw bargraph to represent your data.

Exercise 6.2c

a. The bar chart represents the number of students using different modes of transport. Answer the following questions.



Questions

1. Which mode of transport is mostly used by the students?
   _____
2. How many students come to school by walking? _____
3. Which mode of transport is used the least? _____
4. How many students come by Bus? _____

b. The following information shows the grades in science and maths of 30 students.

Questions

1. How many students got same grades in both the subjects?
2. How many students got a higher grade in science than in maths?
3. Which was the most common grade in science?

Science Grade \ Maths Grade	A	B	C	D	E
A	2	8			
B		1	4		
C		2	3		
D			4	2	
E		1	0	2	1

c. Mr. Dinesh collected information about the rainfall of a particular city in a week from the newspaper and recorded his information in the pictograph.

Millimeters of Rain

Sunday	💧💧💧
Monday	💧💧💧💧💧💧
Tuesday	💧💧💧💧💧
Wednesday	💧💧💧
Thursday	💧💧💧💧
Friday	💧💧💧💧💧💧💧💧💧💧
Saturday	💧💧💧💧💧💧

D1FJ5X

💧 = 2 millimeters of rain

1. On which day, the rain was the most?
2. On which day, the rain was the least?
3. How much rain was there on Sunday?
4. How much rain was there on Monday?
5. Find the total rainfall of the city in that week?

d. Neela, Mala, Kala and Bala were neighbours. The following data shows the number of fish in their fish tank respectively. Draw a pictograph to represent the data and answer the questions.

Neela	Mala	Kala	Bala
16	20	12	24

1. How may fish did bala have? _____
2. Who has 16 fish? _____
3. How many fewer fish did Kala have than Mala? _____
4. How many fish did Neela and Bala have together? _____

Answers

NUMBERS

Exercise 2.4a

1. 61,866; 41,969
2. a) 44,410 b) 2,83, 448 c) 2, 55, 404 d) 52, 738
3. 15,832
4. Rs. 64, 667
5. Rs. 47,450

Exercise 2.4 b

(a) 1) 18,872 2) 63,308 3) 1,10,398 4) 85,162

(b) 732

Exercise 2.4 d

1. a) 22,704 b) 76,988 c) 21,900 d) 17,934
   e) 16,263 f) 24,360
2. 1. Rs. 825 2. Rs.1375 3. Rs.16,675 4. Rs. 16, 875
   5. Rs.24,700

MEASUREMENTS

Exercise:4

A. 1) 705 cm 2) 50 cm 5 mm 3) 32600 cm 4) 5300 m
   5) 6m 50 m

B. a) false b) true c) false d) true
   e) false

C. 1) 69 m 750 cm 2) 165 km 450 m 3) 10 cm 7 mm

D. 1) 2 km 250 m 2) 380 m 360 mm 3) 2 km 50 m

E. 1) 2453 m 15 cm 2)151 km 800 m 3) 298 m 800 mm

F. 1) 190 km 160 m 2) 7m 110 mm 3) 43m 12cm

G. 1) 000322 2) 6 km 3) 20 poles, 30 m
4) 27 m 50 cm 5) 8 km 800 m

TIME

Exercise:5

C. 1) 7 h 20 min 2) 7 h 20 min
3) 5 h 20 min 4) 5 h 35 min
5) 7 h 15 min

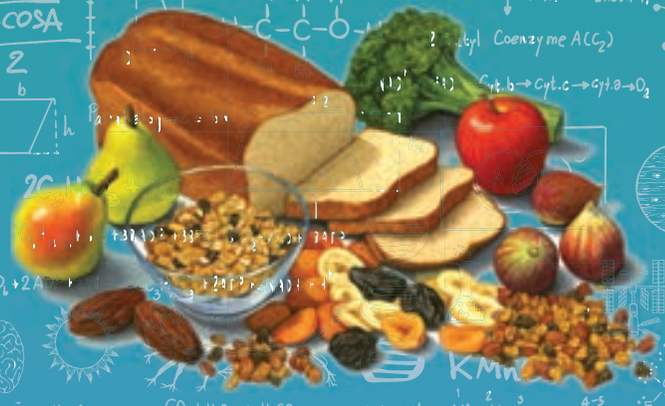
D. 1) 2 hr 35 min 2) 1 hr 40 min
3) 3 hr 05 min 4) 4 hr 35 min
5) 1 hr 50 min

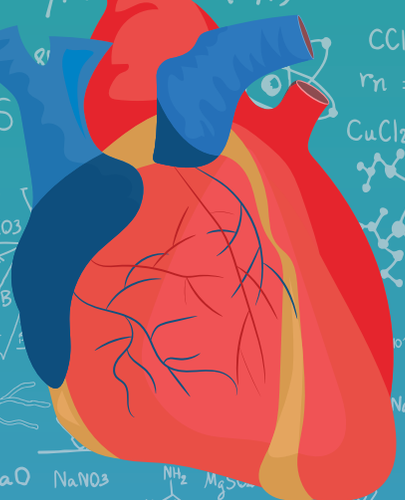
E. 1) 8 hr 2) 7 hr 10 min 3) 4.45 hrs
4) 6 hrs 5) 6 hr 55 min 6) 6 hr 05 min

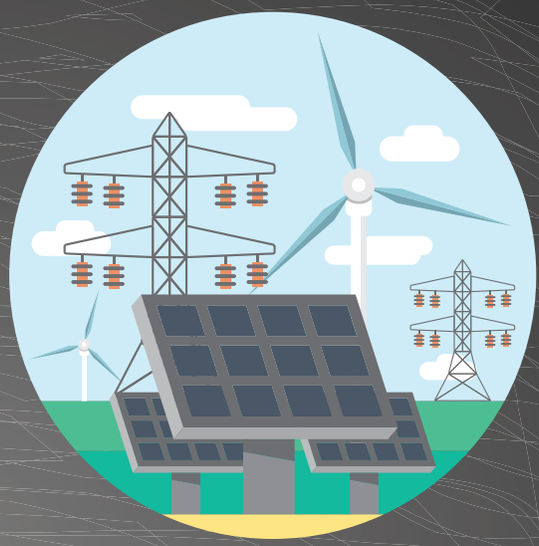
5

SCIENCE

TERM-1







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QTNE8C

Evaluation

B335_5_SCIENCE_EM

Digi Link

1 Organ Systems

Learning Objectives

After completing this lesson students will be able to:

- know about different organ systems of human body.
- identify different organs.
- understand the functions of different organs.

3QA8X8

Introduction

We get energy for our daily activities from the food we eat. How is the food converted into energy? It is through the process called digestion. After we eat the food, waste products are removed from the body. The process involved in this is called excretion. We need oxygen to survive. Our body gets oxygen through the process, called respiration. These processes are carried out by different organs in our body. Different organs form the organ systems. In this lesson we will study about different organ systems in our body and their functions.

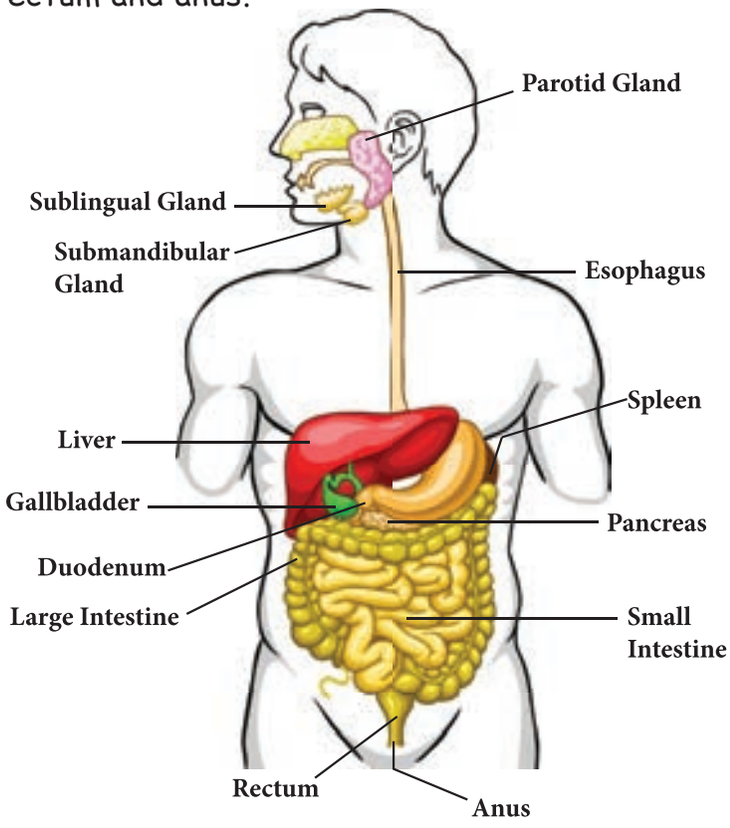
I. Digestive System

The food we eat consists of complex compounds like carbohydrates, proteins and fats. They have to be converted into simpler molecules like glucose, amino acids, fatty acids and glycerol respectively. These simpler molecules are then assimilated either by blood or lymph in order to give us energy. The process of conversion of complex food molecules into simpler molecules is called digestion. The digestive system can be divided into two.

1. Digestive tract 2. Digestive glands

1 Digestive tract (Alimentary canal)

It is a coiled muscular tube extending from the mouth to the anus. It is about 6-9 metres long and consists of many specialized divisions. Arranged sequentially, these are: mouth, buccal cavity, pharynx, esophagus, stomach, small intestine, large intestine, rectum and anus.



Mouth
↓
Buccal Cavity
↓
Pharynx
↓
Esophagus
↓
Stomach
↓
Small intestine
↓
Large intestine
↓
Anus

Do you know?

There are some organisms which live in the digestive systems of animals. For example, tape worm lives in the human intestine.

2 Digestive glands

Three important digestive glands associated with the process of digestion are:

1. Salivary glands
2. Pancreas
3. Liver

Salivary glands secrete saliva which moistens food. Saliva contains enzymes which break down complex starch into simple cabrohydrate molecules. Pancreas produces pancreatic juice which contains digestive enzymes for digesting fats, proteins and carbohydrates. Liver produces bile for the digestion of fat.

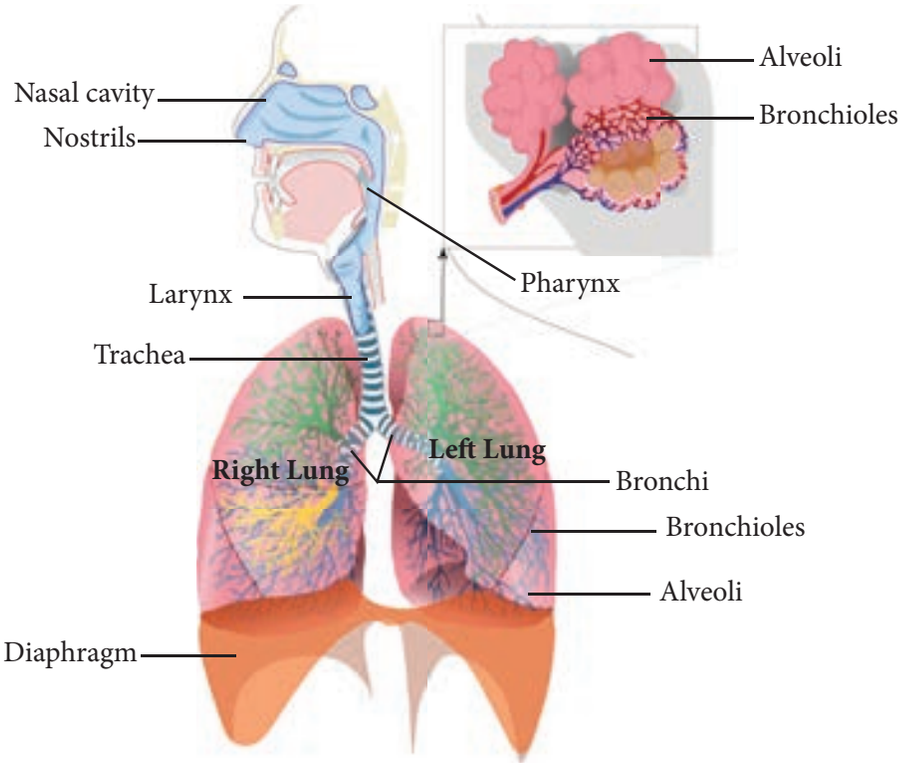
Do you know?

The three pairs of salivary glands parotid, sublingual and submandibular gland secrete approximately 1.5 litres of saliva every day.

II. Respiratory System

The respiratory system provides oxygen to the tissues of the body and removes carbon dioxide from the tissues. There are three major parts forming the respiratory system.

1. Airway 2. Lungs 3. Muscles of respiration



Nostrils
↓
Nasal cavity
↓
Pharynx
↓
Larynx
↓
Trachea
↓
Bronchi
↓
Bronchioles
↓
Alveoli

Do you know?

People suffer due to smoke. Smoke contains large amount of carbon monoxide a toxic gas. People when engulfed in smoke on fire die due to suffocation.

Activity 1

Sit quietly and count how many times you breath per minute. On an average, we breath 16-18 times per minute. Can you guess the number of times you breath in a day? We breath more than 20,000 times in a day.

1 Airway

The airway includes the nasal cavity, pharynx, larynx, trachea, bronchi and lungs. It carries air between the lungs and the surrounding.

2 The Lungs

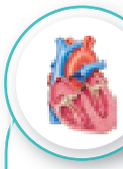
The lungs are the primary organs of the respiratory system. They are paired, cone-shaped organs. They are located near the backbone on both sides of the heart.

3 Muscles of respiration

Muscles of respiration include diaphram and intercostal muscles. They act as pump and push the air into and out of the lungs during breathing.

Do you know?

- Air pollution causes many respiratory diseases.
- Smoking can cause lung cancer.



III. Circulatory System

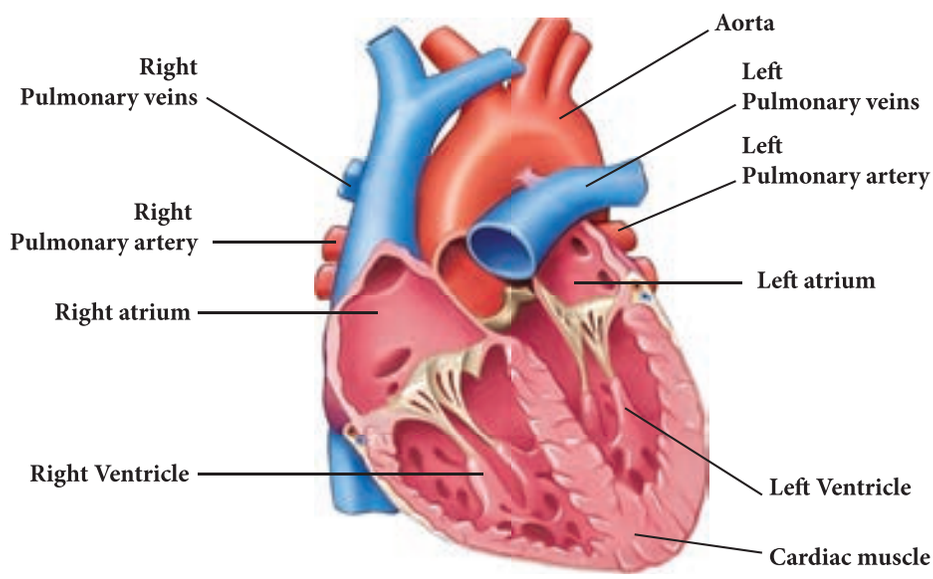
In this system blood is circulated to transport oxygen and nutrients to every part of the body. Circulatory system consists of the following:

1. Heart
2. Blood
3. Blood vessels

FLW3M4

1 Heart

The heart is a hollow, muscular organ. It is somewhat conical in shape. It is covered with double walled membrane called pericardium. The space between the membranes is filled with pericardial fluid. The pericardial fluid protects the heart from shock. Heart is placed inside the thoracic chamber (rib cage) in between the two lungs.



The heart is divided into four chambers. Two upper chambers are called atria or auricles (Singular-atrium). Two lower thicker chambers are called ventricles. The upper and lower chambers of the heart are separated by a muscular wall or tissue known as the auriculo-ventricular septum of the heart. The right side of the heart receives deoxygenated blood from various parts of the body and pumps it to the lungs for oxygenation. The left side of the heart receives oxygenated blood from the lungs and pumps it into different parts of the body.

2 Blood

Blood transports nutrients, oxygen, wastes and hormones. The volume of blood in human adults is 4-5 litres. It regulates water level and the body temperature. Blood is pumped through out the body by the heart. It takes oxygen to tissues and cells and finally reaches the lungs to take oxygen again.

3 Blood vessels

Blood vessels consist of arteries and veins. Arteries carry oxygenated blood (except pulmonary artery which carries deoxygenated blood from the heart) and veins carry deoxygenated blood (except pulmonary vein which carries oxygenated blood to the heart).

Activity 2

Locate your pulse points either on wrist or neck. Place your right index and middle finger on the palm side of your left wrist. On the neck the pulse point is located beneath the ear and jaw bone. Count the number of beats for 15 seconds. Multiply this by four (15 * 4 = 60). This shows how many times the heart beats in one minute.

Do you know?

