



Government of Tamilnadu

STANDARD FIVE

TERM II

VOLUME 2

MATHEMATICS



SCIENCE



SOCIAL SCIENCE



NOT FOR SALE

Untouchability is inhuman and a crime

**A Publication Under
Free Textbook programme of
Government of Tamilnadu**

Department of School Education

© **Government of Tamilnadu**

First Edition - 2012

(Published under Uniform System of School Education scheme in Trimester Pattern)

Textbook preparation and compilation

State Council of Educational Research and Training,

College Road, Chennai - 600 006.

Wrapper and Book design

Bala

Textbook Printing

Tamilnadu Textbook Corporation

College Road, Chennai - 600 006.

This book has been printed on 80 G.S.M Maplitho Paper

Price: Rs.

Printed by Offset at:



CONTENT

MATHEMATICS

(1 – 46)



Unit	TOPIC	Page.No.
1.	Symmetry	1
2.	Multiples & Factors	14
3.	Fractions	21
4.	Addition, Subtraction and Multiplication of Fractions	37



SCIENCE

(47 – 84)

Unit	TOPIC	Page.No.
1.	Food	49
2.	Save Energy	56
3.	Hygiene and Prevention of Diseases	65
4.	Materials around us and different types of Houses	75





CONTENT

SOCIAL SCIENCE

(85 – 122)

Lesson	TOPIC	Page.No.
1.	OUR GREEN COVER	87
2.	TREASURES UNDER THE GROUND	95
3.	BEYOND FRONTIERS	101
4.	OUR GOVERNMENT	113





MATHEMATICS

STANDARD FIVE
TERM II



CHAIRPERSON

B. TAMILSELVI

Senior Lecturer
DIET, Triplicane
Chennai 600 005.

REVIEWER

P. RAMALINGAM

Senior Lecturer
DIET, Kilpennathur
Thiruvannamalai District.

AUTHORS

S. Rajendran

Headmaster
P.U.M. School, Kallanatham
Chinna Salem, Villupuram Dist.

M. Vijayalakshmi

Secondary Grade Assistant
Muthiah Primary School
Allinagaram, Theni Dist.

Hebzibah

Postgraduate Teacher
St. Michales Academy
Adayar, Chennai.

R. Savitha

Headmaster
P.U.P. School, Kilpennathur(East)
Thiruvannamalai District.

Marla Xavler

Secondary Grade Assistant
St. Bede's Anglo-Indian Hr. Sec. School,
Santhome, Chennai.

Sudha M. Cherian

Postgraduate Teacher
Rosary Matric. Hr. Sec. School,
Santhome, Chennai.

Layout

Shiv Anand, Chennai.

R. Raja, Gudalur - 625518.

1

Symmetry

Half a Turn

During the festival season, all people gathered near the temple for celebration. To earn his living by amusing children, Raja brought the mini giant wheel with four cabins. All children loved to play in the small wheel. He was upset because he was not able to count exactly the number of times the wheel rotated. Every time the children said, "One more round to complete". The four cabins of the wheel looked alike.



One day, his daughter gave him an idea which he liked very much. She asked to change the colour of one of the cabins and his problem was solved.

What will you do to solve these problems?

- ✿ In a numberless wrist watch, there is no indication of the numerals. How will you tie it around your left wrist.



❗ A school boy held the digital watch upside down and noted 15 seconds as 51 seconds. How can this error be rectified.



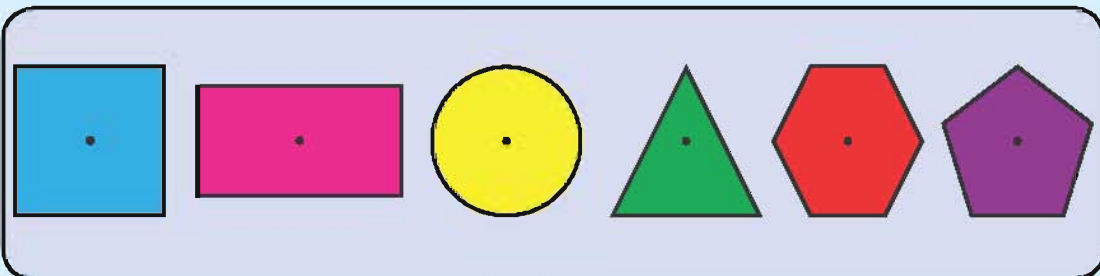
❗ In a hostel, rooms are numbered as NO11, NO12 NO17. No one dared to enter room NO17 why?

❗ In a library, comic books are pasted with 5 digit numbers starting from 35000 to 35030. No one touched the particular book titled "You are a winner". It was found that a particular number was pasted, upside down over the word "winner". Can you guess the reason and the number.

Activity

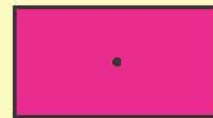


Guess which of the shapes below would look the same after half a turn ?



Do you find it difficult to say? If yes, then there is a way to check your guess. Here's how you can do it. Take any of the shapes.

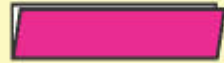
Trace its outline on a sheet of paper. Cut the shape and take it out. Here a rectangular shape is taken.



Then draw a horizontal line passing through its centre.



Fold it once horizontally, so that the fold falls on the centre. One half fits exactly over the other half. We say that rectangular shapes look the same after half a turn.



Repeat the same procedure for other shapes given above and check whether the guessed answers are correct.



Practice Time

- (1) Find out which of the following letters look the same after half a turn.

N A T D O

- (2) Which of these English words read the same on half a turn?

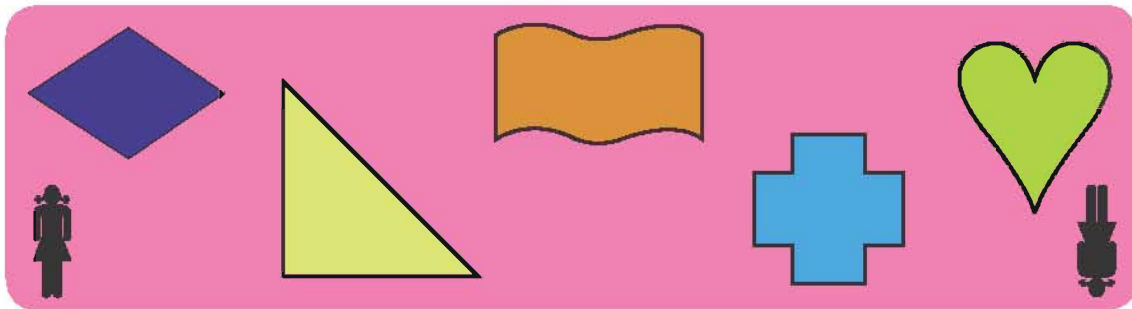
SIS, MOON, NOW, NOON

- (3) Give half a turn to the numbers given below. Find which of them still look the same.

6 3 5 1 7 0

- (4) Write all 5 digit numbers which look the same on half a turn.

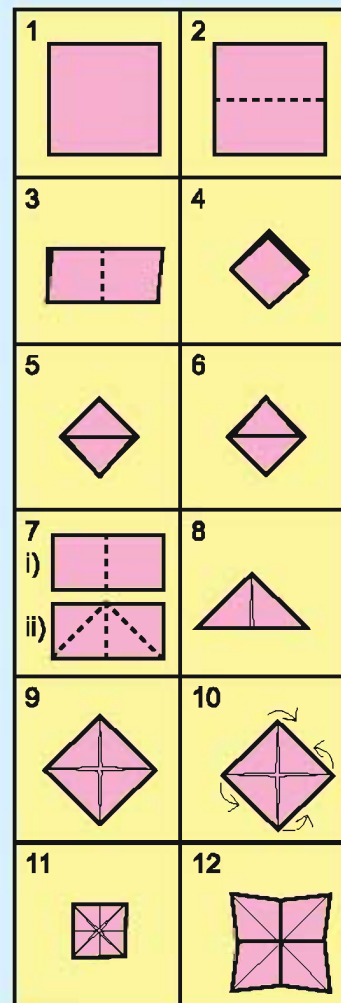
(5) Which among the following pictures will look the same on half of a turn? Put a tick mark (✓)



Activity

Have you seen four cups made of paper. Let us make four cups

1. Take a square sheet of paper
2. Fold it in half
3. Fold it again in half
4. Turn the folded paper such that the folded two sides are at the bottom.
5. From the four flaps take one flap and fold it.
6. Turn the folded shape and take another flap and fold it.
7. Turn it inside out. One side is like 7 (i) and the other side is like 7 (ii).
8. Then fold other two flaps backwards to get the figure 8.
9. Open it out.
10. Reverse it and fold the four corners towards the centre. Repeat the steps 2 and 3.
11. Open it out.
12. The four cups are ready.

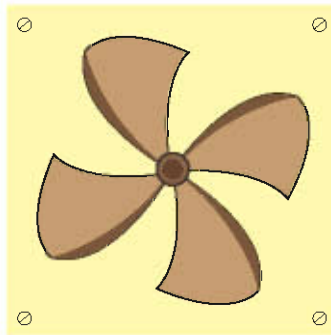


Rotate it and observe

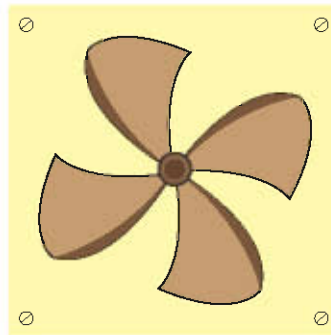
- 🔥 Do the four cups look the same on $\frac{1}{4}$ of a turn?
- 🔥 Does it look the same on half a turn? Discuss.

One-fourth turn

The blades of an exhaust fan look the same on $\frac{1}{4}$ of a turn.



Before turning it

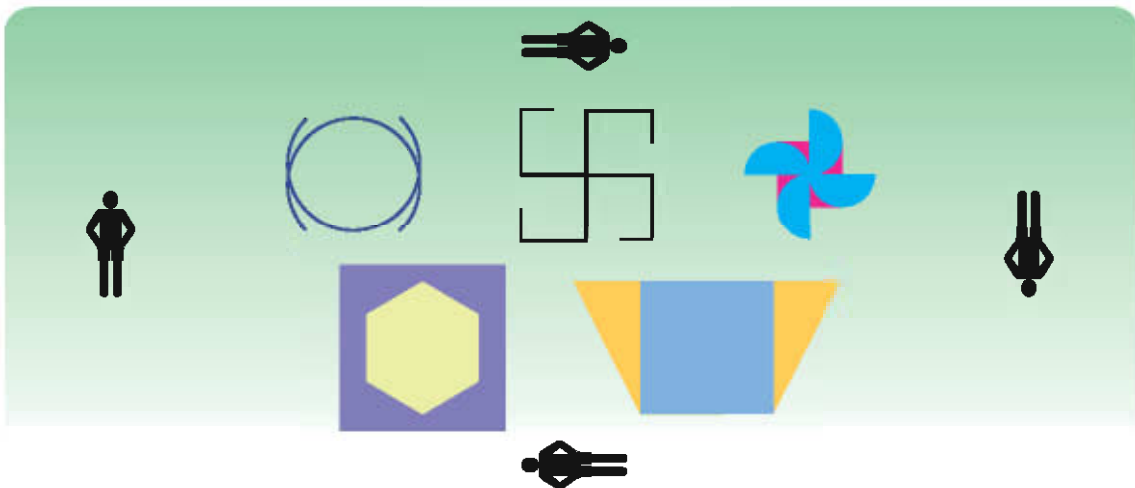


After $\frac{1}{4}$ of a turn.



Practice Time

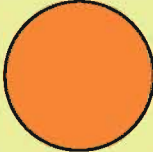





- (1) Among the following shapes, find out which one would look the same after $\frac{1}{4}$ of a turn. Put a mark (✓)



(2) Draw what the following shapes would look like on $\frac{1}{4}$ of a turn and half of a turn.

On $\frac{1}{4}$ of a turn

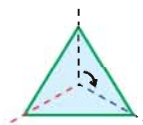
On half of a turn

(3) Draw three shapes which will look the same after half of a turn.

(4) Draw three shapes which will look the same after $\frac{1}{4}$ of a turn.

One-third turn



Which one will look the same on $\frac{1}{3}$ of a turn? Put a tick mark (✓) for the correct one.

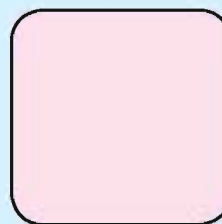


(a)

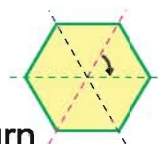


(b)

Draw the shape after $\frac{1}{3}$ of a turn



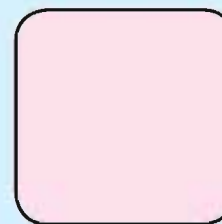
One-sixth turn



Can you see that these shapes look the same on $\frac{1}{6}$ of a turn



Draw the shape after $\frac{1}{6}$ of a turn





Practice Time

(1) Look at the following shapes. Draw how they will look on $\frac{1}{3}$ of a turn and $\frac{1}{6}$ of a turn.