There are some animals like lobsters and crabs that have blue blood. Cockroach has colourless or white blood.

IV. Excretory System

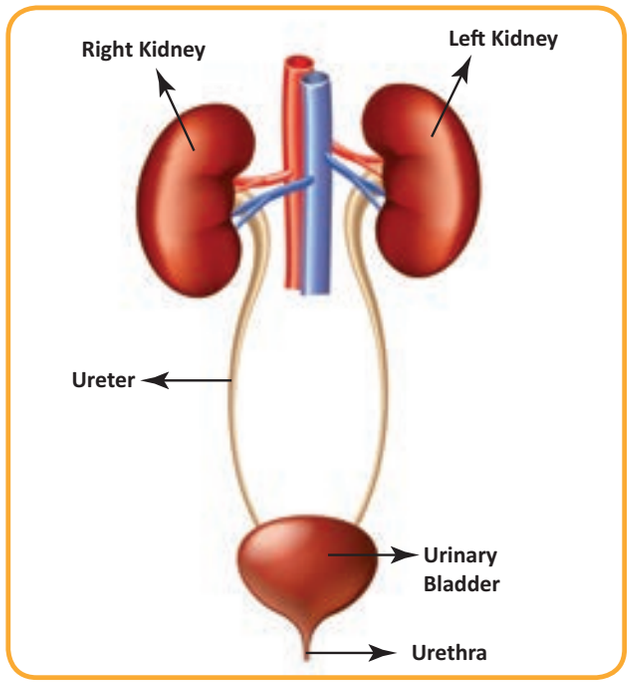
Excretory system removes the waste products from the body. It also regulates water and electrolyte balance. Kidneys, lungs, liver and skin together function as excretory organs. Excretory system consists of the following.

1. Kidneys
2. Ureters
3. Urinary bladder

1 Kidneys

The kidneys filter the blood to remove waste and produce urine. The kidneys are a pair of dark red, bean shaped organs placed behind the abdomen on either side of the vertebral column. The average adult's kidney measures about 12 cm in length, 6 cm in width and 3 cm in thickness. Right kidney is slightly lower than the left kidney. Each kidney is covered by a fibrous membrane called capsule.

The kidneys are made up of millions of excretory units, called Nephrons, which are the structural and functional units of the kidneys.



2 Ureters

Two ureters connect the kidneys with the urinary bladder. Urine formed from each kidney reaches urinary bladder through ureters.

3 Urinary bladder

It is sac-like in shape and acts as a temporary storage organ of urine. Urine entering the urinary bladder from the ureters slowly fill the hallow space inside the bladder. Urine is expelled from the body through the urethra.

Do you know?

Every minute, kidneys receive approximately 1.250 litre of blood.

V. Nervous System

Nervous system is an integration of nerves and specialised cells called Neurons. The human nervous system is divided into the following.

1. Central nervous system (CNS)
2. Peripheral nervous system (PNS)

1 Central nervous system

Central nervous system consists of the brain, the spinal cord and the nerves.

❖ Brain

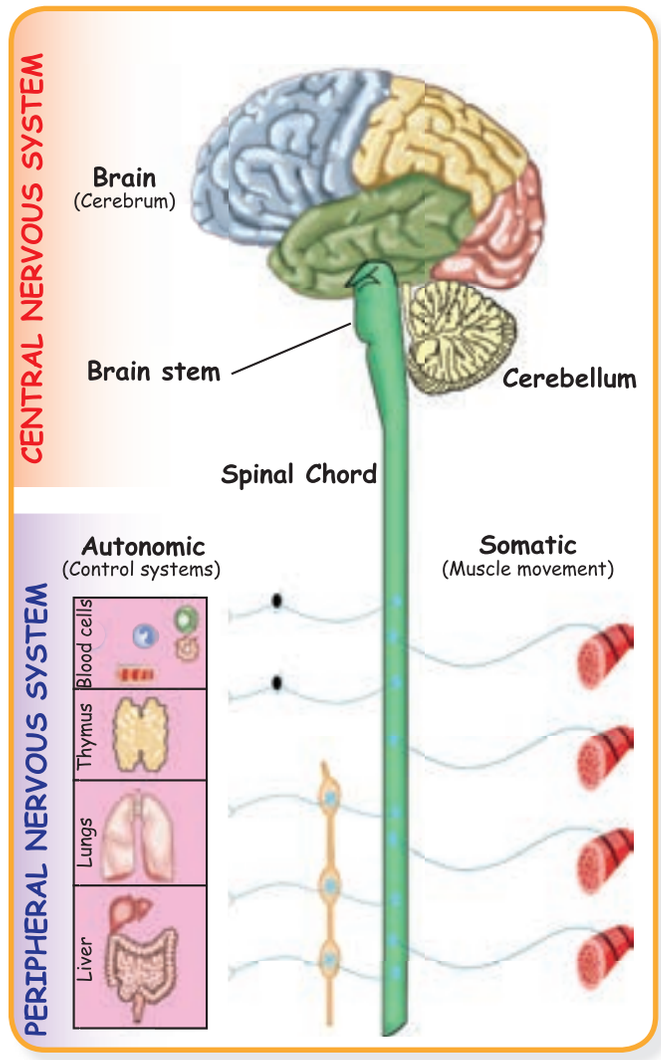
We use our brain to think, read and write. The brain is covered by three membranes called meninges. They are dura mater, arachnoid membrane and pia mater. The brain is kept in a bony case called cranium or skull. It is made up of eight immovable bones. The brain is made up of millions of functional units called Neurons.

Human brain is divided into three major parts.

Fore Brain (Cerebrum)

Mid Brain (Cerebellum)

Hind Brain (Medulla Oblongata)



Fore Brain (Cerebrum)

- The fore brain consists of cerebrum, thalamus and hypo thalamus.
- It is the largest part of the brain.
- It is the centre of human memory.
- It is responsible for intelligence, imagination and reasoning.

Do you know?

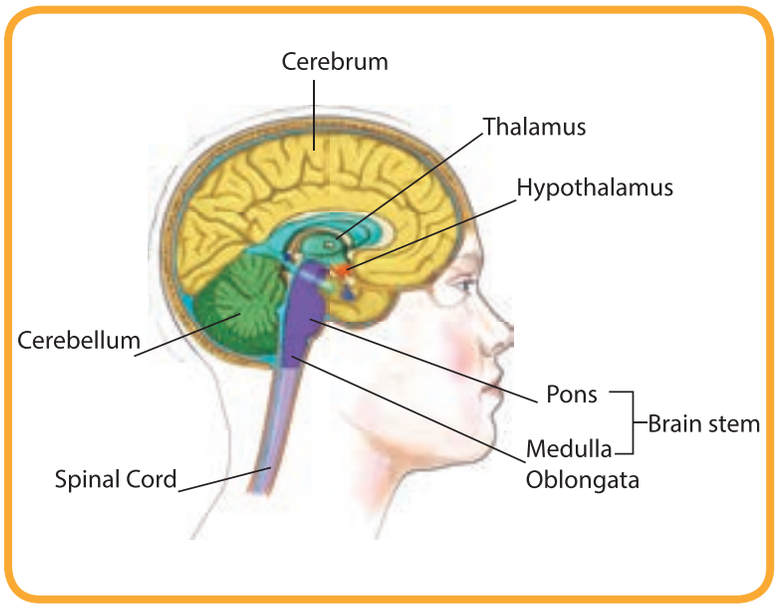
Average weight of human brain is 1.300 kg

Mid Brain (Cerebellum)

- It lies behind the cerebrum.
- It co-ordinates the movements of the muscles of the body.
- It helps to maintain the balance of the body.

Hind Brain (Medulla Oblongata)

- The hind brain comprises of pons and medulla oblongata.
- It is also called the brain stem.
- It is called 'Vital knot' because it controls breathing, heart beat and other involuntary muscles.
- It connects the brain to the spinal cord.



Do you know?

- The Brain needs a continuous supply of oxygen for better functioning.
- The brain loses the ability to function when it does not get oxygen for more than 4 minutes.
- Enough sleep and healthy food increase the efficiency of our brain.

❖ Spinal cord

Spinal cord is along a tube like structure which extends from the brain. It lies within the back bone of our body.

2 Peripheral nervous system

Peripheral nervous system consists of nerves extending from the spinal cord to all parts of the body. It is made up of two parts.

- Somatic nervous system
- Autonomous nervous system

Somatic nervous system carries sensations from the organs to the brain and take messages from the brain to the organs for movements. Autonomous nervous system controls the nerves of the inner organs of the body.

Evaluation

SIHXBZ

I Choose the correct answer.

1. What is the length of the alimentary canal?

   a) 3-5 m b) 5-6 m c) 9-11 m d) 6-9 m

2. Which organ is involved in respiration?

   a) Kidney b) Lungs c) Heart d) Brain

3. How many kidneys do we have?

   a) 2 b) 3 c) 1 d) 4

4. Functional unit of brain is

a) Neuron b) Nephron c) Brain stem d) Nerves

5. Blood is bumped by

a) Lungs b) Heart c) Kidneys d) Bones

II Fill in the blanks.

1. A group of organs together make up an _____ system.
2. The process by which the body removes waste is called _____
3. The number of chambers in human heart is _____
4. The functional unit of kidney is _____
5. The human nervous system is divided into _____ parts.

III Say True or False.

1. In human respiratory system, length of trachea is 8-10 cm.
2. The circulatory system is made up of the heart, blood and blood vessels.
3. Important function of the heart is to transport blood with nutrients, oxygen, waste and hormones.
4. The brain is protected by the rib cage.
5. The functional unit of kidney is neuron.

IV Circle the odd one.

1. a) Mouth b) Buccal cavity c) Pharynx d) Lungs
2. a) Nostrils b) Nasal cavity c) Pharynx d) Stomach
3. a) Mouth b) Esophagus c) Stomach d) Kidney
4. a) Taste b) Hear c) Think d) Smell
5. a) Cerebrum b) Cerebellum c) Medulla Oblongata d) Nephron

V Match the following.

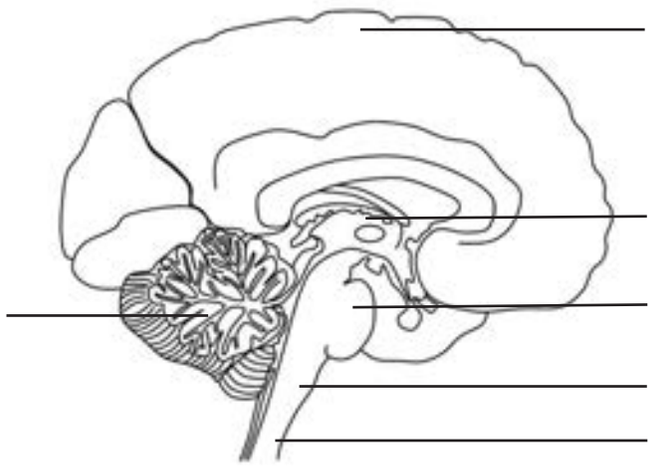
Digestive System	-	Kidney
Respiratory system	-	Brain
Circulatory system	-	Alimentary canal
Excretory system	-	Heart
Nervous System	-	Lungs

VI Answer briefly.

1. Name the salivary glands in our mouth?
2. What is respiration?
3. What is the function of pericardial fluid?
4. Name the chambers in human heart?
5. Arrange the excretory system in correct sequence.
   (Urinary bladder, Ureter, Kidney, Urethra).
6. What are the two parts of peripheral nervous system?
7. What are the functions of blood?

VII Answer in detail.

1. List out the functions of the digestive system.
2. Explain the main parts of the circulatory system.
3. Explain three major parts of human brain.
4. Label the diagram given below.



VIII Questions based on higher order thinking (HOT).

1. Why it is important to wear helmet while riding a bike?
2. Eating fast-food and junk food affects our health. Justify.

2 Matter and Materials

Learning Objectives

After completing this lesson students will be able to:

- know about matter and materials.
- understand the process of manufacturing fabrics.
- know the varieties of grains and the food products.
- understand why do things float or sink.

MUI72D

Introduction

Our needs have increased in the modern days and we use number of things in our daily life. We get some of them from the nature and some other things are manufactured artificially. The things you use like pen, pencil, ink, eraser, note book, ball and the food you eat, all have different nature and characteristics. They are obtained by transforming the natural and artificial substances. In this lesson we will study about different things used in our life and how they are obtained.

I. States of Matter

Matter is anything that has mass and occupies space. Matter can exist in three physical states: solid, liquid and gas. It is made up of molecules and the molecules are made up of atoms.

❖ Solid

In solids molecules are very closely arranged. Solids are incompressible. They have definite shape, size and volume.

❖ Liquids

In liquids molecules are loosely packed. Hence, liquids are negligibly compressible. They have definite volume, but no definite shape and size.

❖ Gas

In gases, molecules are very loosely packed. Hence, gases are highly compressible.

Activity 1

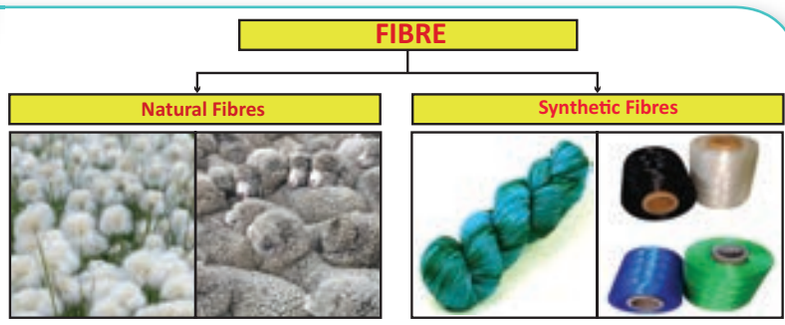
Look at your surrounding. Give some examples for solids, liquids and gases.

Solids	Liquids	Gases

II. Materials

A material is a mixture of substances that constitute an object. They can be pure or impure, natural or man made. Materials are needed to get the things needed for our daily life. We need food, dress and many other goods for our daily living. Natural and man made materials are transformed to produce these things.

III. Fibres



Fibre is a thin thread of natural or artificial substances. It is used to make cloths with the help of powerlooms or weaving machines. The fibres we get from plants and animals are called natural fibres. Cotton, jute, coir, flax, hemp are examples for plant fibres. Wool and silk are examples for animal fibres. Fibres made by humans by chemical synthesis are called synthetic fibres or artificial fibres. Rayon, nylon, acrylic and dacron are examples for artificial fibres. These fibres are obtained from petroleum by complex chemical processes.

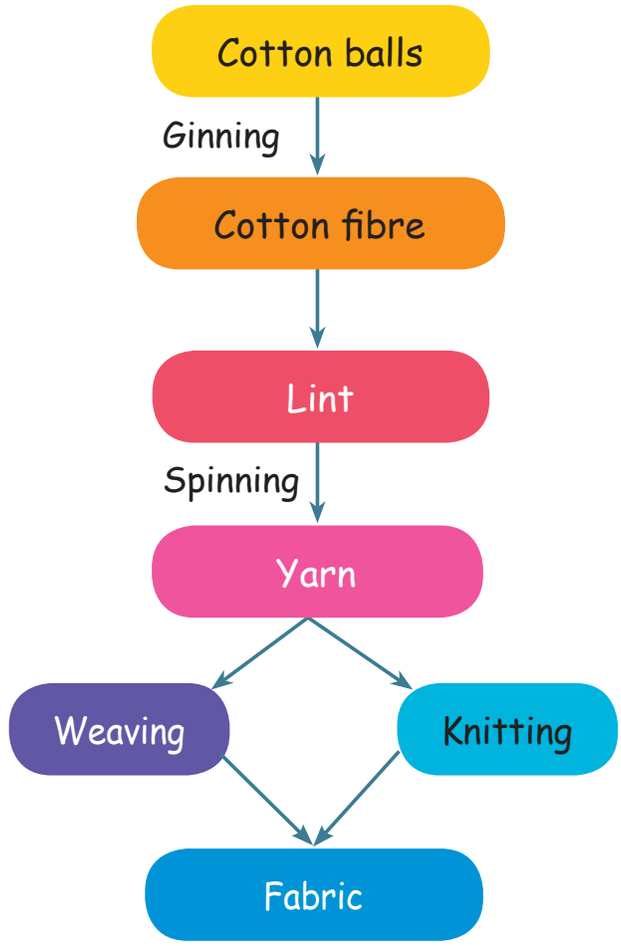
1 Natural Fibres

❖ Cotton

A cotton plant is a bushy plant of 5 to 6 feet high. Cotton grows well in black soil and alluvial soil. The cotton plant bears a large number of small green pods called cotton balls. These balls contain seeds covered with white fibres. When the cotton balls mature, they burst exposing the white fibre of cotton. Cotton is usually hand picked from the plants.

Ginning

There are two processes to make cotton yarn from cotton fibre. The raw fibres are separated from the seeds by a process known as Ginning. The fibrous material left after separating cotton seeds is called lint. The lint is then tied and pressed into balls. The final proportions of short fibres and other impurities are removed by the process of combing.



Spinning

The process of making yarn from lint (fibre) is called spinning. Spinning is done on a large scale with the help of spinning machines.

Yarn to fabrics

Weaving and knitting are the two most important processes used for making fabric from the yarn. The process of making two sets of yarns together to make fabric is called weaving. It is done by weavers on a machine called loom. The loom are either hand – operated (hand looms) or power - operated. During knitting a single yarn is used to make a piece of fabric. It is done by hand and also on machine.