	$\frac{1}{3}$ of a turn	$\frac{1}{6}$ of a turn

- (2) Draw three shapes which will look the same after $\frac{1}{3}$ of a turn.
- (3) Draw three shapes which will look the same after $\frac{1}{6}$ of a turn.

Group Activity



Collect and draw *kolams* in your notebook which will look the same after half a turn, $\frac{1}{4}$ of a turn, $\frac{1}{3}$ of a turn and $\frac{1}{6}$ of a turn.

Symmetry

The front view pictures of a tiger, an architectural marvel, a rocket, a butterfly, a bird and a flower are some of the examples exhibiting symmetry.

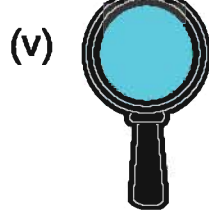
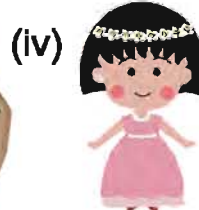
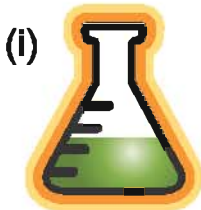


The bodies of most of the animals are symmetrical. Their left and right sides are mirror images of each other.



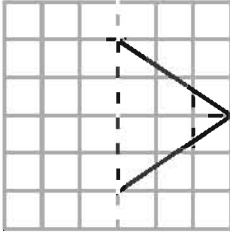
Practice Time

- (1) List any four symmetrical objects that you see on your way to school and draw them.
- (2) Identify the shapes given below. Check whether they are symmetrical or not. Draw the line of symmetry if they are symmetrical.

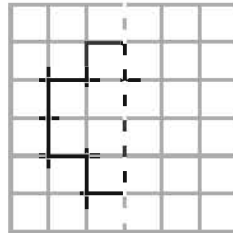


Complete them such that the dotted line is the line of symmetry.

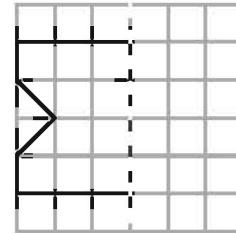
(i)



(ii)



(iii)



Activity (3)



Figures with two lines of symmetry

Take a rectangular sheet. Fold it length wise, so that one half fits exactly over the other half.



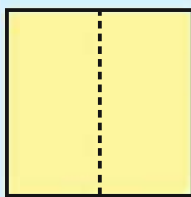
1st fold

Then fold it breadthwise in the same way. These two lines are the lines of symmetry.



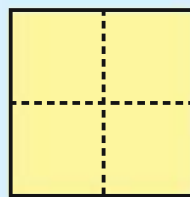
2nd fold

Figures with multiple (more than two) lines of symmetry



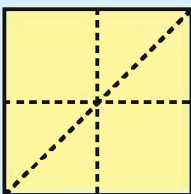
1st fold

Take a square sheet. Fold it into half vertically.



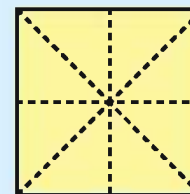
2nd fold

Fold it again into half horizontally.



3rd fold

Holding the closed ends as the base fold the two joined flaps along the base.



Open out the fold. There are four lines of symmetry.



Try these

(1) Find the number of lines of symmetry for each of the following shapes.

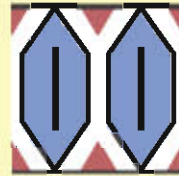
(i)



(ii)



(iii)



(iv)



(v)



(vi)



(vii)

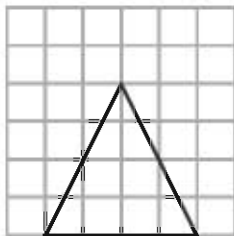


(viii)

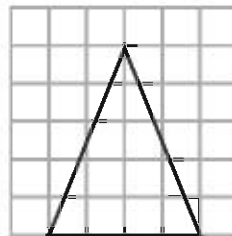


(2) Trace each figure and draw the lines of symmetry, if any.

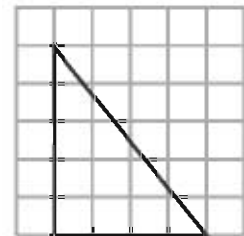
(i)



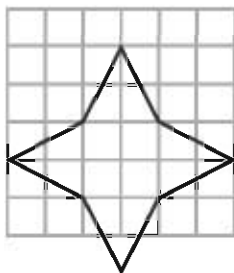
(ii)



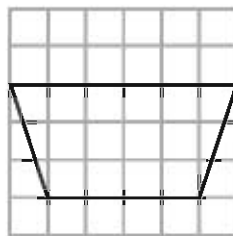
(iii)



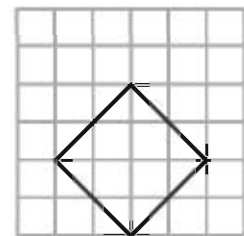
(iv)



(v)



(vi)



Reflection and symmetry











The mirror image of the face and the face itself are symmetrical about the plane of the mirror. Fold the paper in such a way that one face exactly falls on the other. Then the mirror line becomes the line of symmetry. Observe that the image is the reflection of the object at the mirror line.

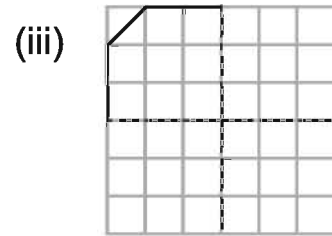
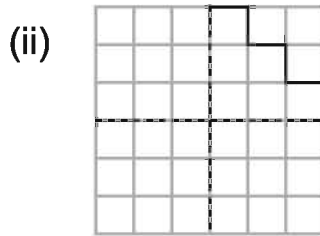
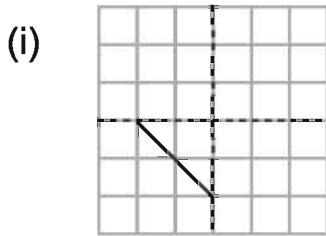


Practice Time

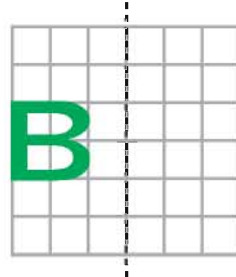
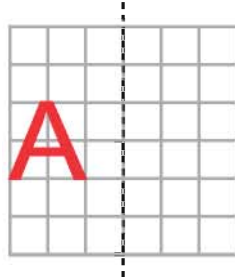
(1) Find the number of lines of symmetry in each of the following shapes. Check your answer by placing a mirror on the lines of symmetry.

- (i) 
- (ii) 
- (iii) 
- (iv) 
- (v) 
- (vi) 
- (vii) 
- (viii) 

(2) Copy the following on a squared paper. Complete each one of them in such a way that the resultant figure has two dotted lines as two lines of symmetry.



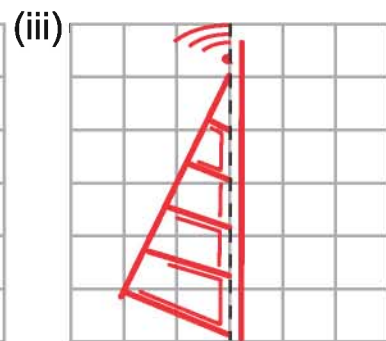
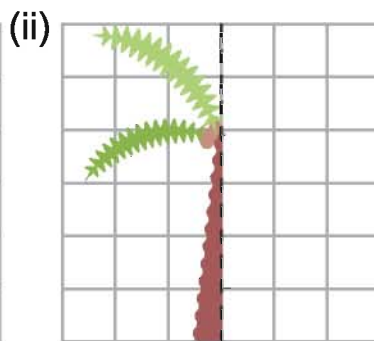
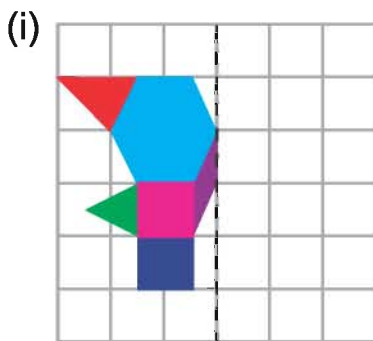
3) Take a mirror image of the letter in the given line. Find which letters look the same after reflection and which do not.



Try for other letters of the English alphabet.

C, D, E, F, G, H, M, N, O, R, S

(4) Place the mirror along the line shown, get the other side and draw and colour it.



Project work



Collect and draw ten *kolams* in your notebook with one, two and three lines of symmetry.

2

Multiples & Factors

Multiples

Mary, Meena, Emily, Noorjahan and Taj are friends. Emily wanted to play an indoor game.

Emily started explaining the rules. She took a sheet of paper and wrote the numbers from 1 to 50 as shown below. She made lots of cast from 1 to 10.

From the lots of cast, whoever picks a number has to keep a small stone on the particular number. Then she adds the number with the same number and keeps a stone on the number. The activity is continued in the same way.

Taj picked one of the lots of cast. She got number 3. Can you guess, on what boxes she would have kept the stones? Look at the table given below.



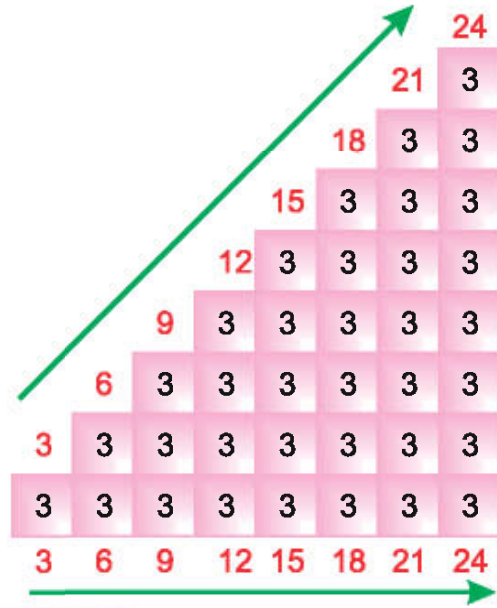
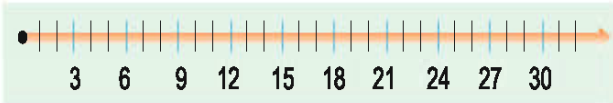
1	2	3	4	5	6	7	8	9	10
11	12	13	14	15	16	17	18	19	20
21	22	23	24	25	26	27	28	29	30
31	32	33	34	35	36	37	38	39	40
41	42	43	44	45	46	47	48	49	50



Number started with 3 and its consecutive summations are

3, 6, 9, 12, 15, 18, 21, 27, ...

Mark these numbers on the number line.

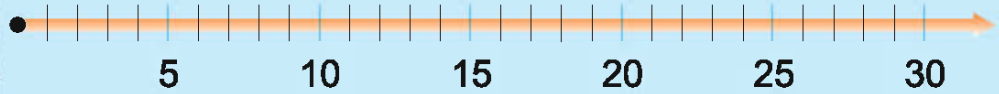


When a number is added repeatedly, the resulting numbers are called its multiples.

Mark the numbers, picked up by the other friends on the number line.



Noorjahan picked the number **5**



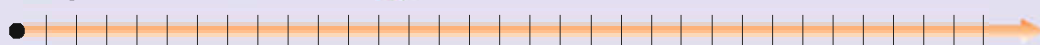
So, multiples of 5 are 5, 10, 15, 20, 25, 30,...

Emily picked the number **6**



So, multiples of 6 are _____

Meena picked the number **9**



So, multiples of 9 are _____

Mary picked the number **4**



So, multiples of 4 are _____



Know This

Each number is a first multiple of itself.



Practice Time

1. Fill in the blanks, with the multiples.

(i) 8, 16, _____, _____, _____ 48 _____, _____.

(ii) 13, 26, _____, _____, _____ 78 _____, _____.

(iii) 20, _____, _____, 80 _____, _____.

2. Write 5 multiples of each of the following numbers.

(i) 15

(ii) 25

(iii) 50

Project Work



The multiple of numbers from 1 to 10 are given in two ways that is from **left to right** and from **top to bottom**.

Follow the instructions and **encircle** the multiples.

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

Left to right:

From the 3rd multiple to the 8th multiple of 3

From the 3rd multiple to the 8th multiple of 6

From the 3rd multiple to the 8th multiple of 9

Top to bottom:

4th and 5th multiple of 3

7th and 8th multiple of 8

Shade the circles and enjoy.



What do you see? This year you are studying in _____ Standard.



To think





What is the connection between multiple of a number and its multiplication table?

Factors

Abdulla and Fathima got 4 cream biscuits each from their mom as snacks. Since Fathima is crazy of cream biscuits, Abdulla tempted her, and said "I will give you one more biscuit if you answer my question".

Fathima was eagerly waiting for the question. The much awaited question is "write 8 as the product of two numbers" in all the possible ways and arrange these toys as the numbers.

Observe Fathima's answer:

$8 = 1 \times 8$		$8 = 8 \times 1$
$8 = 2 \times 4$		
$8 = 4 \times 2$		

If a number can be written as a product of two or more numbers, those numbers are called factors.

Abdulla appreciated Fathima and gave her one more cream biscuit. He concluded saying that 8 can be expressed as the product of two different pairs of numbers.

$$8 = 1 \times 8$$

$$8 = 2 \times 4$$

Hence, the factors of 8 are 1, 2, 4 and 8.



i) Find the factors of 15.