Spinning

Weaving

Knitting

Uses of cotton

- It is used to manufacture cotton textiles and garments.
- It is used as fillers in pillows and mattresses.
- It used for making surgical bandages.
- It is used for making dhotis, sarees, bedsheets, table cloth and so on.

ZR51R9

❖ Jute

Jute fibre is obtained from the stem of the jute plant. Jute plant has long, soft and shiny fibres. It is also referred to as the golden fibre due to its colour and cost effectiveness. Jute fibres are separated from the process of retting jute by hand and then they are dried. These are converted into yarns in the same manner as in the case of cotton.

Uses of Jute

- ➔ It is used for making bags, carpets, curtains and ropes.
- ➔ It is used for making clothes for wrapping bales of raw cotton and to make socks for storing grains.
- ➔ It is used for making wall hangings for decoration.

❖ Coir

Coir fibre is obtained from the outer covering of coconut. It is used to make floor mats, door mats, brushes and mattresses.

2 Synthetic Fibres (or) Manmade Fibres

These fibres are made by human beings with the help of chemical process. Hence, they are called synthetic fibres or manmade fibres. These fibres are obtained from coal, petroleum and natural gas.

Synthetic fibre	Sources
Rayon	Wood pulp
Nylon	Silk and wool
Polyester	Petroleum products
Acrylic	Wool products

Activity 2

Classify the following natural fibres.
Polyster, Jute, Silk, Nylon, Cotton, Wool, Acrylic, Rayon.

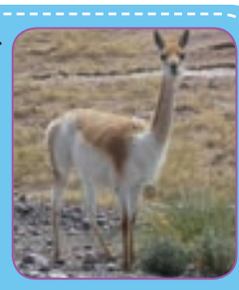
Synthetic Fibres	Natural Fibres

Uses of synthetic fibres

- Rayon is used to make rope, cloth, cap, tyre cords and carpets.
- Nylon is used to make fishing nets, ropes, parachutes, fabrics and bristles for brushes.
- Polyester is used to make fabric for suits and shirts, hoses, conveyer belts, films, PET bottles and wires.
- Acrylic is used to make sweaters, shawls and blankets.

Do you know?

The world's most valuable fibre is obtained from a small wild animal called Vicuna. It belongs to a camel family.



IV. Grains

Grain is a small, hard, dry seed. Each grain is protected by a husk and the husk encloses the seed. Two main types of commercial grain crops are cereals and legumes. Wheat, maize, rice, beans, peas, barley and millets are some of the whole grains.

❖ Wheat

This is the most important crop cultivated in the world. Whole wheat is important because it is rich in fibre, vitamins and minerals. Wheat products are: Breads, Cakes, Pasta, Wheat germ and Cracked wheat.

❖ Maize

In many tropical and sub tropical countries (Mexico and America), maize is the main food that people eat. It is also known as corn. Maize is also made into oil for cooking. Yellow or coloured corn may promote eye health. It is also rich source of many vitamins and minerals. Corn syrup is used as a sweetener instead of sugar in many products. Maize products are: Sweet corn, Breakfast cereal, Tortilla chips, Taco and Maize oil.

❖ Rice

Rice is a type of grass. It is produced worldwide after sugarcane and maize. Large parts of the world's human population especially people in Asia have this as their main food. Ninety percent of the world's rice production is in Asia. White rice contains few essential nutrients. Brown rice is a whole grain that contains the fibrous bran. Brown rice is usually considered much healthier than white rice. Rice idly, Idiappam and Rice aval (Flattened rice) are the food items made from rice.

❖ Millets

Millets are a group of small seeded grasses. They are widely grown around the world as cereal crops for fodder and human food. It helps in weight loss. It is rich in fibre. Some of the millet products are Sorghum, Fox tail millet, Finger millet, Pearl millet, Barnyard millet, Kodo millet and Little Millet.

V. Household Goods

These are the products that we use in our house. The goods that are found in a house permanently are called household goods. Household goods are: Furniture, Kitchenware, Cloths, Towels, Beddings, Boots and Electronic goods.

Household goods used in the olden days

Household goods used in the modern days

VI. Sinking and Floating

You could have seen that some objects float in water while others sink. Whether an object floats or sinks is determined by its density. When an object is immersed in a liquid, the liquid exerts an upward force on the object. It is known as upthrust. What happens if you put a coin and an empty water bottle in water? The weight of the coin is greater than the upthrust and so the coin sinks. But it is less on the empty water bottle and so it floats.

Activity 3

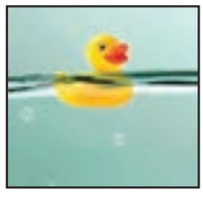
Take water in a bucket and drop the following items in the water.

Apple, Scissors, Silver fork, Marbles, Plastic ball.

Fill the table with your observation.

Things	Float	Sink
Apple		
Scissors		
Silver fork		
Marbles		
Plastic ball		

Floating



Sinking

Do you know?

A fish can control the upthurst on its body. So it can float and go beneath the surface of the water.

VII. Solubility of Solids in Water

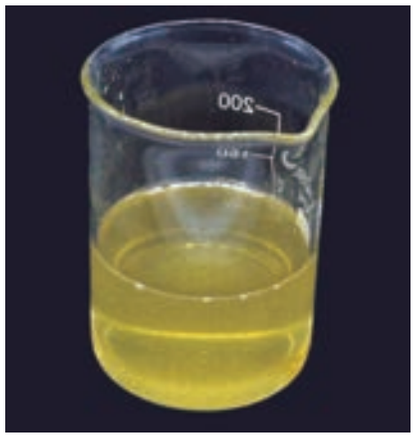
Some substances completely dissolve in water. We say that these substances are soluble in water. Other substances do not dissolve in water even after we stir for long time. These substances are insoluble in water.

Activity 4

Collect some samples of solid substances such as salt, sugar, chalk powder, sand and saw dust.

Take five beakers filled with water and add a small amount of sugar to the first beaker, salt to the second and similarly, add small amounts of other substances in other beakers. Stir the content with a glass rod. Wait for few minutes. What happens to the substances added? Note your observation.

Substances	Disappear in water/ Does not disappear/ Disappear completely in water
Salt	
Sugar	
Chalk powder	
Sand	
Saw Dust	



Sugar in water

Chalk in water

Sand in water

VIII. Mixing

Certain liquids are heavier (dense) than other liquids. When you attempt to mix liquids which have different densities they separate when you stop mixing them. The heavier liquid deposits at the bottom and the lighter liquid floats on the top.

Activity 5

Collect samples of coconut oil, kerosene, mustard oil, lemon juice and vinegar. Take five test tubes, fill them up to half with water. Add a spoon full of one liquid to this and stir it well. Keep it in a test tube stand and wait for few minutes. Observe whether the liquid mixes with water. Repeat the experiment with other liquids and tabulate your observation.

Liquid	Mixes well/ Does not mix
Lemon Juice	
Vinegar	
Mustard oil	
Coconut oil	
Kerosene	

Vinegar in water

Coconut oil in water

Do you know?

- Substances with similar chemical properties will mix.
- Substances with different chemical properties will not mix.

Evaluation

CMQVG5

I. Choose the correct answer.

1. Which of the following are the states of matter?
   a) Solid, Liquid, Water
   b. Solid, Liquid, Gas
   c) Solid, Liquid, Wood
   d. Solid, Liquid, Sugar
2. Which of the following is a solid?
   a. Kerosene b. Air c. Water d. Apple
3. Jute fibre is obtained from
   a. leaf b. stem c. flower d. root

II Fill in the blanks.

1. _____ soil is suitable for growing cotton.
2. The process of making cotton yarn from cotton fibre is _____.
3. Ginning is done to separate _____ from the seeds.
4. Synthetic fibre is also called _____ fibre.
5. Woolen clothes are manufactured from _____ (plant / animals).

III. Match the following.

Yarn	-	Ginning
Lint	-	Spinning
Fabrics	-	Wood pulp
Rayon	-	Stem
Jute	-	Weaving

IV. Say True or False.

1. Coir is the outer covering of coconut.
2. Beans and peas are pulses.
3. Table is a household good.
4. Sweet corn is not a product of maize.
5. Cotton balls contain jute fibre.

V. Complete the given analogy.

1. Solid : Table :: _____ : Water
2. Cotton seed : _____ :: Lint : Spinning
3. Coir fibre : _____ :: Cotton fibre : Cotton Plant
4. Black Pepper : Spice :: Sweat corn : _____

VI. Answer in brief.

1. What is known as ginning?
2. Give two examples for food products made from wheat.
3. What are synthetic fibres?
4. What is known as upthrust?
5. Name the list of whole grains.

VII. Answer in detail.

1. Discuss briefly about three states of matter.
2. Draw a flow chart to indicate the process of making fabrics from cotton ball.

VIII. Give reason.

1. Why umbrellas are made up of synthetic clothes?
2. What determines whether an object floats or sinks in a fluid?

3 Energy

Learning Objectives

After completing this lesson, students will be able to:

- know about different forms of energy.
- explain the energy charges in daily life.
- understand the law of conservation of energy.
- list out the uses of energy.

PJCQ61

Introduction

Mala was standing in the row for her morning school assembly. Suddenly she fainted and fell down. Her class teacher rushed to her, took her to the class room and gave her water to drink. She came to know that Mala had skipped her breakfast. She was given some food and then she came back to normal. What do you understand from this?

We need energy to do our daily activities. We get this energy from the food. In science, energy is defined as capacity to do work. Let us study about different forms of energy and their uses in this lesson.

I. Different forms of Energy

We do many works in our daily life. Many of them are done physically. Some works are done with the help of instruments and devices. But, they need energy to work. There are different forms of energy like mechanical energy, heat energy, light energy, wind energy and so on. Let us study about them one by one.

Activity 1

Find out what do we need for the following.

To Drive bus | To dry cloth | To cook | To work in laptop

1 Mechanical Energy

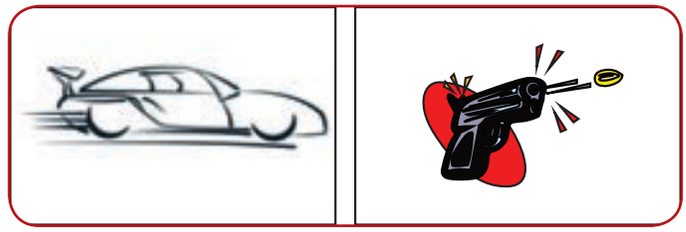
Energy possessed by an object due to its position is called mechanical energy. Mechanical energy can be classified into two.

- Kinetic energy
- Potential energy

Kinetic energy

Energy possessed by a moving object is known as kinetic energy. It is also known as energy of motion.

Examples: Moving car, Cricket ball bowled by a player, Bullet coming out of a gun.



Potential energy

Energy possessed by an object which is at rest is known as potential energy. It is also known as stored energy of position.

Examples: Object lifted above, Stone in the stretched rubber, Water in the dam.

Uses of mechanical energy

Mechanical energy can be used to do many works. Some of them are given below.

- In hydro electric plants, kinetic energy of water is converted into electrical energy.
- Wind mills convert kinetic energy of winds into electrical energy.
- Mechanical energy of the hammer is used to apply a force on a nail.
- Mechanical energy can bring a moving body to rest and make a body at rest to move.

Activity 2

Find out the form of energy in the following.

2 Wind Energy

Energy possessed by the wind is known as wind energy.

Uses of wind energy

- Wind mills use wind energy to generate electricity.
- Ships sail by the power of wind.
- Sports like wind surfing, sailing, kite surfing use wind energy.
- Wind energy can be used for pumping water.

Do you know?

Tamil Nadu stands first in generating electricity from wind mills. Wind mills are located in places like Aaralvaimozhi, Kayatharu and Gudimangalam.

3 Heat Energy

When the temperature of a substance is raised, its atoms and molecules begin to vibrate and release a kind of energy. This energy is known as heat energy or thermal energy. This energy flows from a hot substance to a cold substance.

Do you know?

Heat is the total energy of the molecules in a body. Temperature is a measure of heat in a body.

If we put some ice cubes into water in a glass, water becomes cold. It is because, heat is transferred from water to ice.

Activity 3

Rub your hands together. What do you feel in your hands? Do you feel the heat generated by friction?

Activity 4

Take a small amount of lime powder in a glass. Add some water and stir well. Touch the glass outside. How do you feel?

In both the cases, you can feel the heat. Thus, heat is produced by friction and chemical reactions also. Sun is the primary source of heat energy.

Uses of heat energy

- Heat energy obtained from power stations is used to generate electricity.
- Heat energy obtained from petrol and diesel is used to run vehicles.
- We cook food with the help of heat. Heat energy renders the food material soft and easy to digest.
- Hard substances like iron are heated to mold them into different shapes.
- Heat is used to dry cloths and other wet substances.

4 Light Energy

Light is a form of energy which travels in the form of wave. It contains a particle called photon which are the minute packets of energy. It is the only form of energy visible to human eye. Light does not require any medium to travel. It travels at a speed of 3,00,000 km/s. Sunlight takes 8 minutes to reach earth.

Do you know?

Study of light is known as Optics.

Uses of light energy

- We are able to see objects with the help of light energy.
- Plants use light energy to synthesis their food.
- With the help of light energy, our skin is able to synthesis Vitamin-D.
- Electricity can be produced with the help of light energy.

5 Electrical energy

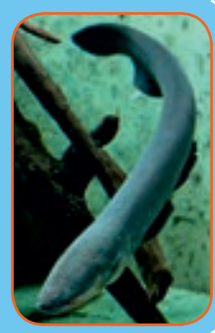
We know that all things are made up of atoms. Atoms posses particles like protons, electrons and neutrons. Movement of electron in the objects causes an energy. This energy is called electric energy. In our daily life we use batteries to get electric energy. Electric energy is also generated from nuclear power plants, hydroelectric plants and wind mills. It is also generated from solar energy.

Uses of Electric energy

- Electric energy is needed for the working of fan, light, television, washing machine, refrigerator etc.
- Electric iron box, electric stove and electric water heater work by electrical energy.
- It is used to run cars and trains.
- It is used in factories to produce materials.

Do you know?

'Electric eel' generates electric energy. It uses this energy to defend itself against its predators.



Activity 5

Mention few places where electric energy is generated in plants.

Nuclear plant	Hydroelectric plant	Thermoelectric plant

6 Chemical energy

Chemical energy is stored in subtances when atoms join together to form chemical compounds. When two or more chemical substances react with each other, this energy is released.

Activity 6

Observe the stove burning in your kitchen.
Do you see the light and feel the heat?
Where do you get these from?

Uses of chemical energy

- The food we eat contains chemical energy.
- Chemical energy in wood provides heat energy which helps us to cook food.
- Chemical energy in coal is used to generate electricity.
- Batteries we use in our daily life contain chemical energy.
- Fuels like petrol and diesel posses chemical energy which is used to run vehicles.

II. Conservation of Energy

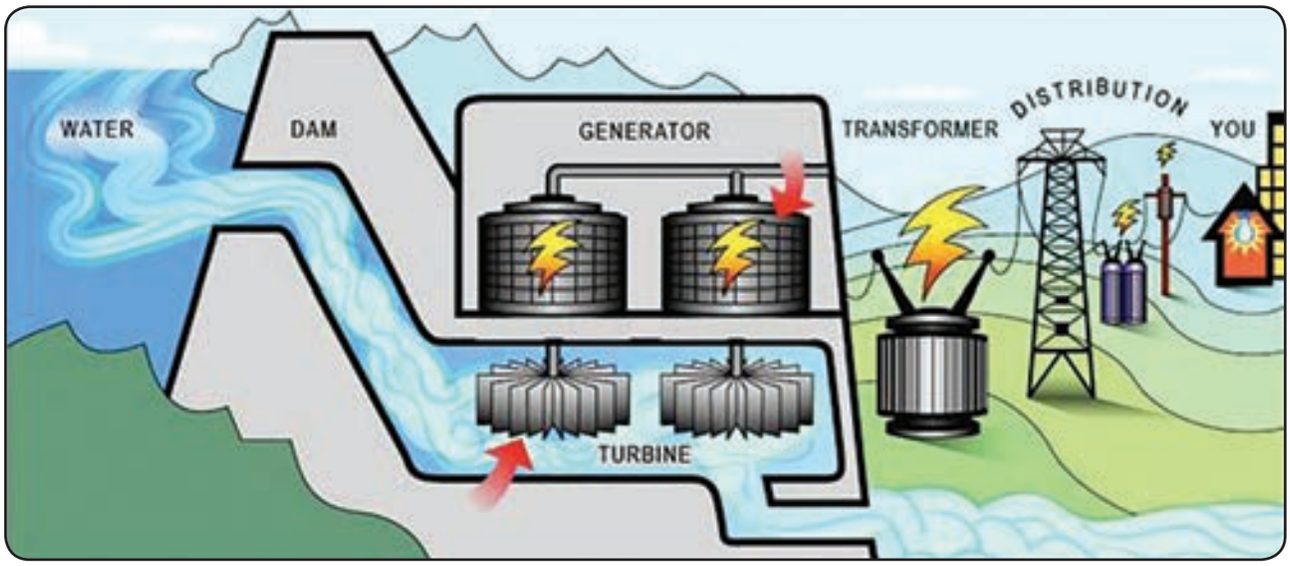
Energy cannot be created and it cannot be destroyed also. It is changed from one form to another form or transferred from one object to another object. We can say many examples for conservation of energy in our daily life.