Factors of 15
are 1, 3, 5, 15

ii) Find the factors of 9.

$$9 = 1 \times 9$$

$$9 = 3 \times 3$$

Factors of 9 are
1, 3, 9



Try these

(i) Find the factors of 10.



Factors of 10 are _____

(ii) Find the factors of 6.

$$6 =$$

$$6 =$$

Factors of 6 are



(i) Find the factors of 20.



Factors of
20 are
1, 2, 4, 5, 10, 20

(ii) Find the factors of 18.

$$18 = 1 \times 18$$

$$18 = 2 \times 9$$

$$18 = 3 \times 6$$

Factors of 18 are
1, 2, 3, 6, 9, 18



Try these

(i) Find the factors of 24.



Factors of 24 are _____

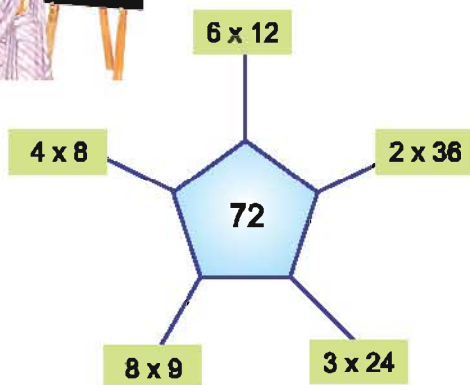
(ii) Find the factors of 36.



Note
Observe the factors of 8, 15 and 20. For any number, **1 and the number itself** are the factors. They are called **trivial factors**. Generally, we don't mention the trivial factors when we write these factors.

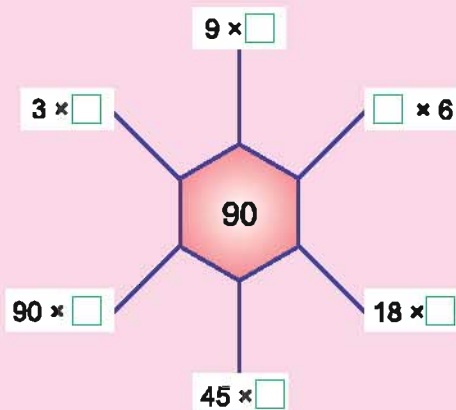


Find the factors of 72



Factors of 72 are
2, 3, 4, 6, 8, 9, 12, 18, 24, 36

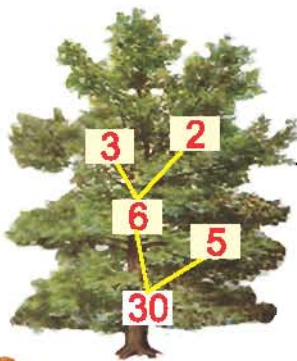
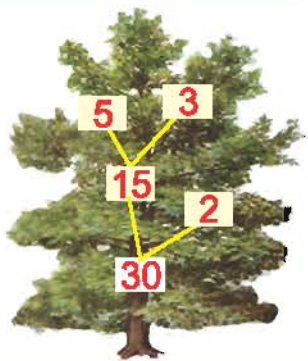
Fill in the boxes with suitable numbers and write the factors of 90



Factors of 90 are

FACTOR TREE

The factor tree for 30 are given in three different ways



Practice Time

- Write the following numbers as multiplication of two numbers in all possible ways and write the factors: (i) 48 (ii) 50
- Draw the factor tree for 60 in all possible ways.

The factors of a number can divide the number without remainder.

To think



Activity



Keep a heap of tamarind seeds. Divide them into groups of four seeds each. Ask your friend what is 5 times of 4. Note down the answer given by him. Then put together 5 groups of 4 seeds each. Count the number of seeds with your friend. Check whether the answer given by your friend and the total number of seeds are the same. In this case, your friend has given the correct answer. Continue this activity for different numbers arranging groups with tamarind seeds.

Activity



Take a collection of 24 beads. Make as many groups as possible by putting two beads in one group. Find out if any bead is remaining? Collect all the beads back. Continue this by putting 3 beads in one group, 4 beads in one group and so on up to 24 beads. Each time find out whether there are any beads remaining. Note the numbers which have remaining beads and those which do not have remaining beads. When there are no beads remaining, make a note of the number of seeds used each time. Then find factors for the number 24 using factorization method. Compare the factors with the numbers noted which do not have remaining beads. What do you observe? Enjoy doing this activity by finding the factors for different numbers.

Happy Birthday Celebration

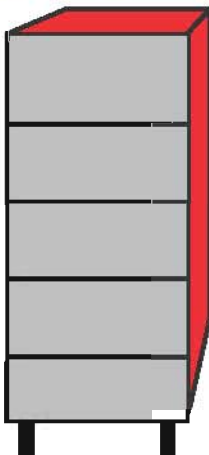
Gowtham wanted to celebrate his birthday in an orphanage with children. Hearing this, his parents, Seenu and Lakshmi felt very happy.

There were ten children in the orphanage. With the help of his father, he cut the cake into ten equal parts and distributed to them. He gave _____ part of the cake to each



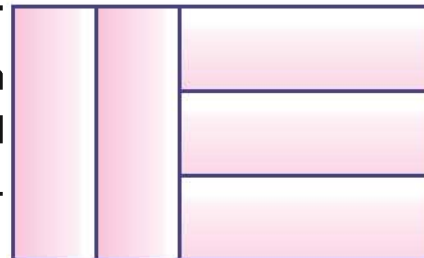
child. There were 7 girls and 3 boys. Then _____ part of the cake was given to girls and _____ part of the cake was given to boys. Round the larger portion. Girls / boys.

During Holiday



Ranjitha helped her mother to arrange the clothes in the wardrobe. There were 5 shelves in it. In $\frac{3}{5}$ th part of the shelves the clothes were neatly arranged, then in _____ part of the shelves the clothes were not arranged.

Have you seen wardrobes with five equal shelves in any other form. One model is this



Activity

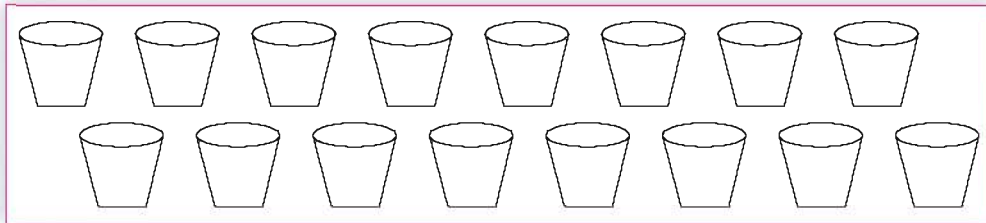
Create your own rectangular wardrobes in different ways with 5 equal shelves.



Activity



Colour $\frac{1}{4}$ of the flower pots in red. Colour half of them in blue.
The remaining are to be coloured in green.



- How many flower pots are red coloured?
- How many flower pots are blue coloured?
- How many flower pots are green coloured?

**Fraction is a number representing part of a whole.
Whole may be a single object or a group of objects.**



Kavitha shows a piece of chocolate having 5 equal parts.

Raman takes away three - fifth of it. $\frac{3}{5}$ is a fraction.

In the above fraction,

- What does 5 stand for?** 5 stands for the **denominator**.
It is the number of equal part into which the whole has been divided.
- What does 3 stand for?** 3 stands for the **numerator**.
It is the number of equal parts which is taken from the whole.



Practice Time

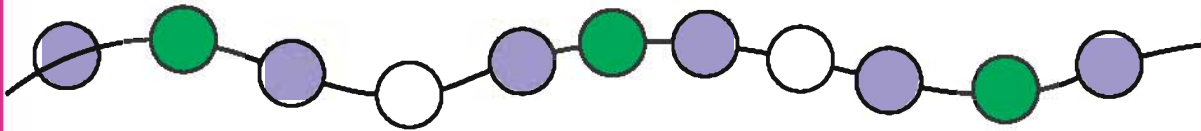
(1) Pick out the denominator and numerator in each of the following fractions. Write them in the respective boxes.

In $\frac{4}{6}$, Denominator is and Numerator is

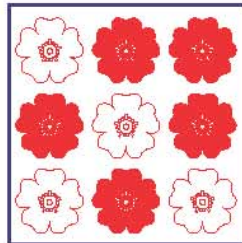
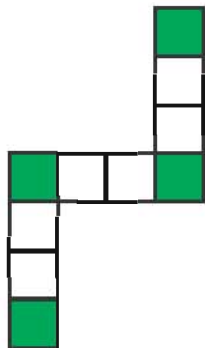
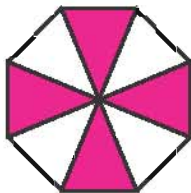
In $\frac{7}{12}$, Denominator is and Numerator is

In $\frac{13}{20}$, Denominator is and Numerator is

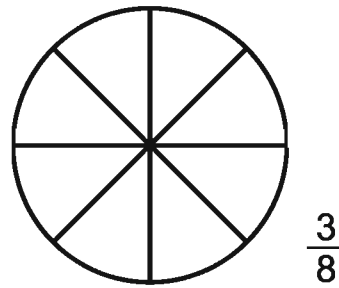
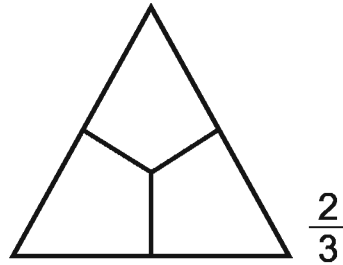
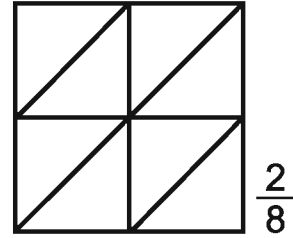
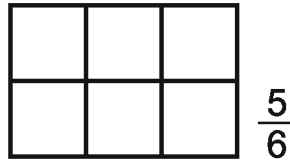
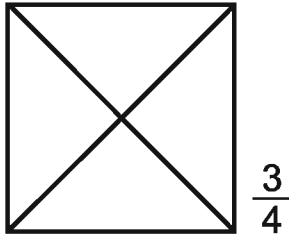
(2) In the given string of beads, number of white beads are _____ .
_____ of the beads are violet coloured and _____
of the beads are green coloured.



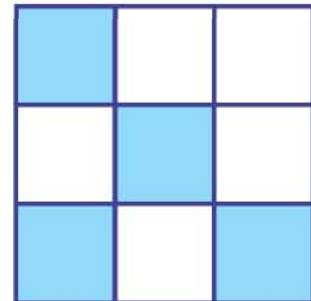
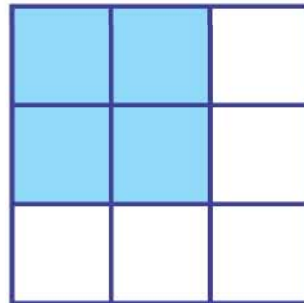
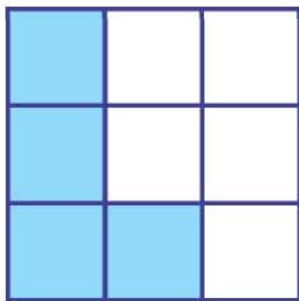
(3) Write the fraction representing the shaded portion.



(4) Colour the part according to the given fraction:



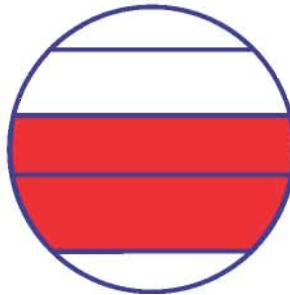
(5) In a 3×3 grid, the following figures show different ways of shading $\frac{4}{9}$. Make three more ways of shading $\frac{4}{9}$ in your notebook.



(6) Put the tick mark (✓) for the correct picture.

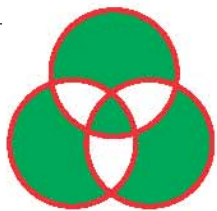
(i) $\frac{2}{5}$

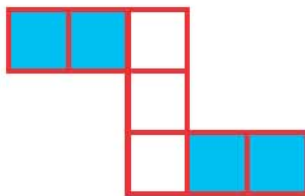






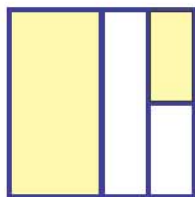
(ii) $\frac{4}{7}$

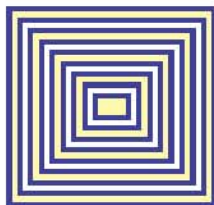


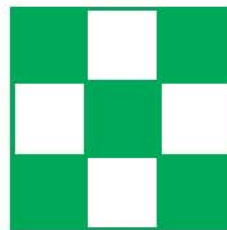




(iii) $\frac{5}{8}$







(7) Write the numbers from 1001 to 1021. Find the fraction of the even number from the list.

(8) What is the fraction of 5 hours in a day?

Activity



- The upper part is saffron in colour.
- The lower part is green in colour.
- Observe the picture.

What part is shaded in green?

_____ part is shaded in saffron.



To think

Is the white colour a little less than $\frac{1}{3}$ of the flag? Why?