1 Water Dam

Water stored in water dams posseses potential energy. When water falls down, potential energy of water is converted into kinetic energy. Kinetic energy of water rotates the turbines and electric energy is generated.

Do you know?

Law of conservation of energy states that energy can neither be created nor be destroyed. One form of energy is converted into another form of energy.
This law was given by Julius Robert Mayar.



2 Electrical Appliances

2FYJUW

Electric energy is used in many domestic appliances such as electric stove, iron box and fan. Electric energy flows into the coil in the devices. As current flows, it heats up the coil. With the help of this heat energy, we do many useful works. Thus, electrical energy is converted into heat energy. Electical energy is converted to mechanical energy in fan, light enrgy in bulb and sound energy in computer.


Heat Energy


Light and Sound Energy


Light Energy


Mechanical Energy

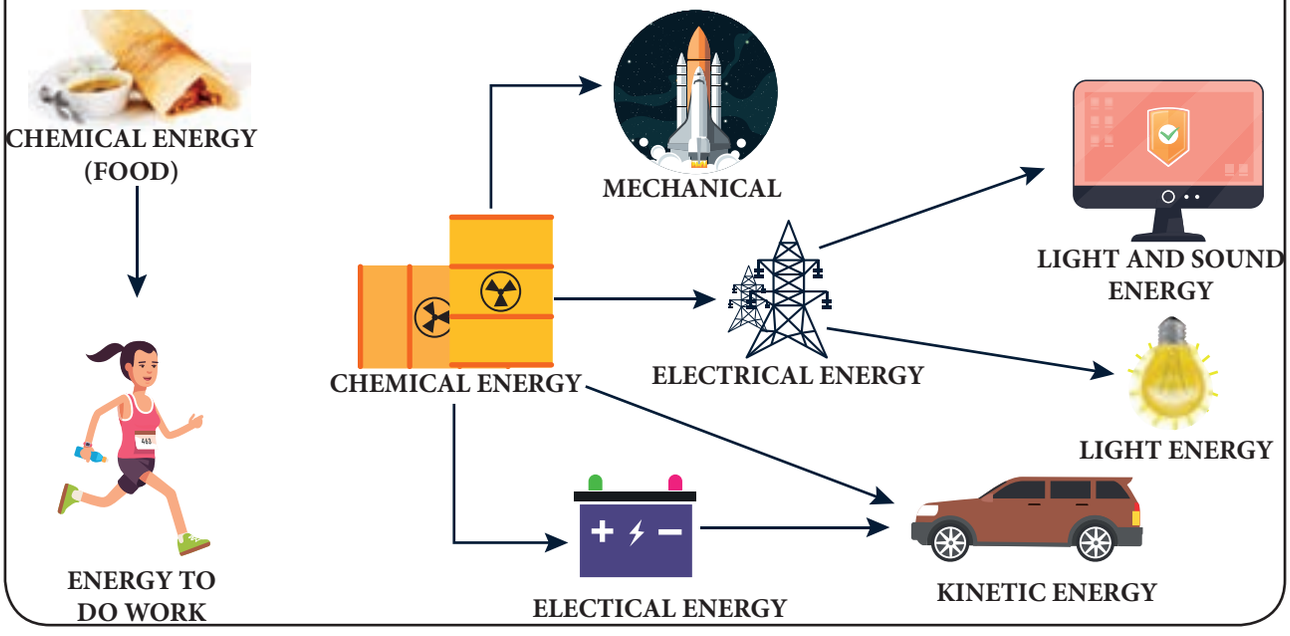
3 Driving a Car

We use fuel in the form of petrol or diesel or gas to run vehicles. When this fuel burns in the engine, chemical energy is converted into heat energy. Burning fuel produces hot gases which pushes the piston in the engine to move the vehicle. Thus heat energy is converted into mechanical energy.

Do you know?

Photosynthesis changes solar energy into chemical energy.

Conservation of Energy



Evaluation

JVCYVE

I Choose the correct answer.

1. When diesel is burnt chemical energy is converted into _____
   a) wind energy b) heat energy
   c) solar energy d) sound energy
2. Running water possesses _____
   a) potential energy b) chemical energy
   c) kinetic energy d) sound energy
3. Unit of energy is _____
   a) kilo gram b) newton
   c) kelvin d) joule
4. Which one of the following requires wind energy?
   a) Bicycle b) Photosynthesis
   c) Parachute d) Automobiles
5. Cow dung possesses _____
   a) kinetic energy b) chemical energy
   c) solar energy d) heat energy

II. Find out the energy conversion that takes place in the following.

1. Iron box : Chemical energy ➔ Heat energy
2. Electric Iron box : _____ ➔ _____
3. Electric fan : _____ ➔ _____
4. Speaker : _____ ➔ _____
5. Generator : _____ ➔ _____

III. Find out the form of energy possessed by the following things.

1. A rock on the top of a hill
2. A rolling ball
3. Charcoal
4. Water falls
5. Battery

IV. Match the following.

Electric bell	-	Solar energy
Water in dam	-	Light energy
Solar heater	-	Electrical energy
Wind mill	-	Potential energy
Torch light	-	Sound energy

V. Say True or False.

1. An apple falling from a tree is an example for kinetic energy.
2. Electrical energy is used to run electric trains.
3. Heat energy cannot be produced by friction.
4. Potential energy and heat energy are the two forms of mechanical energy.
5. The unit of energy is joule.

VI. Answer in brief.

1. What is energy?
2. What are the different forms of energy?
3. What are the uses of mechanical energy.
4. State the law of conservation of energy.
5. Mention the uses of light energy.

VII. Answer in detail.

1. Explain the types of mechanical energy.
2. Explain conservation of energy.

4 Science in Everyday Life

Learning Objectives

After completing this lesson, students will be able to

- know about Scientists from Tamil Nadu.
- understand the reason for the blue appearance of the sky.
- differentiate reversible and irreversible processes in daily life.
- get awareness about waste materials generated in home and school environment.

WRYTKA

Introduction

Science has helped us to find solution to many of our problems. It has shaped our daily life also. The world we are living in is not the same as before. It is changing everyday, infact every hour. We see lot of changes around us. Some of them are reversible and some of them are irreversible. Irreveresible changes like burning of wastes pollute our home and school environment. We need to know about waste management and proper disposable of wastes. Let us study about them in this lesson.

I. Scientists from Tamil Nadu

Tamil Nadu has a long history of science since ancient times. Scientific concepts can be seen in ancient Tamil literatures. Tamil Nadu has produced many scientists who have contributed to the world of science. The following table gives the names of some of the scientsts from Tamil Nadu and their contributions.

Name of the Scientists	Department	Contribution
Dr. M.S. Swaminathan	Genetics	Green Revolution
Srinivasa Ramanujan	Mathematics	Composite Numbers
Venkataraman Radhakrishnan	Biology	Structure of Ribosome
Dr. A.P.J. Abdul Kalam	Aeronautical Engineering	Missile development
Sir. C.V. Raman	Physics	Scattering of light

1 Sir. C.V. Raman (1888-1970)

Chandrasekhara Venkata Raman was born at Trichirapalli, Tamil Nadu on 7th November, 1888. In 1904, he completed his Bachelor of Arts (B.A) degree at Presidency College, Chennai. He stood first and won gold medal in Physics. In 1907, he got his Master of Science (M.Sc) degree from University of Madras.

Sir.C.V. Raman won the Nobel Prize in Physics in the year 1930 for his work in scattering of light. In 1954, he was awarded the Bharat Ratna.

Blue appearance of Sky

One day in the summer of 1921, Sir.C.V. Raman was on the deck of a ship sailing in the mediterranean sea. He was observing the blue colour of the sky and started reasoning it. He concluded that sunlight is scattered by the gases and particles present in the air. The white light we see is composed of different colours such as violet, indigo, blue, green, yellow, orange and red (VIBGYOR). Among these colours, blue is scattered more. Because of this reason, sky appears blue most of the time. During sunrise and sunset, rays have to travel long distance. As they travel, all other colours except red are scattered. So, sky appears red at sunrise and sunset.

Do you know?

National Science Day is celebrated on 28th of February in order to commemorate the invention of the Raman Effect by Sir. Chandrasekhara Venkata Raman on the same day in the year 1928.

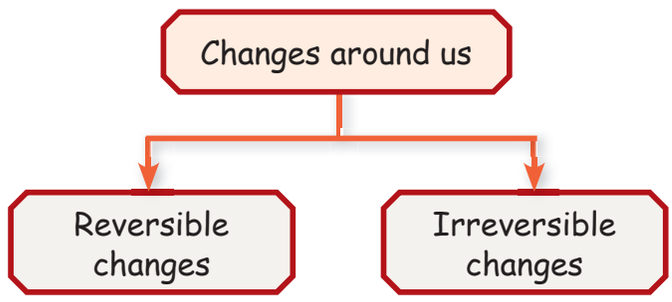
2 Dr. A.P.J. Abdul Kalam (1931-2015)

Avul Pakir Jainulabdeen Abdul Kalam was an Aeronautical Scientist. He was born on 15th October 1931 in Rameshwaram, Tamil Nadu. He got his Bachelor of Science (B.Sc) degree from St.Joseph's College, Trichirappalli in 1954. In 1960, he got his degree in Aeronautical Engineering from Madras Institute of Technology.

He was involved in India's missile development programme and thus came to be known as Missile Man of India. He also served as the President of India (2002-2007) and widely referred to as the People's President. He was awarded Padma Bhusan in 1981, Padma Vibhusan in 1990 and Bharat Ratna in 1997. He has written many books like Wings of Fire, India 2020 and Ignited minds.

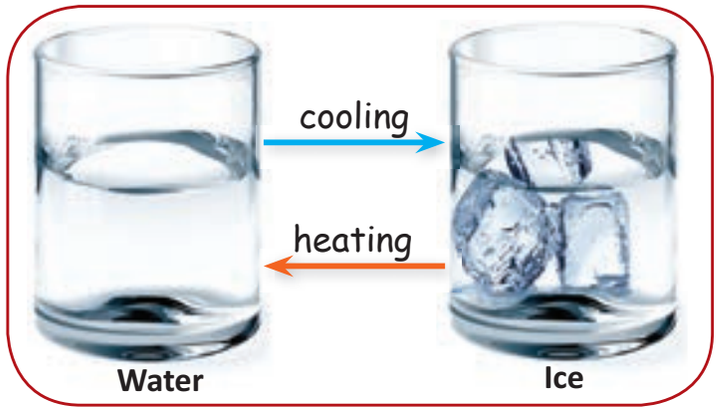
II. Changes Around Us

Change is the transition of a substance from one form to another. We see many changes around us. We see changes like day and night, summer and winter and so on. We also see changes in objects. Growth of a tree, ripening of fruits, falling of leaves are some of the changes taking place around us. You can observe changes in you also. Your height and weight increase, hair and nail grow and you have grown up as a whole compared to last year. These changes can be classified as reversible and irreversible changes.



1 Reversible Changes

Changes which can be reversed are called reversible changes. If you keep water in the freezer for some time, it is tranformed into ice. If it is taken out, it becomes water again. This is a reversible change.

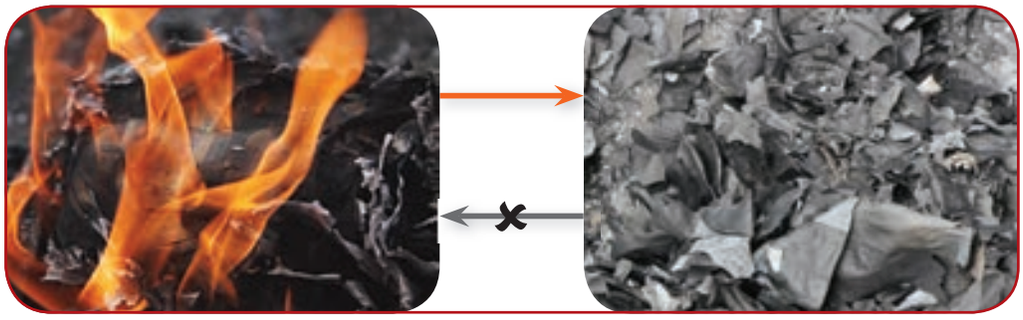


2 Irreversible Changes

Changes which cannot be reversed are called irreversible changes. If you burn a piece of paper it burns and turns into ash. It cannot become paper again. This is an irreversible change.

Do you know?

Irreversible changes are also known as permanent changes. Processes like heating, burning, mixing and powdering cause permanent changes.



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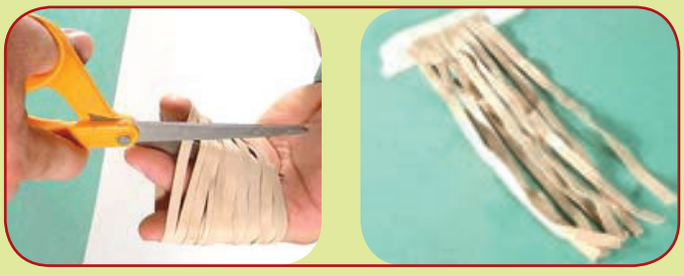
Activity 1



Take an elastic band and stretch it to the maximum. Now release it. What do you observe?

Cut it now into pieces. Can you get the band back again?

Activity 2

Take a balloon and blow air into it. You can see that the shape and size of the balloon is changed. Now let the air escape from the balloon. What do you observe now?

Now blow it to its full size and prick it with the tip of a pin. It is burst. Can you get the balloon back?

From these activities we can observe some differences between reversible and irreversible changes. Differences between reversible and irreversible changes are listed below.

Reversible Change	Irreversible Change
A substance can turn to its original state.	A substance cannot change to its original state.
The chemical properties of the substance do not change.	The chemical properties of the substance will change.
Most of the physical changes are reversible.	All chemical changes are irreversible.

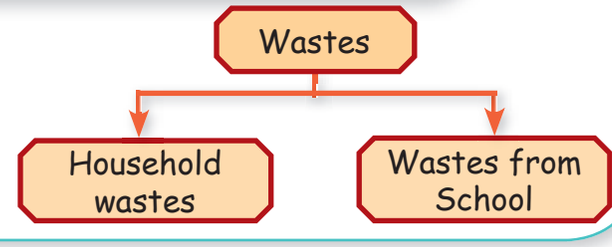
Activity 3

Which of these common changes, you think, can be reversed?

Change	Can it be reversed?
Raw egg to boiled egg	Yes / No
Ice cube to water	Yes / No
Batter to Idly	Yes / No
Milk to Curd	Yes / No
Grain to Flour	Yes / No
Bud to Flower	Yes / No
Cow dung to Biogas	Yes / No

III. Wastes Generated in our Environment

Waste is any substance which is discarded after primary use. It is worthless, defective and of no use. They are unwanted and undesirable materials.



1 Household Wastes

Wastes from home is known as household waste. Solid wastes disposed from home and apartments comprise of garbage and rubbish (bottles, cans, clothings, composts, disposable items, food packings, news papers, magazines and trimmings). We can classify the household wastes as below.

Organic wastes: Kitchen wastes, Vegetables, Flowers, Leaves, Fruits.

Toxic wastes: Old medicines, Paints, Chemicals, Bulbs, Spray cans, Fertilizers, Pesticide containers, Batteries, Shoe polish.

Recyclable wastes: Paper, Glass, Metals, Plastics.

Solid wastes: Cloths soiled with blood and other body fluids.

e-wastes: Computer parts, Electronic materials, Cell phone parts, CFL bulbs.

Do you know?

- 40 million tons of electronic waste is generated every year worldwide.
- e-waste comprises 70% of our overall toxic waste.
- e-waste contains hundreds of substances, of which many are toxic.

Activity 4

Collect the wastes from your house before it is thrown into dustbin. Separate them into two groups.

Group 1: Garbage from the kitchen like fruit and vegetable peel, egg shells, waste food, tea leaves, news papers, dry leaves and paper bags.

Group 2: Pieces of cloth, polythene bags, brocken glass, aluminum wrappers, nails, old shoes and broken toys.

Find out how you can dispose them properly.

2 Wastes from School

Do you know?

Each one in our state capital (Chennai) contributes 700 gram of waste everyday. It is the highest in our country.

You leave many waste materials inside your class rooms and throw away many things in the school campus. If they are not collected and disposed properly, your environment will be polluted. Papers, pen and its parts, blades, chocolate covers and plastic items are found in the school environment. The single most common materilal generated in schools is food waste. Food is not only wasted but it is also thrown away everywhere, making your surrounding unclean.

In a survey conducted, it is found that food waste accounts for 23.9% of the total wastes generated in the school and recyclable paper like card board, white paper and mixed papers accounted for 23.5% of the total waste. To keep our surrounding clean, we need to have a proper waste disposal system.

3 Need for Proper Disposal of Waste

With so much of wastes lying everywhere, what do you think that we should do? We urgently need a proper waste management system. Waste management is needed for the following reasons.

To control pollution

➔ Various pollutions like water pollution, air pollution and soil pollution can be avoided.