Project Work



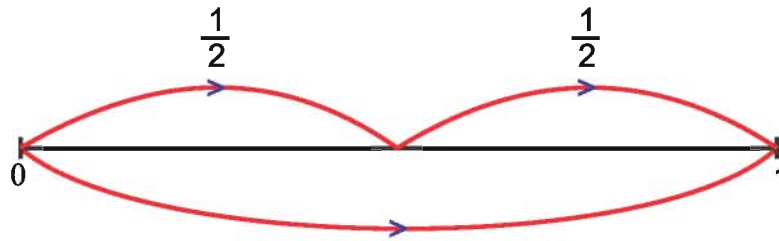
Collect the flags of 20 different countries. Stick them in your note book. Check whether they can be used to represent fraction. If so, write the fraction for each colour used in the flag.

TYPES OF FRACTIONS

Fraction less than 1

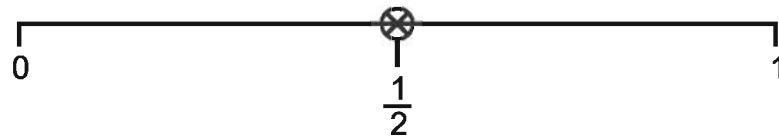
You have already learnt to show multiples of 2, 3, on a number line.

We can also show fractions on a number line .

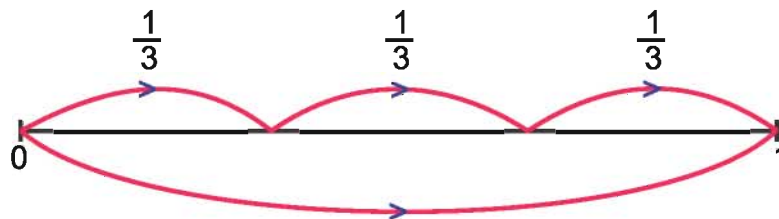


We divide the gap between 0 and 1 into two equal parts and show that each part is $\frac{1}{2}$.

Mark the point which divides the line into two equal halves as $\frac{1}{2}$.



Suppose we want to show $\frac{1}{3}$ on a number line into how many equal parts, should the length between 0 and 1 be divided?



We divide the length between 0 and 1 into 3 equal parts and show that each part is $\frac{1}{3}$.

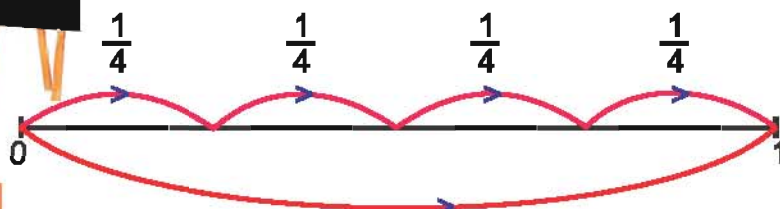


Can you show $\frac{2}{3}$ on this number line? $\frac{2}{3}$ means 2 times of $\frac{1}{3}$ and $\frac{3}{3}$ means 3 times of $\frac{1}{3}$.

Observe that
 $\frac{0}{3} = 0$ and
 $\frac{3}{3} = 1$



Plot $\frac{0}{4}$, $\frac{1}{4}$, $\frac{2}{4}$, $\frac{3}{4}$ and $\frac{4}{4}$ on this number line.

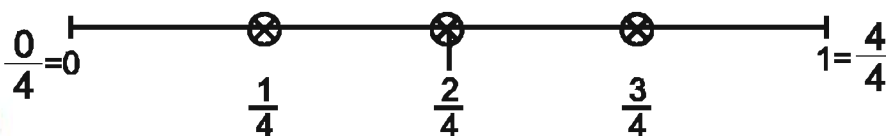


STEP 1

To plot these points divide the gap between 0 and 1 into 4 equal parts.

STEP 2

Mark the points $\frac{1}{4}$, $\frac{2}{4}$ and $\frac{3}{4}$ on the number line.



Kavitha recalls that the above fractions in the numberline represent parts of the whole. Raman adds that they are proper fractions. The denominator shows the number of parts into which the whole is divided and the numerator shows the number of parts we have taken out. Both of them concluded saying that

All the fractions we have learnt so far are less than 1. These are called proper fractions. In a proper fraction the numerator is always less than the denominator.



Try these

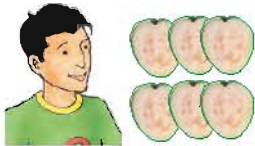
(3) Choose the correct answer and put (✓) mark against the correct column.

- (1) Give a proper fraction :
 - i) Whose numerator is 5 and the denominator is 6.
 - ii) Whose denominator is 10 and the numerator is 3.
 - iii) Make 5 proper fractions on your own.
- (2) Locate the fractions $\frac{1}{2}$, $\frac{3}{5}$, $\frac{9}{10}$, $\frac{0}{9}$ and $\frac{5}{7}$ on separate number lines.

Fraction	equal to 0	less than 1	equal to 1
$\frac{1}{2}$		✓	
$\frac{4}{5}$			
$\frac{4}{4}$			
$\frac{5}{6}$			
$\frac{0}{7}$			
$\frac{200}{200}$			

A way to Share

Sathya had three guavas with her. After having lunch with Mathan, she wanted to share them equally. How can they share three guavas among two of them? Sathya started dividing like this. She gave one full guava and a half of the remaining guava.



Mathan said, "I can divide like this". He divides each of the 3 guavas into 2 equal parts and gave half of each guava.



In Sathya's way, each share is equal to one whole and one half. It is $1 + \frac{1}{2}$ which is written as $1\frac{1}{2}$.

Sathya observed that the above number is the combination of whole and a fractional part.

Fractions such as $1\frac{1}{2}$ are called mixed fractions. A mixed fraction is the combination of a whole and a fractional part.



In Madan's way, each share is equal to three halves which is written as $\frac{3}{2}$.

Madan observed that in the above fraction, the numerator is greater than the denominator. Such fractions are called improper fractions.

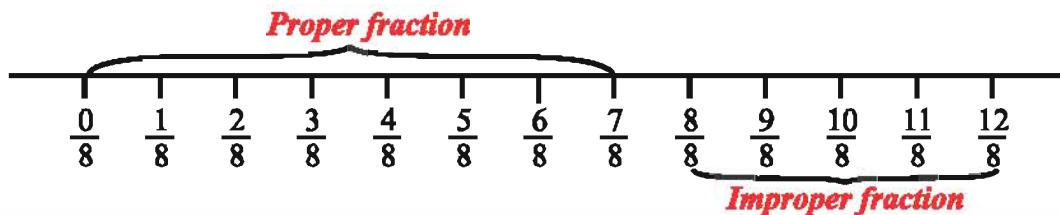
The fractions, in which the numerator is greater than or equal to denominator are called improper fractions.