To conserve natural resources

➔ Waste disposal is important for the conservation of our environmental resources like forest, minerals and water.

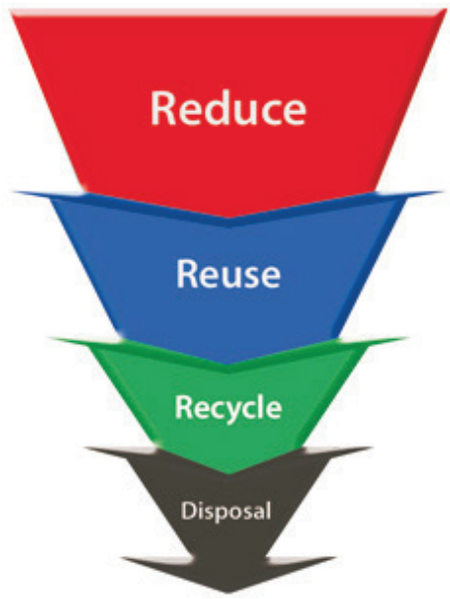
To control spread of diseases

➔ Spread of infectious diseases can be controlled.

Recycle for further use

➔ Wastes can be recycled to get products for further use.

4 Ways to Reduce Waste



The best place to start changes is our home. We need to learn how to reduce, reuse and recycle wastes. The following practices will be helpful to reduce wastes in our home and school environment.

➔ Use reusable and recyclable bags and containers.

➔ Avoid one time use items and use items which can be used permanently.

➔ Segregate wastes into bio-degradable and non-biodegradable items and hand over them to the municipal and corporation people who collect them.

➔ Do not throw away your wastes everywhere. Put them in dustbins and dispose them properly.

➔ Don't waste food. Waste food in schools can be collected and used to feed cattles.

➔ Organic wastes can be converted into manures.

Evaluation

LK7HZ2

I. Choose the correct answer.

1. Blue appearance of the sky is due to_____ of light.
   a. reflection b. refraction c. interference d. scattering
2. Who is known as Missile Man of India?
   a. Sir. C.V.Raman b. Dr. A.P.J. Abdul Kalam
   c. Dr. M.S. Swaminathan d. Ramanujan
3. An example for reversible change is
   a. melting of ice b. burst of balloon
   c. burning paper d. change of milk into curd
4. Chemical reactions are example for
   a. reversible change b. irreversible change
   c. both of them d. none of them
5. Which of the following is not an organic waste?
   a. Flowers b. Vegetables
   c. Fruits d. Battery

II. Fill in the blanks.

1. The book 'Wings of fire' was written by _____
2. A stretched rubber band comes back to normal shape. It is an example for _____
3. Most of the physical changes are _____ changes.
4. News paper is a _____ waste.
5. Wastes from house and apartments are called _____ waste.

III. Match the following.

Bud to flower	-	Dr. A.P.J. Abdul Kalam
Reversible change	-	Recyclable waste
India 2020	-	Organic waste
Paper	-	Melting of ice
Vegetables	-	Irreversible change

IV. Circle the odd one.

1. a) Melting	b) Freezing	c) Boiling	d) Cooking
2. a) Boiling	b) Burning	c) Cooking	d) Rusting of iron
3. a) Vegetables	b) Flowers	c) Fruits	d) Chemicals
4. a) Paper	b) Glass	c) Metals	d) Paints

V. Answer briefly.

1. Sky appears blue in colour. Why?
2. What is reversible change?
3. Differentiate reversible and irreversible changes.
4. What are the different types of wastes?
5 Write a note on e-waste.
6 Name the scientists from Tamil Nadu?

VI. Answer in detail.

1. Write about different household wastes.
2. Expalin the need for waste disposal.
3. How can you reduce wastes in your school environment?

SOCIAL SCIENCE

TERM 1

Contents

V23RA2
E-Book

7XPKYX
Assessment

B336_5_SOCIAL_EM
Digi Links

Let's use the QR code in the text books!

- Download DIKSHA app from the Google Play Store.
- Tap the QR code icon to scan QR codes in the textbook.
- Point the device and focus on the QR code.
- On successful scan, content linked to the QR code gets listed.

QR GUIDE

Note: For ICT corner, Digi Links QR codes use any other QR scanner.

Unit 1

OUR EARTH

Imayan is waiting for his father in the evening, after returning from school. His father is an employee in a reputed bank

DW11BV

Imayan : Come Daddy! (Imayan ran and hugged his father)

Father : what Imaya? Had your snacks?

Imayan : Yes, I had!

Father : What are you doing? Have you completed your homework?

Imayan : My social teacher told to draw solar system will you please help me?

Father : Yes Sure.

Imayan : She is going to teach about Earth tomorrow. She told to gather information about earth. Please tell me about that dad.

Father : Oh! Ok. I will tell you.

Imayan : How did the earth originate?

Father : Millions of years ago an explosion called the big bang occurred. Numerous stars and celestial bodies came into existence by that massive explosion. These celestial bodies together called the Universe. It is also referred to as cosmos.

Nebula Zone

Imayan : Will you explain about Universe, Daddy?

Father : The Universe is a vast expanse of space. The Universe consists of billions of galaxies, stars, planets, comets, asteriods, meteoroids and natural satellites. The exact size of the universe is still unknown. Scientists believe that the universe is still expanding outward.

Imayan : What is the galaxy, daddy?

Galaxy

Father : Galaxy has a huge cluster of stars. Our galaxy 'Milky way' is one of the countless billions of galaxies in the Universe.

Milky Way

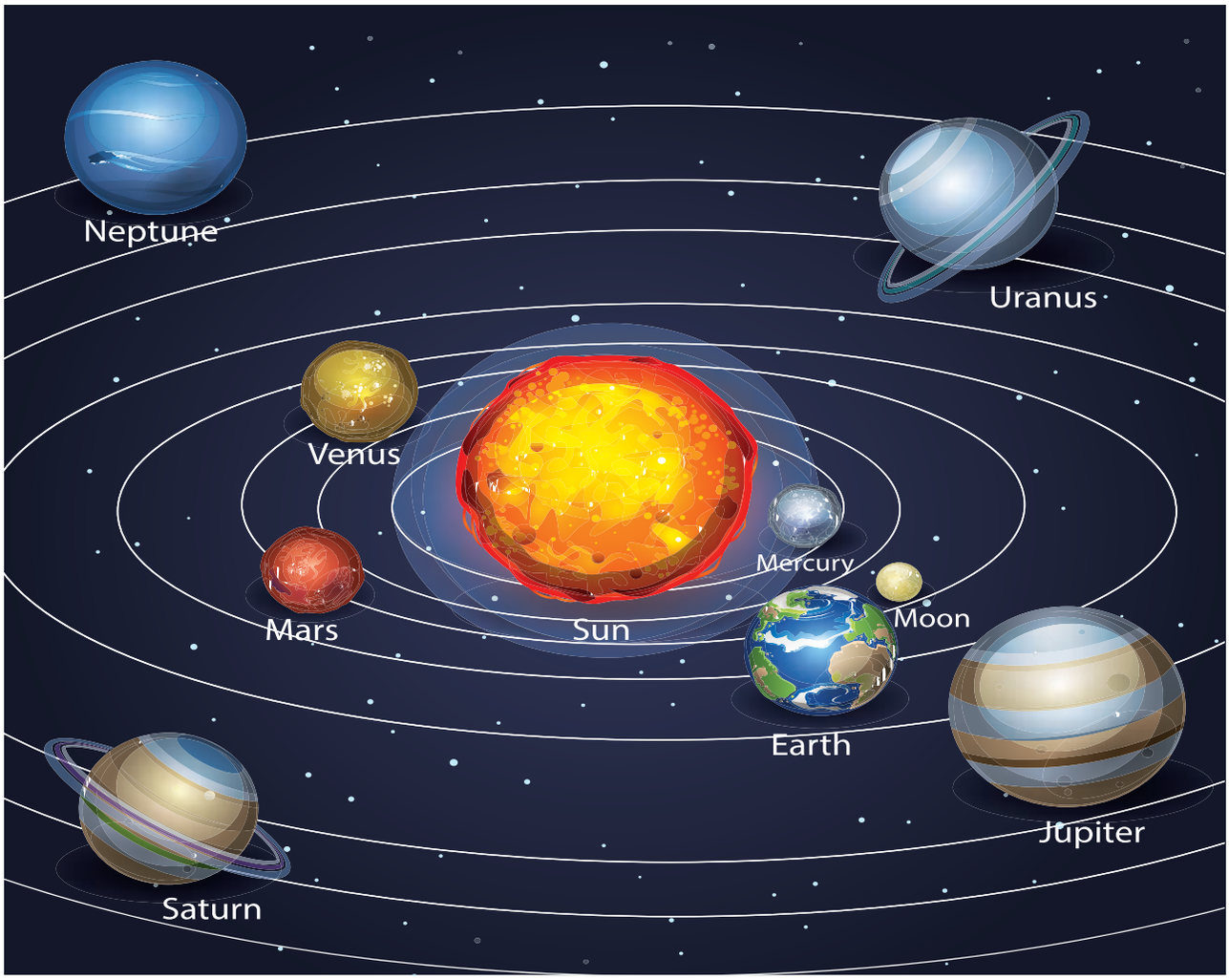
Imayan : Ok Daddy. What is Solar system?

Father : Solar system consists of the sun, the planets, their moons, dwarf planets, asteroids and comets. These objects are gravitationally bound.

Imayan : Very interesting dad. Tell me about our solar system.

Father : There are 8 planets in our solar system. The outer planets are Gaseous planets. They are Jupiter, Saturn, Uranus and Neptune. The inner -rocky planets are Mercury, Venus, Earth, and Mars. They are called Terrestrial planets. The frozen planets are Uranus and Neptune.

Solar Family



Activity

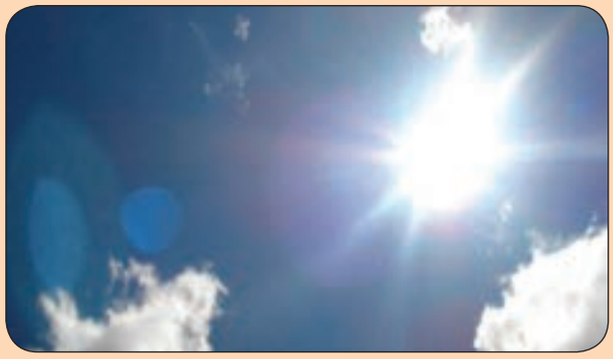
Make the Globe.

Imayan : Then, where is our Earth daddy?

Father : The Earth is the third planet from the sun and the fifth largest in the solar system

Imayan : It is said that the earth is rotating itself and at the same time revolving around the sun. Is it true?

Father : Yes, it has two movements. They are rotations and revolution. The earth rotates on its axis. It is called rotation of the earth. It also revolves around the Sun. It is called revolution of the earth. Day and night are caused due to the earth's rotation. Seasons are caused by Earth's revolution. Life is possible only on earth because of the presence of land, air and water.



Summer
March to May

Winter
December to February

South West Monsoon
June to September

North East Monsoon
October and November

Imayan : Oh! I see. What is the distance between the sun and the earth?

Father : The distance is nearly 150 million kilometre between the sun and the earth.

Imayan : Say some interesting facts about Planets dad?

Father : Mercury and Venus lie near the sun. Next to Earth is Mars, Jupitar, Saturn, Uranus and Neptune. The planets nearer to the sun are very hot. The planets away from the sun are very cold. Mercury is the smallest planet. Venus is called Earth's twin. Mars is described as the Red planet. Earth is called the Blue planet. Saturn is the Ringed planet.

Imayan : Wow! Amazing! Where do we live on the Earth?

Father : We live on the surface of the Earth. It is made up of 7 continents and 5 oceans.

Imayan : 7 continents!! What are they?

Father : Listen. They are: Asia, Africa, North America, South America, Antarctica, Europe, and Australia.

Imayan : Which is the biggest continent?

Continents and Oceans

Father : The Asian continent where we live is the biggest of all. And Australia is the smallest one. The Antartica is the continent full of snow.

Imayan : What are the five oceans Daddy?

Father : Pacific Ocean, Atlantic Ocean, Indian Ocean, Arctic Ocean and Southern Ocean. Do you know that around 97 percent of the planet's water is in the Ocean?

Imayan : Is it so, Daddy?

Father : Yes, Around 71 percent of our Earth is covered by salt water and that is called as Ocean. Only 2.5 percent of water is fresh and 1 percent of it is easily accessible.

ASIA

Imayan : Thank you, Daddy. Today I have learnt a lot about the earth from you. Now I am going to study and do my home work.

Father : Ok, Imaya. Go and study.

Birla Planetarium is located in Chennai which provides virtual tour of the night sky and planets of the solar system.

Evaluation

I. Fill in the blanks.

1. The distance between the earth and the sun is _____.
2. _____ is caused due to revolution of the Earth.
3. The continent which is covered by ice is _____.
4. The biggest continent is _____.
5. _____ is described as Red Planet.
6. _____ Percentage of our earth is covered by salt water.

JUBFNT

II. Match the Following:

1. Smallest continent	-	farthest planet
2. Blue planet	-	Australia
3. Neptune	-	Earth

III. Short answer:

1. Define the origin of the Earth.
2. Define solar system?
3. How many oceans are there in the earth?
4. Distinguish between Rotation and Revolution?

IV. Paragraph:

1. What do you know about Universe?.
2. Write about the nature of the Planet Earth.

V. Answer in detail

Draw and Write about the solar system.

VI. Activity:

1. Collect images on various types of planets.
2. On a world map mark the five oceans of the Earth.
3. On a world map mark the deserts and forests.

VII. Mapwork

Find the Continents and write their name in the world map.

Unit 2

TOWARDS HISTORY

QSLV1R

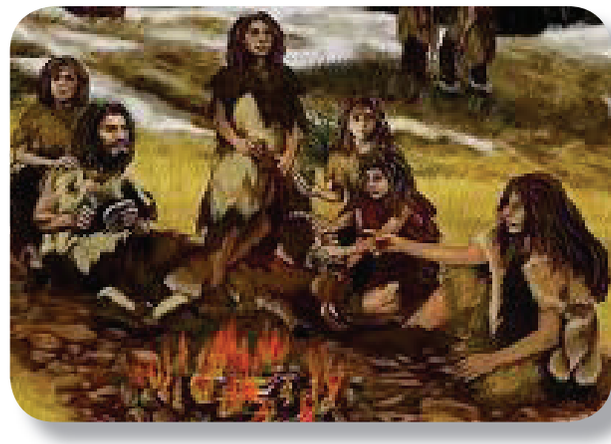
Stone Age

Stone tools and weapons were used by humans in the past. To start with, humans were not aware of any weapons or metals. They took several years to invent them. Our lives today are their gifts. In this period humans were not aware of scripts. The stone age is the period in which Stones were used as weapons.

Nature of Human Evolution

Early humans lived in jungles along with animals. They used the stone tools to protect themselves, drive away animals, dig out roots, shoots etc. The most important thing is that they ate everything raw including flesh. They did not know the use of fire in the beginning. At first, dog was their good companion. Wild animals ran away when dogs barked. Humans tamed dog as their pet at first. They took it wherever they went. Later they started rearing cattle as they did not harm them and were very useful to them. They observed some grains growing along the river side. They ate them and found it very tasty. They observed that the scattered grains were only eaten up by birds. They were keen observers. Early man found that the grains grow with the help of sunshine and rainfall. Thus, they learnt the art of cultivation.

Humans noticed forest fire. At first they were afraid of fire. They found some animals dead due to fire. They ate the flesh of the burnt animals. It tasted good. They also observed that the spark came out by scratching two stones together. Since then, they ate cooked food.

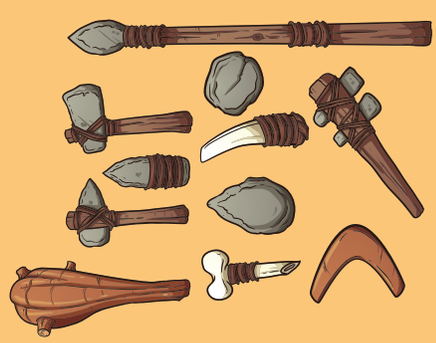


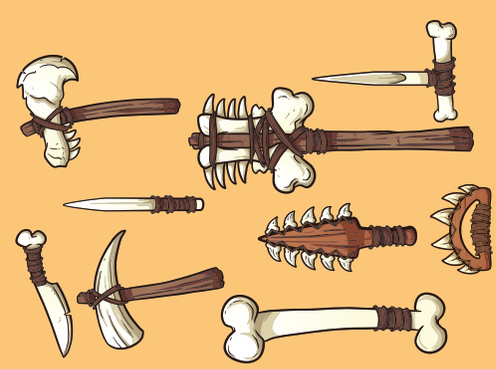
Museum

Museum is a place where objects which are rare and used by our ancestors are preserved. These give information about the lives of people. Therefore it is important to preserve the remains of the past. Remains are the objects or things used by the people of the past which got buried under the Earth.

WQXADP

- ✓ Early man used Quartzite, a type of stone for making tools and weapons.
- ✓ A type of stone called flint stone was used to produce fire.





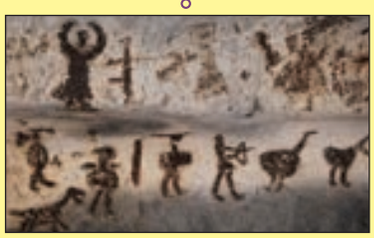
Cultivation

Early humans did not know to grow crops. They wandered in all the landscapes in search of food. They ate whatever they got and drank water from natural sources. This kind of life was called **nomadic life**. They wore leaves, skins of animals, barks of trees to cover their body. They lived in caves and holes of big trees.

Stones were sharpened as tools by them. They made it with the help of other stones. These sharp tools helped to hunt animals and tear the flesh of animals.

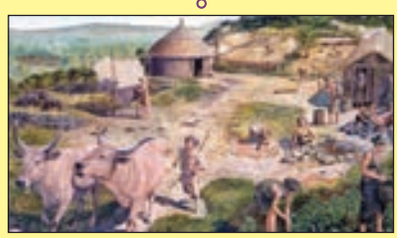
They used bones, horns, stones, skin, branches of trees and sticks as their tools and weapons. This stage of development in history was called **New stone age** or **Neolithic age**.

Stone age



Palaeolithic age
(old stone age)
10,000 BCE years ago

Mesolithic age
Middle stone age
Before 8,000 BCE



Neolithic age
(New stone age)
10,000 – 4000 BCE

Activity

What was the food eaten by early humans?

- _____ _____
- _____ _____
- Why did early humans live in the caves?
- Why did they eat raw flesh?

They used clothes, torches, tools and weapons.

The purpose of using them are given below:

To protect themselves from animals

To find the path at night

To protect themselves from winter

They drew paintings of what they saw around them on the walls of the caves where they lived.

Distinguish between

Palaeolithic age	Mesolithic age	Neolithic age

Stone wheels

When the stones rolled down the mountains they acquired round shape. Humans observed them and thus wheel was invented. In the beginning it was made of stone and later by wood. This was the first scientific invention.

Pottery

Pottery was also one of the greatest inventions by humans. The baked pot was strong and looked beautiful. Stone Age people made all the household artifacts (articles made by humans) by themselves.

Stone houses were built. The roofs of these houses were thatched with sticks and husks. After this several inventions were made, humans started living in a settled life.

The period which has written documents are called historical period. These documents help us to know about the life styles of the people, events, food habits, culture, art, architecture, literature etc.,

Agriculture was an important activity in the history of humans. They started cultivating crops. They sowed seeds and harvested crops. They found it convenient to live along the river as crops grew well near the river.

Burial pots called urns have been excarated in which the dead bodies were placed and buried under the ground.

20 lakhs years ago man walked straight. Around 3 lakhs years ago he spread all over the earth. He cultivated around 8000 years ago. Since then civilisations started around 300 years ago.

Changes in man's life ⟶

Man ⟶ family ⟶ society ⟶ group ⟶ administration

Earthenware Vessels
Metal used in the stone age.

At the end of new Stone Age copper was invented. In this age both stone and copper were used. This period was called **Chalcolithic Age**. Bronze was produced when copper, zinc and tin were mixed together. The period when people made tools from an alloy called bronze was called Bronze Age.

Tell the names of some iron tools found at your home.

- Sickle Spade
- _____ _____
- _____ _____

After this, humans found iron and started using iron tools and weapons. This age was called Iron Age. In this age household articles, agricultural tools etc. were made of iron. Metals were alloyed and tools were made.

You can collect – coins, potsherds, metal objects etc. Most of these objects are dug out from the ground. Such objects are preserved in the museum. In Tamilnadu, Athichanallur, Arikkamedu and Keeladi are the sites where the objects used by the people of the past are excavated. Still research is going on in these sites.

Activity

Find the age of period

_____

_____

_____

_____

_____

Palaeolithic age
Mesolithic

Neolithic age
Chalcolithic age

Ironage

Archaeological excavations

If you come across any old, traditional objects of historical value try to collect and save them.

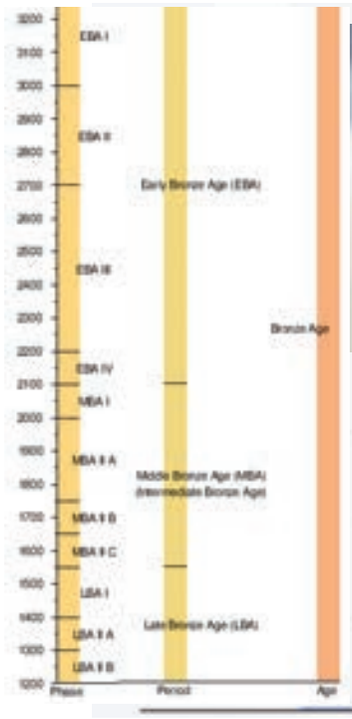
Athichanallur

Arikkamedu

Keeladi

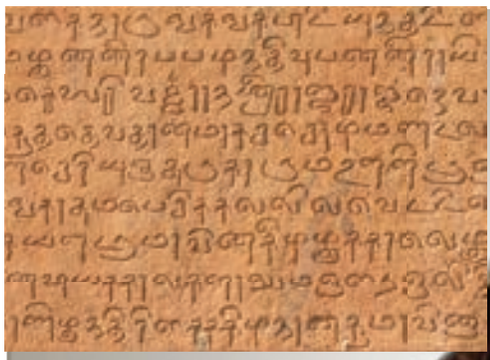
Pre historic period

- *Palaeolithic age Before 10,000 B.C.(BCE)*
- *Mesolithic Middle age Before 8,000 B.C. (BCE)*
- *Neolithic age 10,000 to 4.000 B.C. (BCE)*
- *Chalcolithic age 3000 to 1500 B.C. (BCE)*
- *Ironage 1500 to 600 B.C. (BCE)*



Before Christ (B.C)
Before Common Era (BCE).
Anno Domini (A.D)
Common Era (CE)

The term Chronology is used to express the historical events in respect of dates and years in the order of their occurrence



Study of coins is called Numismatics. All types of coins right from metals to paper help to learn about the kings, and economic conditions of that period.

All the evidences or traces like, artifacts, pots, coins, idols, ornaments, weapons written documents etc, are valuable sources to construct History.

Scripts inscribed about a king's rule, people or society on rocks and walls are called inscriptions, usually they are found on temple walls.

Evaluation

I. Choose the best answer.

1. Palaeolithic humans,
   a) Wore cotton clothes
   b) Wore leaves and skin of animals
   c) Wore woolen clothes.
2. The animal tamed by early human was
   a) Cow
   b) Horse
   c) Dog
3. The first metal invented by early human was
   a) Iron
   b) Copper
   c) Gold

II. Fill in the blanks

1. Early man lived in _____.
2. The period before the inventions of script was called._____.
3. The period that used iron tools was called _____.
4. The first scientific invention was _____.
5. Name one site where historical research is still going on_____.

3P8PQM

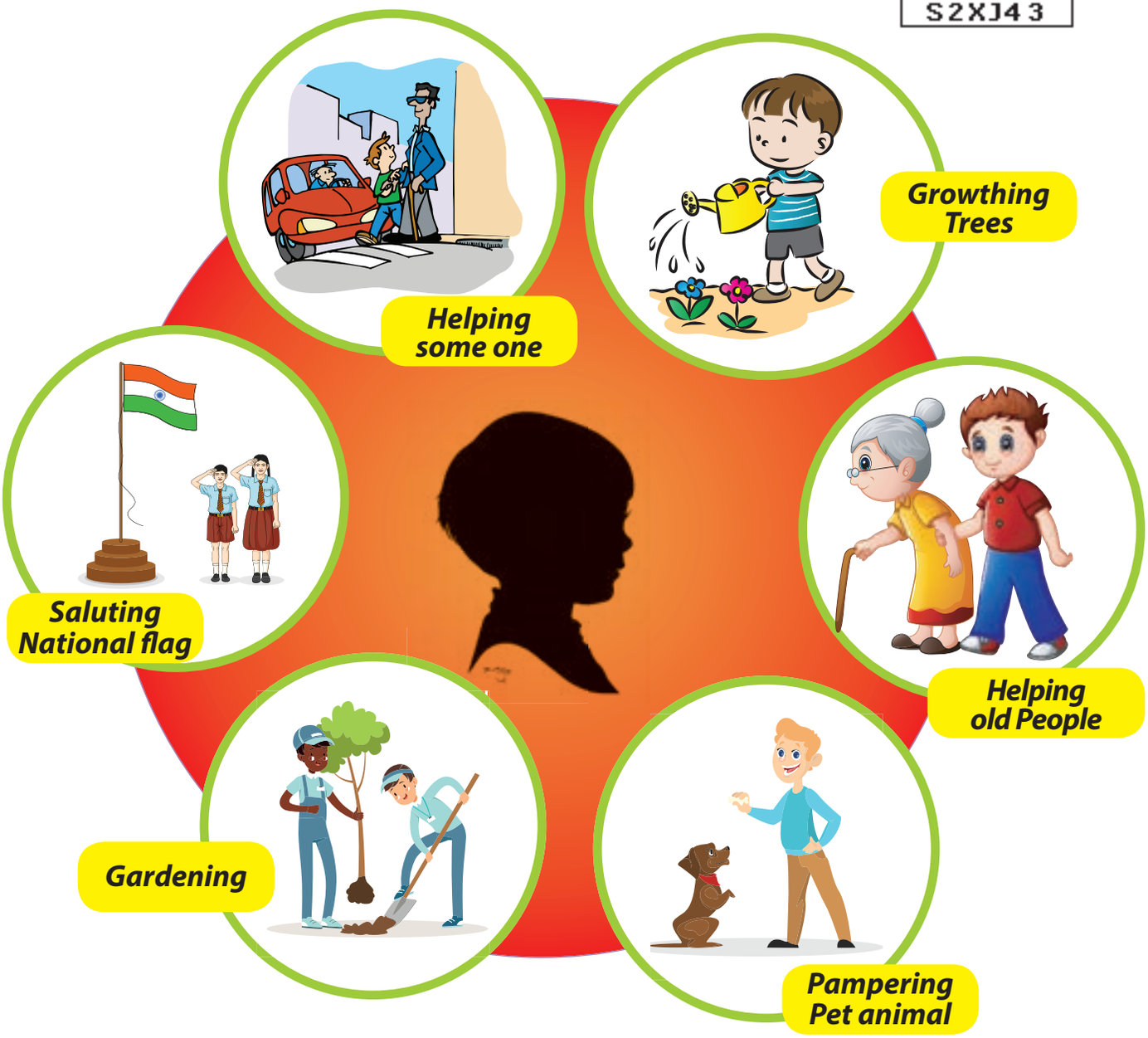
III. Answer in detail.

1. What is Stone Age?
2. Define Neolithic age.
3. In which age Stone and copper were used?
4. What are the sources that help us to learn history?
5. What is a museum?
6. How can we classify the prehistoric period?
7. Classify Palaeolithic and Neolithic tools.

Unit 3

Good Citizen

S2XJ43



What do the above pictures say?

Who is a human? What are the differences between animals and human beings?

'Man is a social animal'. Human beings are bestowed with senses. Human beings think and act using their senses. They are born free but bound in the social web. They cannot live alone. They need social and emotional support. To live in the society they need to develop some good values.

We are born with few values and rights. These values are further polished in educational institutions. The aim of education is to change a person into a valuable person.

Good values are the qualities of a person that keep society running. These qualities can be developed by all.

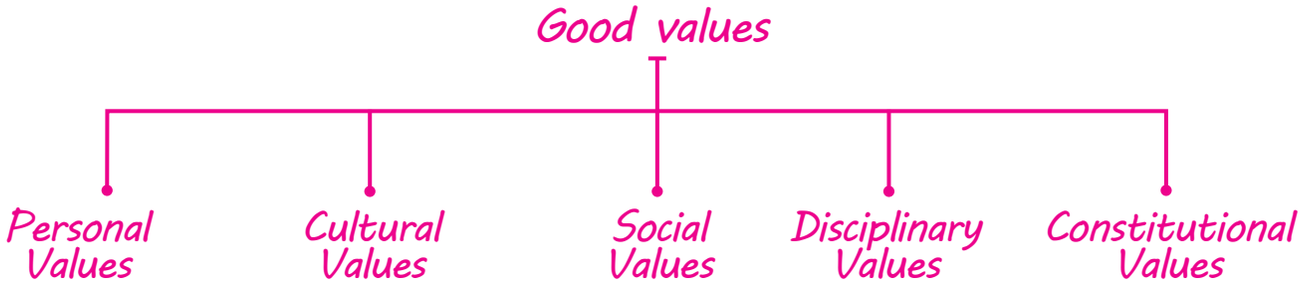
The term 'civic' relates to people or civilian or citizen of a country. People should live together in unity.

Living together in harmony despite all the disparities is a significant value. Helping others is also an important value.

There should be no disparity among people and all are one. Today's children are tomorrow's citizens of the nation. Moral and good values have to be grown among children so that they may become valuable citizens.

World survives on morality
Selfishness is immoral and
Selflessness is moral

Swami Vivekananda



Personal values:

Personal value is the basic value for every individual. We must bring out the hidden values of a person that they acquire from their experiences. This leads to their overall development.

Try these

1. We show _____ to all living beings.
2. Help the poor with _____.
3. _____ is the best policy.
4. The best relationship is _____.
5. We show _____ to our guests.
6. We show _____ to those who suffer.
7. Always speak the _____.
8. We must maintain _____ in public.

Love, mercy, generosity, honesty, truth, friendship, hospitality, peace, tolerance, faith etc. are personal values. (Fill in the above blanks with the help of these values)

Citizenship is the right to live in a best way as a civilian. This includes a person's participation in Government activities too.

Try these

1. What is your mother tongue? _____
2. Which is our official language? _____
3. Main food of North India is _____
4. _____ is the main food of south India.
5. How many languages do you know? _____

Cultural values

To become well mannered and cultured is an essence of the society.



Irrespective of language and religion people live together in harmony. This help to maintain cultural values.

- *We are Tamil people and Indians too. We are all human.*
- *We must live together as brothers and sisters.*

Social values

How should we behave in public places? We can maintain good values in public places by following the points given below.

- Maintain good relations with people
- Respect elders
- Respect nature
- Be tolerant
- Maintain friendship

- The king Sibi offered the flesh of his thighs to a wounded dove.
- To give justice to a cow, Manuneethi Cholan killed his son under the wheels of his chariot.
- King Paari offered his chariot to mullai, a climber (Rotana climber).
- King Pehan offered his shawl to a peacock.

1. Grow trees to get ----------

2. Millions benefit if they live ----------

3. United we ---------- divided we fall.

Disciplinary values

Punctuality, involvement, treating every one as equal, doing work ontime, holding your morals, doing duties without fail, etc. are disciplinary values.

Circle the good values given above:

	P	L	E	Q	A	L	I	T	Y	A	B
	U	O	G	X	C	O	N	D	U	C	T
	N	Y	E	T	F	V	V	O	L	E	D
	C	T	N	M	A	E	O	R	H	R	S
	T	U	E	O	E	M	I	S	I	S	E
	U	V	R	U	D	T	V	T	G	R	R
	A	A	O	P	E	S	E	R	V	I	V
	L	B	C	L	F	X	M	K	M	G	I
	I	D	I	N	I	Z	E	R	L	H	C
	T	E	T	K	L	G	N	F	N	T	E
	Y	Y	Y	G	M	O	T	I	O	I	K

CITIZEN

A citizen is a person who is a member of a particular country and enjoys various rights and executes his duties. A sovereign state provides Citizenship to its people. Right to live, right to vote, right to work and reside anywhere in the country are the other rights enjoyed by the citizens.

Constitutional values:

1. Safeguard the public properties.
2. Maintain the unity and integrity of the nation.
3. Develop scientific attitude.
4. Protect the natural resources.

5. Care for the environment.
6. Honour the national symbols.
7. Respect martyrs and their sacrifices.
8. Preserve our culture and heritage.
9. Develop patriotism.

Match the following

Dr. A.P.J. Abdul Kalam

National Flag

Environment
Public property
National symbol
Harmony
Scientific attitude

India Map

Bus

Tree

There are some factors that affect our values:

- Extreme faith in religion leads to communalism.
- Don't break the queue / rules.
- Spitting and dumping garbage anywhere.
- Polluting land and water.

Let us know:

In the name of faith and worship people violate rules and values. For example:

1. Breaking of white pumpkin (poosanikai) on the roads causes inconvenience to the people.
2. Burning the old objects.
3. Submerging idols in water bodies.
4. Bursting crackers causes pollution.

In the name of modernization polythene, plastics and non-decomposable things are used which causes various problems in the environment.

Good conduct and moral science are nothing but civic values.

Factors that enriches good values are:

- Literacy
- Creating awareness and interests
- Trying hard till success
- One's own evaluation
- Acceptance
- Self confidence

One main feature of good value is to preserve hygiene. Each person should be taught to be hygienic and follow the routine given below

- Wakeup early in the morning
- Brush your teeth
- Have a bath
- Wear clean clothes
- Wear slippers / shoes
- Trim hair and cut the nails
- Wash hands before and after meals.

Consolidation

- Good values are developed by practicing them.
- Honesty is the best policy.
- Good values are classified into four types.

1. Personal values 2. Social values 3. Cultural values 4. Disciplinary values.

- Personal values are love, generosity, mercy etc.
- Cultural values include indiscriminate society and various cultural features.
- Mannerism is an important feature of social values.
- To protect equality is the soul of disciplinary value.

Evaluation

I. Fill in the blanks

1. The word civic means _____ of a nation.
2. The main objective of education is to change person into_____.
3. Man is a _____.
4. Always be _____ in delivering duty.

II. Match the following

1. Natural character	-	Tolerance
2. Culture	-	Affecting factor
3. Society	-	Punctuality
4. Duty	-	Language
5. Unemployment	-	Good value

III. Answer the following in brief

Y18YG1

1. Define the term Citizen.
2. List out any five personal values?
3. What are the social values?
4. What are disciplinary values?

IV. Answer in detail.

1. Write any five factors that enrich good values.
2. Write about the constitutional values?

ATMOSPHERE

Unit 4

4YJDSY

Ravi Where do we get the most significant thing that we need?

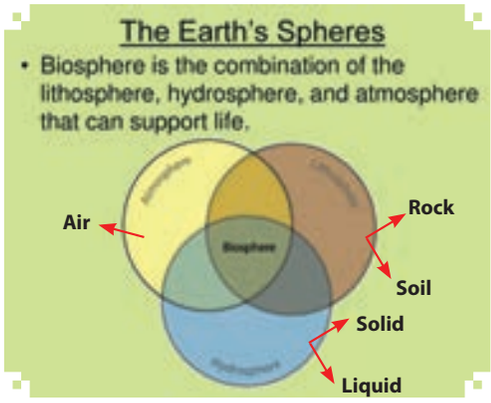
Devi From the **Biosphere** of our earth.

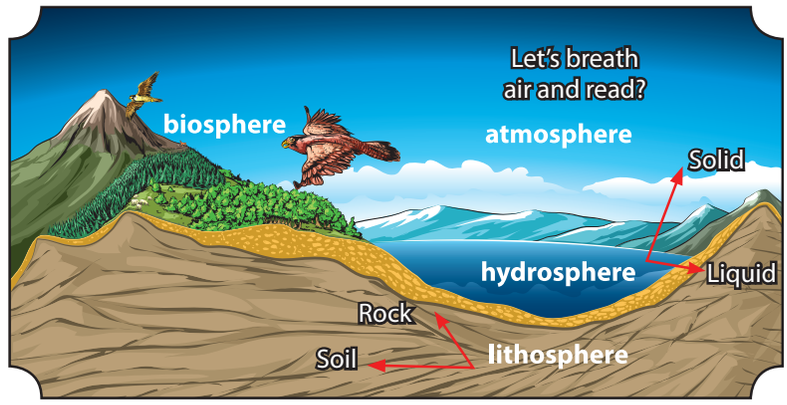
Ravi What is Biosphere?

Devi Biosphere is the combination of lithosphere, hydrosphere and atmosphere.

Ravi What is atmosphere? Shall we study about it?

Lithosphere – Land on Earth
Hydrosphere – Water on Earth
Atmosphere – Air on Earth
Biosphere – Life on Earth





Atmosphere

Atmosphere is the envelope of air around the Earth.

Weather

Weather is a day to day conditions of atmosphere at any place in regard to temperature, pressure, wind, humidity, and rainfall.

- Is there any poet who does not love the nature?
- Is there any human who does not enjoy air?

The word 'weather' is often used by us in our day to day life

World Weather Day March – 23

Climate

Climate is the average weather for a given period of time.

The world climate is derived from the Greek word called 'clima'

Try this

Take a ball and throw it up in the air observe the increasing speed of the ball when it comes down.

Gases in the atmosphere

- Oxygen 21%
- Nitrogen 78%
- Other gases 1%
  - Carbon di oxide 0.03%
  - Ozone 0.00006%
  - Organ, Neon, Helium, Hydrogen, Krypton, Xenon, Methane

We know that the gravitational force increases near the Earth and decreases as we go higher.

As a result the density of air also differs and can be found in five layers called Troposphere, Stratosphere, Mesosphere, Thermosphere and Exosphere.

All the major changes occur in the Troposphere. The study of weather is called Meteorology.

Solar radiation:

The Earth receives heat energy from the Sun in the form of radiation. It is called solar radiation.

World Environment Day, June-5

World Ozone Day, September-16

Farenheit, Celsius, Kelvin are the units to measure temperature

The sun is the only source of light to all the planets in the solar system. The land, water and air in our planets receives heat from the sun.

Activity

Write the significance of gases

Oxygen __ __ __ __ __ __ __ __ __

Carbon di oxide __ __ __ __ __ __ __ __ __

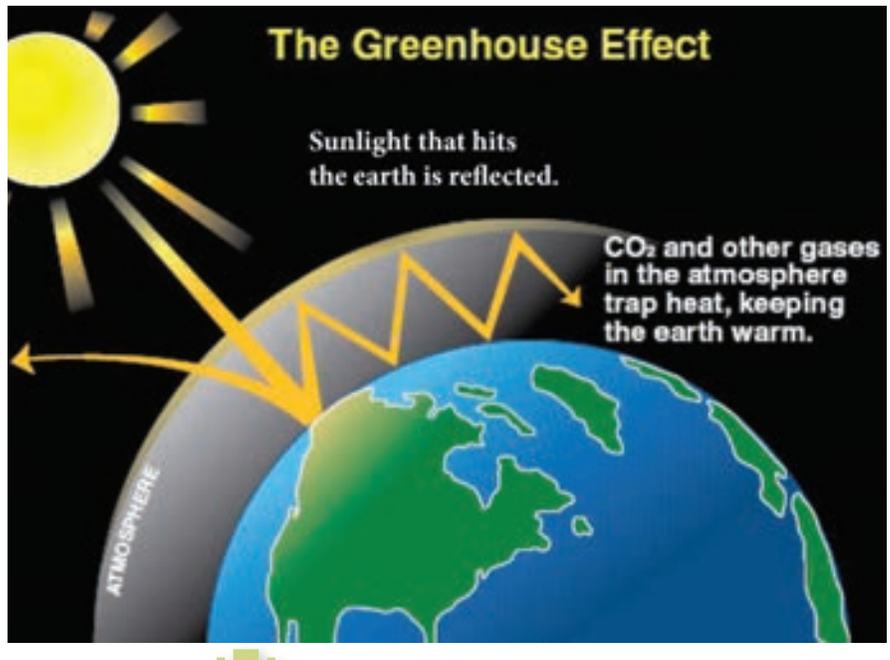
Ozone __ __ __ __ __ __ __ __ __

Effects of solar radiation

- Land – Conduction
- Water – Convection
- Atmosphere - Terrestrial radiation

The earth has the capacity to reflect the rays from the sun.

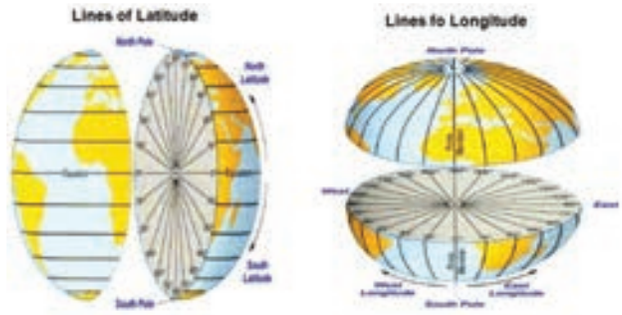
The temperature is not same everywhere. Latitude, altitude, distance from the sea, position of the mountains are some of the factors that determine the temperature of a place.



Find out how it differs

Significance of Latitude and Longitude

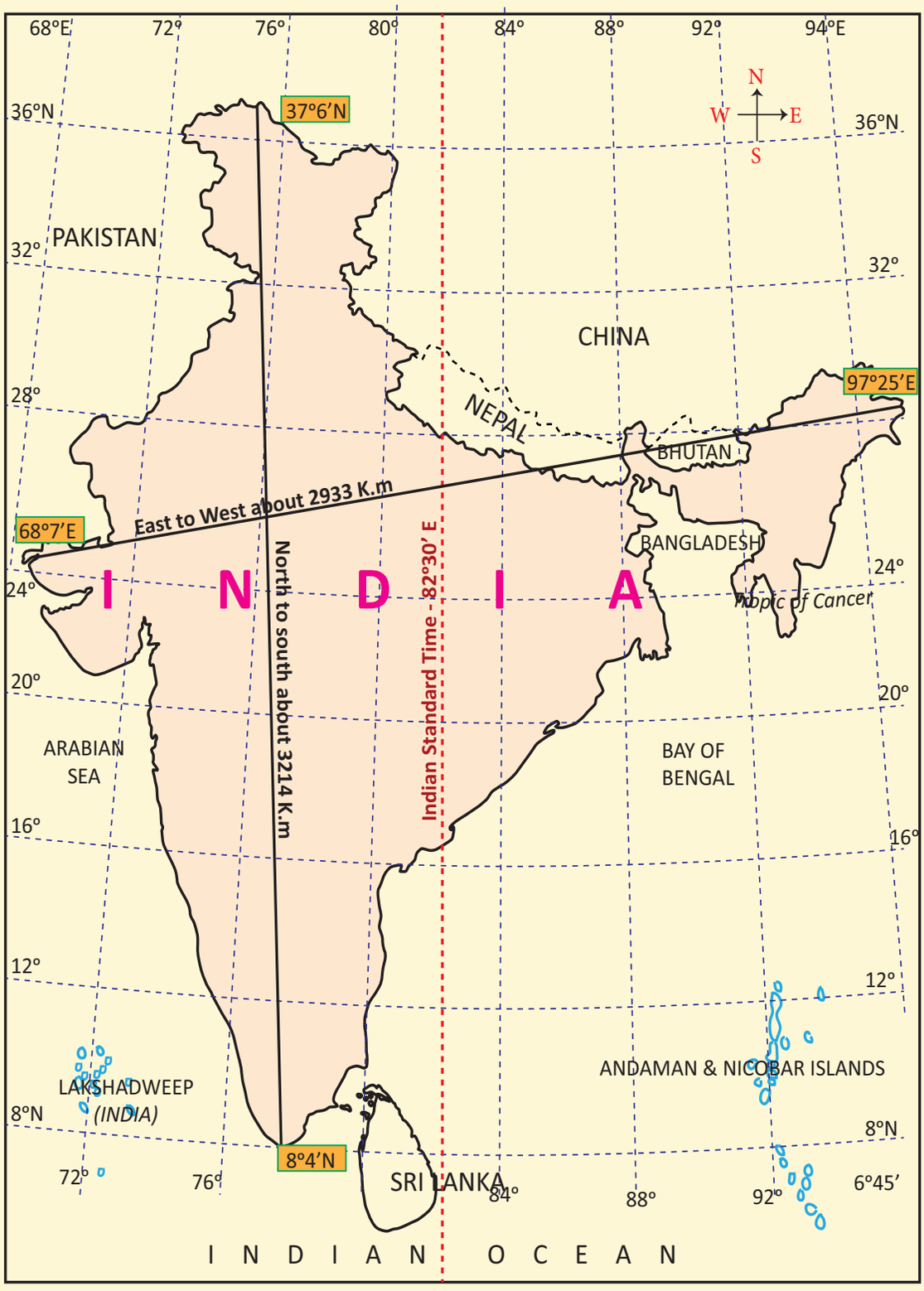
- Latitude and Longitude together make grid.
- Thus grid helps us to locate a place correctly.



Learn

Latitude/ Parallels	Longitude / Meridians
The imaginary lines drawn horizontally on the Earth surface from west to east are called latitudes. There are 180 latitudes or parallel circles drawn around the earth surface both in Northern and Southern hemispheres respectively. Some important latitude are (1) Equator - 0° (2) Tropic of cancer -23 ½° North (3) Tropic of Capricorn-23 ½° South (4) Arctic Circle - 66 ½° North (5) Antarctic Circle - 66 ½° South (6) North Pole and South Pole end at a point of – 90° North and 90° South (7) Equators is the great circle at the centre of the earth	(1) These are the semi circles extended from North Pole to South Pole. (2) The 0° longitude is called prime meridian. It passes through a place called Greenwich in London, England. (3) The earth rotates on its axis once in 24 hours. There are 360 longitudes on the Earth. Sunlight takes 4 minutes time to move 1°. (4) 82.30° East longitude is the Indian Standard Time (IST) that passes through Allahabad in India. (5) It is 5.30 hours ahead of Greenwich Mean Time (GMT). (6) 82.30° × 4′ = _____?

Location of India



Not to Scale

Activity

In which latitude and longitude is your school located?

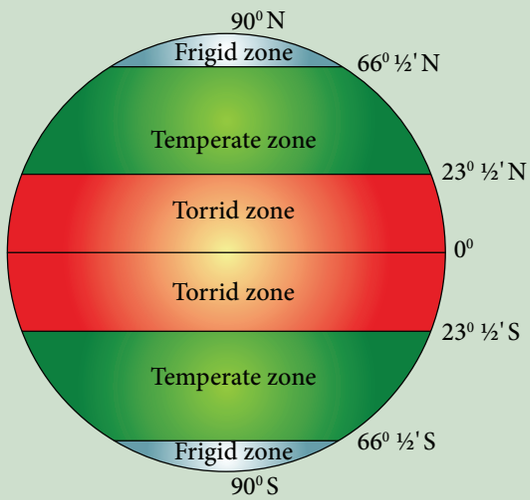
Latitude _____ Longitude _____

Heat Zones of the Earth

Why does the heat vary from morning to evening?

It is because of the sun's rays.

The land is divided into various heat zones according to the fall of sun's rays on the surface of the Earth.



The zone between Tropic of Cancer and Tropic of Capricorn is called Tropical or Torrid zone, where the sun's rays fall vertically.

The zone between 23½° N to 66½° N latitude and 23½° S to 66½° S latitude which receive slanting rays of the sun are called Temperate zone. The zones which do not Get Sun's rays are called Frigid zones.

Himalayas

The highest mountain in the world is Himalayas.

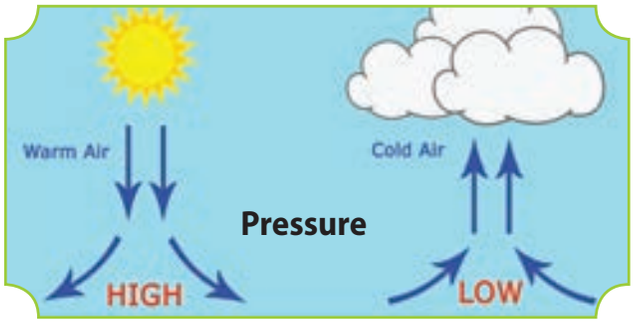
Apart from the famous mountain peaks like Mount Everest, K2, Kanchenjunga there are other peaks like Nanga Parbat, Annapurna, Dhaulagiri. Mount Everest is the highest peak in the world. It rises to a height of 8,848m above sea level.

Doddabetta

Doddabetta is the highest peak in the Nilgiri ranges. It rises to a height of 2,637 metres. There is a reserved forest area around the peak. It is 9 km from Ooty, on the Ooty-Kotagiri Road in the Nilgiris district of Tamil Nadu, India.

Pressure

When the temperature increases, pressure decreases and when the temperature decreases, pressure increases.



Barometer used for measuring the pressure.

The average pressure of ocean is 1013 mlb.

Wind

The air which moves horizontally from high pressure to low pressure area is called wind.

How do you find the direction and speed of the wind?

Devi: The national flag which was hoisted in the morning is flying from West to East.

Ravi: My toy fan was swirling very fast when I showed it outside.

Air never moves in one direction. It differs from place to place and time to time. This is due to the rotation of the earth.

The instrument used to measure the direction of wind is wind vane.

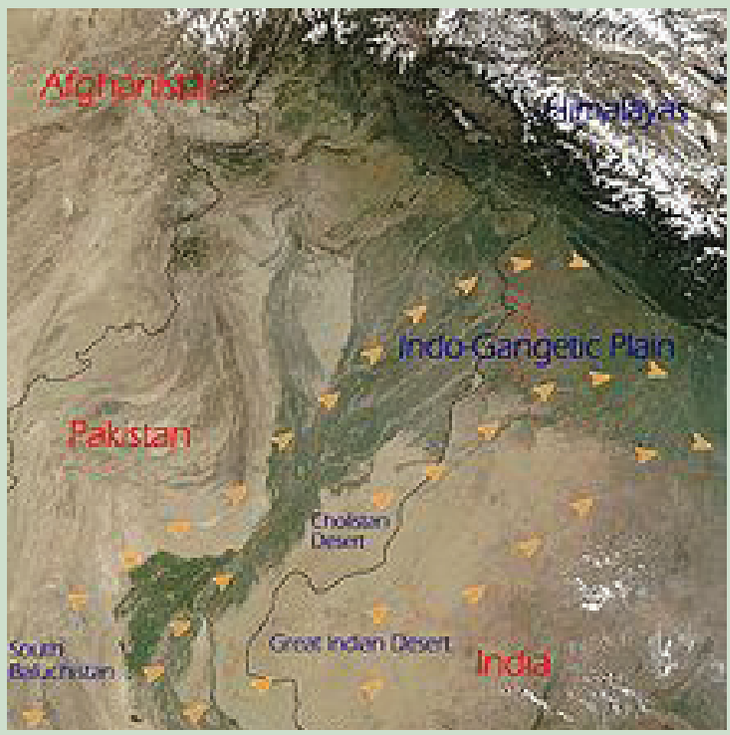
The instrument used to measure the speed of the wind is Anemometer.

Wind Energy

Wind energy is a form of renewable energy. Wind turbines converts the kinetic energy into mechanical energy. A generator can convert mechanical energy into electricity.

Loo Wind

The 'Loo' is a strong, dusty, gusty, hot and dry summer wind from the west which blows over of North Western India. It is especially strong in the months of May and June. Due to it very high temperature, exposure to it often leads to fatal heatstrokes.



Different types of wind

Planetary wind:

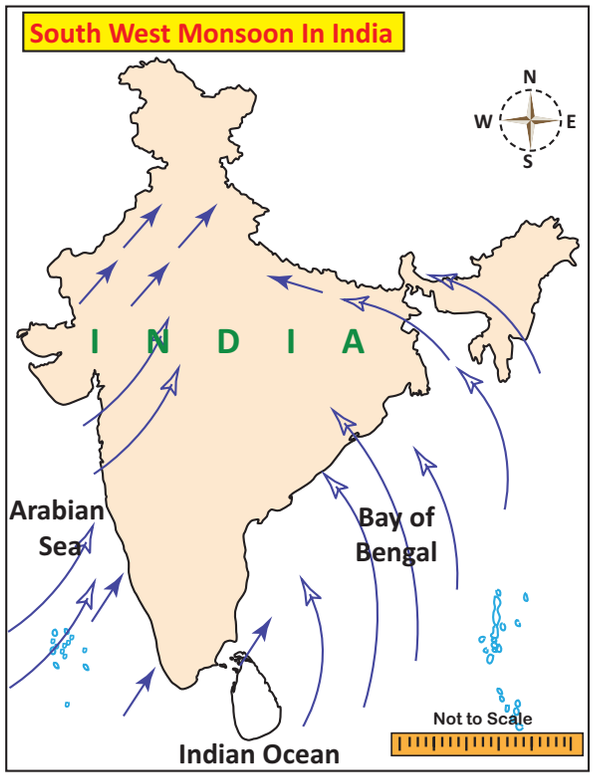
These winds move in the same direction throughout the year with the rotation of the Earth.

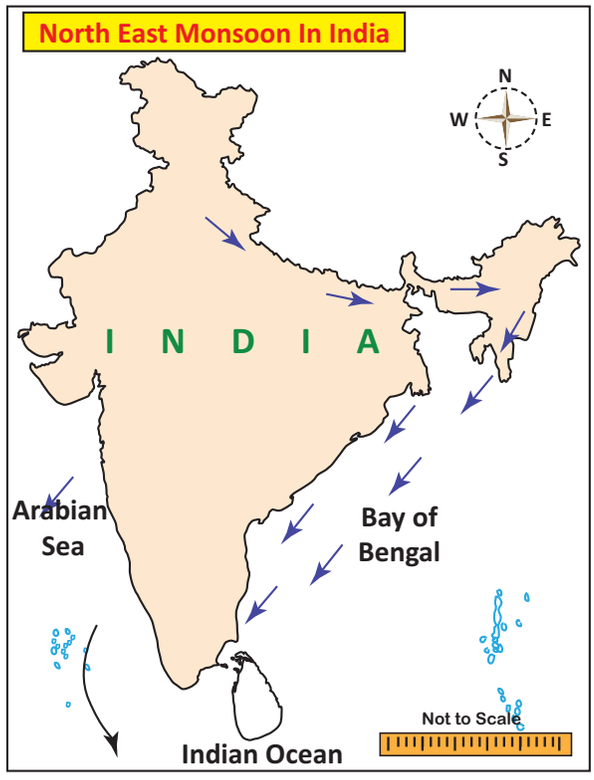
Monsoon winds:

The word monsoon is derived from the Arabic term 'mausim' which means season.

Types:

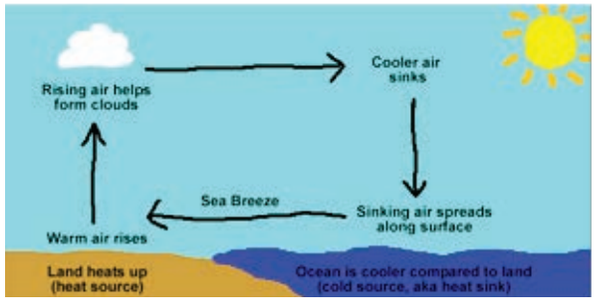
- South West monsoon winds
- North East monsoon winds





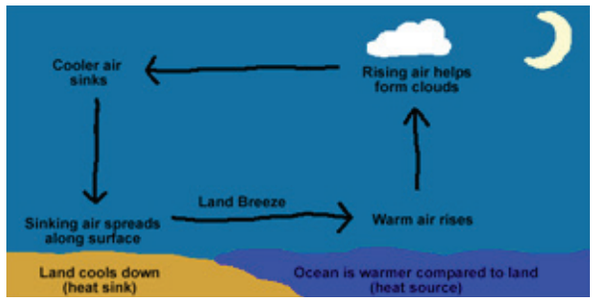
Sea breeze:

It blows from sea to land during the evening.



Land Breeze:

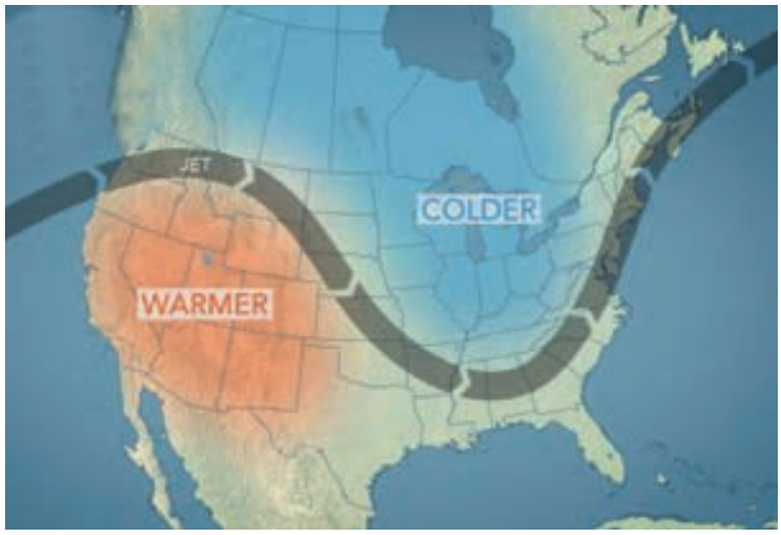
It blows from land to sea in the morning.



Local wind:

It affects the weather.

- ❖ Warm local wind – North West India
- ❖ Cool local wind – North East India



Jet streams

Air currents in the upper layers of atmosphere is known as Jet streams.

It could determine the arrival and departure of monsoon winds in India.

Hurricane / cyclone

Hurricane changes its position and direction with time to time.

The speed of winds also changes with time. It gives very heavy rainfall.

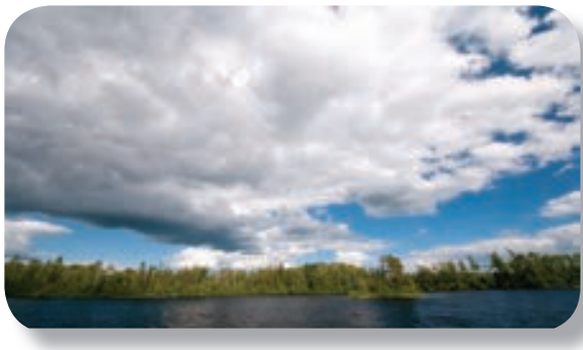
Types of clouds

The clouds are composed of water vapour in the air. The clouds are divided into four categories on the basis of appearance and height. They are

1. Cirrus cloud
2. Stratus cloud
3. Cumulus cloud
4. Nimbus cloud

1. Cirrus cloud

These clouds appears like a silver grey fish at a very high altitude in the sky. These may not give rain.



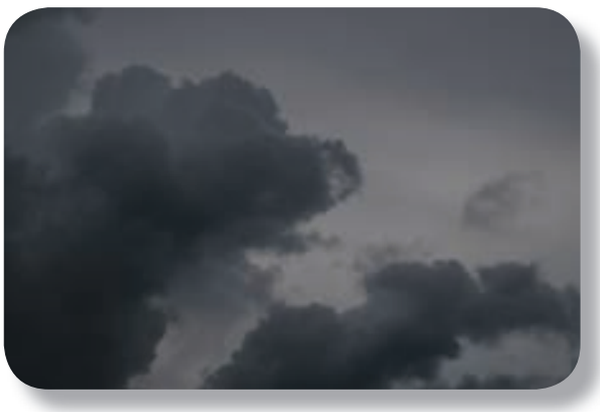
2. Stratus cloud

They are grey in colour and are spreadout. They may give small shower.

3. Cumulus cloud

It looks like a burst cotton and gives convectional rain fall.

These clouds are associated with rainfall lightning and thunder.



4. Nimbus cloud

It appears as dark or grey in color. It gives heavy rainfall. It is called vertical or rain clouds.

Look at the sky: write

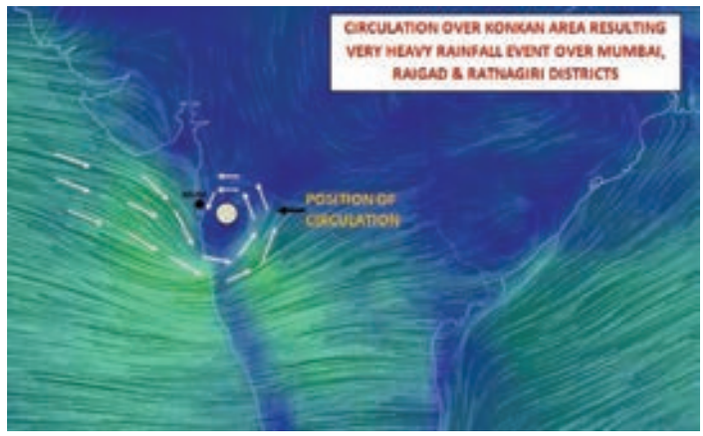
How does the cloud appear today ?_____

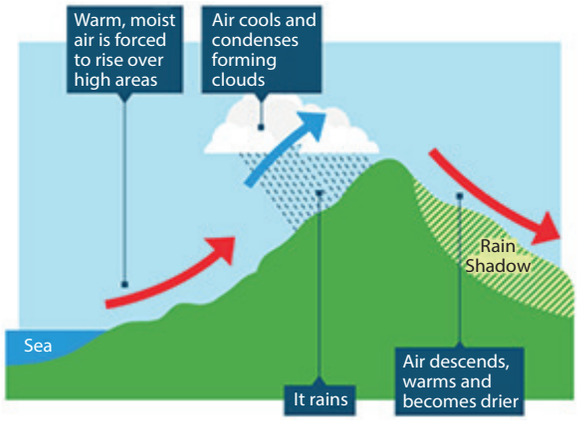
What would be the consequences ?_____

Rain fall

Condensation of the wind causes rain fall

Rain water must be saved and not be wasted.





Convectional Rain fall

During summer solar insolation takes place in land. Water evaporates from lakes, ponds and vegetations. Due to this a heavy rainfall with lightning and thunder occurs in the evening for a short period.

Environment

Natural Environment

The natural materials and living things, including sunlight are called environment.

DO YOU KNOW?

Types of Environmental Pollution

Pollution

Water (liquid)

Air (gas)

Land (solid)

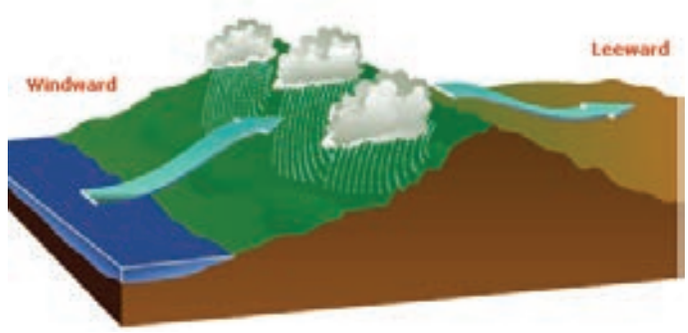
Rain water harvesting

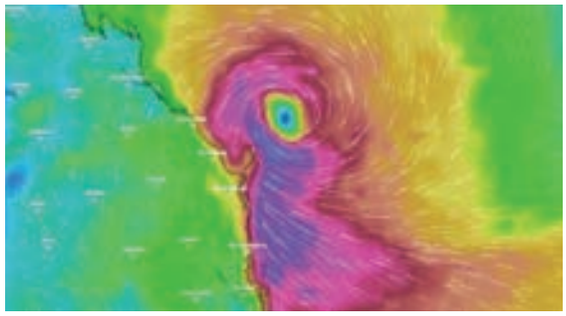
Rain water harvesting is a technique of collection and storage of rainwater into natural reservoirs or tanks, or the infiltration of surface water into subsurface aquifers (before it is lost as surface runoff). One method of rainwater harvesting is rooftop harvesting.

Convey this message to society

Orographic Rain fall

When the moisture laden winds from the sea climb the hill slopes, it becomes cool and cause heavy rainfall. The opposite side of the mountain is called Leeward side. It receives very little rainfall.





Cyclonic rainfall

The warm air from the hot area is heated and moves upwards. Hence a low pressure area is developed and it attracts air from high pressure area. Owing to Earth's rotation a circular motion of winds develop. It gets cooled and brings heavy rainfall.

Thunder – Lightning

How do we know that the thunder is going to hit?

When the clouds of positive and negative (+,-) charge hit each other, lightning and thunder are produced. Light travels faster than sound, therefore thunder follows lightning. When all the characteristics together activate at the same time it is called weather factory.

Evaluation

I. Choose the best answer.

AWUT5W

1. The atmosphere is divided into _____ layers.

   a) four b) five

   c) six d) seven

2. The carbon dioxide is _____ _____ in the atmosphere.

   a) 0.03% b) 3%

   c) 1% d) 0.00003%

3. The world weather day

   a) March-20 b) March -21

   c) March-22 d) March-23

4. The Indian Standard Meridian passes through the city of _____.

   a) Allahabad b) Ahmedabad

   c) Hyderabad d) Secunderbad

5. Zone located in between Tropic of cancer and Tropic of Capricorn is _____ zone.

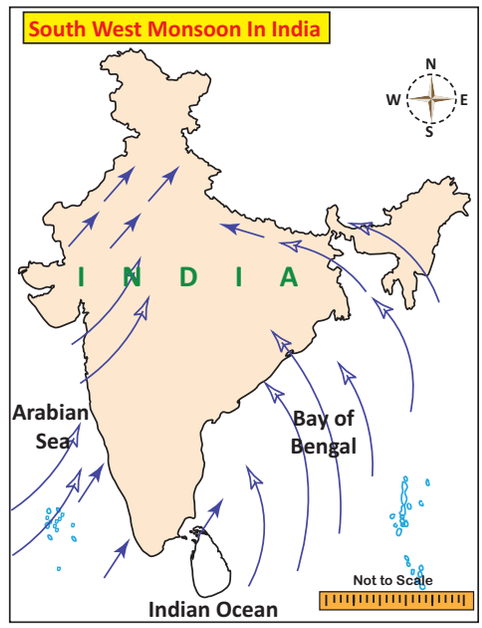
   a) Temperate b) Subtropical

   c) Cold d) Torrid

6. _____ is used to measure pressure in the air.

   a) Barometer b) Thermometer

   c) Anemometer d) Wind vane

7. 

   The above picture shows the direction of _____.

   a) South west monsoon rain

   b) North east monsoon rain

   c) Cyclonic rain d) Orographic rain.

8. Monsoon is derived from the _____ word.

   a) Greek b) Arabian

   c) English d) Latin

9. Vertical cloud is called _____.

   a) Cirrus cloud b) Stratus clouds

   c) Cumulus clouds d) Nimbus clouds.

10. _____ clouds give convectional rainfall.

a) Cirrus b) Stratus

c) Cumulus d) Nimbus

11. Which of the following statement(s) is/are.

Statement I - The instrument used to measure wind direction in wind vane.

Statement II - The speed of light travels faster than sound.

a) I & II

b) I only

c) II only

d) None

II. Fill in the blanks.

1. The study about the weather is called _____.
2. The instrument used to measure heat _____.
3. The imaginary lines drawn parallel to the surface of the earth is _____.
4. _____ are rain clouds.

III. Match the following.

a) Cirrus clouds - Grey sheet

b) Stratus clouds - Storm cloud

c) Cumulus clouds - do not give rain

d) Nimbus clouds - Cotton

IV. True/ False.

1. Latitudes and longitudes are used to calculate time zones. T/F
2. Latitudes and Longitudes help us to locate a country. T/F
3. Atmosphere gets heated by conduction than solar radiation. T/F
4. The main reason for the change of wind direction is Earth's rotation. T/F
5. Cyclone moves in anti-clock-wise direction. T/F

V. Write short note.

1. What is weather?
2. What are the atmospheric layers?
3. Write a short note on the Nimbus clouds.
4. Illustrate orographic rain fall with a diagram.

VI. Answer in detail.

1. Write about Jet Streams?
2. Explain the types of winds.
3. Write about 'weather factory'.

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