Remember

In both ways each of them got the same share. But the same share can be represented in two different ways.

Improper fractions are greater than or equal to 1. We can mark fraction such as $\frac{0}{8}, \frac{1}{8}, \dots, \frac{12}{8}$ on the number line.



What about $\frac{0}{8}$ and $\frac{8}{8}$? We have already learnt that $\frac{0}{8}$ is 0 and $\frac{8}{8}$ is 1.









Try these

Draw the number line and locate the given points on it. List out the proper and improper fractions. (i) $\frac{2}{5}, \frac{3}{5}, \frac{8}{5}, \frac{4}{5}$ (ii) $\frac{1}{13}, \frac{15}{13}, \frac{8}{13}, \frac{17}{13}$

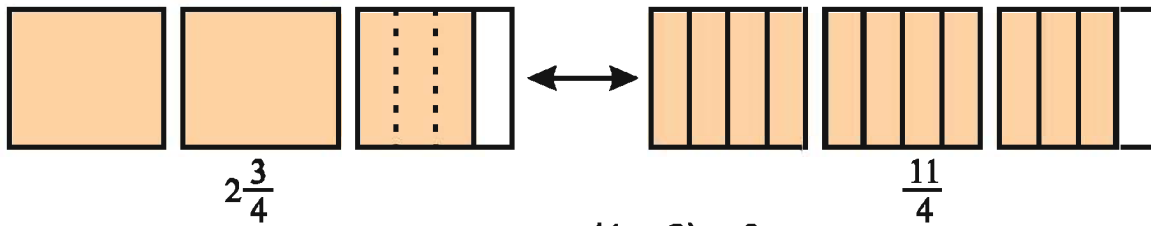
Mixed Fraction into Improper Fraction

Complete the table for two given mixed fractions $5\frac{1}{2}$ and $6\frac{1}{2}$.

Mixed Fractions	Improper Fractions	Mixed Fractions into Improper Fractions
$2\frac{1}{2}$ 		$\frac{(2 \times 2) + 1}{2} = \frac{5}{2}$
$3\frac{1}{2}$ 		$\frac{(2 \times 3) + 1}{2} = \frac{7}{2}$
$4\frac{1}{2}$ 		$\frac{(2 \times 4) + 1}{2} = \frac{9}{2}$



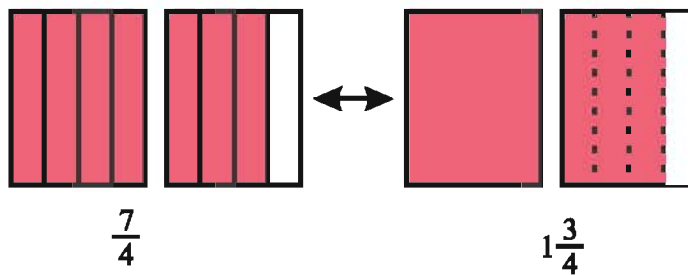
Conversion of mixed fraction $2\frac{3}{4}$ into improper fraction



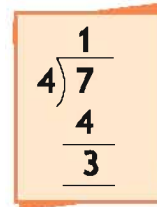
The Improper fraction of $2\frac{3}{4}$ is $\frac{(4 \times 2) + 3}{4} = \frac{11}{4}$



Conversion of improper fraction $\frac{7}{4}$ into mixed fraction



The mixed fraction of $\frac{7}{4}$ is $1\frac{3}{4}$.



Mixed fraction can be expressed as improper fraction and improper fraction can be converted into mixed fraction.

We can express a mixed fraction as an Improper fraction
Improper fraction = $\frac{(\text{Whole} \times \text{Denominator}) + \text{Numerator}}{\text{Denominator}}$



Try these

(1) Change these into improper fractions: a) $3\frac{3}{4}$ b) $2\frac{5}{7}$

(2) Change these into mixed fractions: a) $\frac{16}{3}$ b) $\frac{13}{5}$

MOTHER'S DAY



Mano and Meena had a saving of ₹ 500 each. They wanted to greet their mother with a gift on the Mother's Day.

Spending half of his saving, Mano bought a saree worth of ₹ 250. Meena bought a hand bag for ₹ 125 and bangles for ₹ 125, each of which is one-fourth of her saving. Hence, she has spent two-fourth $\left(\frac{1}{4} + \frac{1}{4}\right)$ of her savings. Both the children spent, equal share of their savings to greet their mother. So, $\frac{1}{2} = \frac{2}{4}$.

Changing a fraction to higher terms.

Paper folding activity

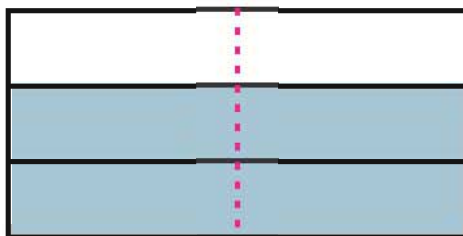
Take a rectangular sheet of paper measuring 6cm × 3 cm and represent the fraction $\frac{2}{3}$.



From the above picture

$$\frac{2}{3} \times \frac{1}{1} = \frac{2}{3}$$

Fold it exactly into two halves and unfold as shown.



$$\frac{2}{3} \times \frac{2}{2} = \frac{4}{6}$$

In another sheet of paper do the same activity as given above for representing $\frac{2}{3}$ and fold it into 3 equal parts and then unfold as done before.



$$\frac{2}{3} \times \frac{2}{2} = \frac{6}{9}$$

We infer that $\frac{2}{3} = \frac{4}{6} = \frac{6}{9}$

These are called equivalent fractions. They represent the same part of a whole.

To find an equivalent fraction, multiply both the numerator and the denominator of the given fraction by the same number.



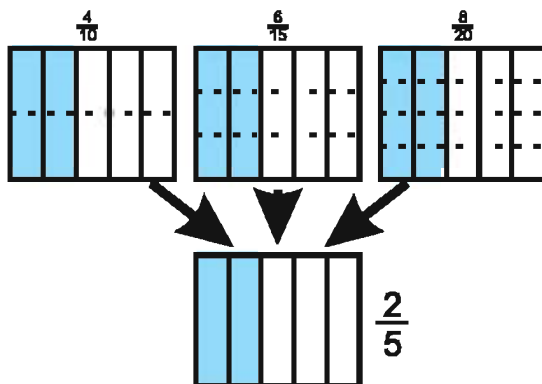
Try these

(1) Find the equivalent fractions of $\frac{3}{4}$ through paper folding until the numerator comes to 12.

(2) Find five equivalent fractions of $\frac{1}{5}$, $\frac{2}{7}$ and $\frac{4}{11}$.

Changing a fraction to lower terms.

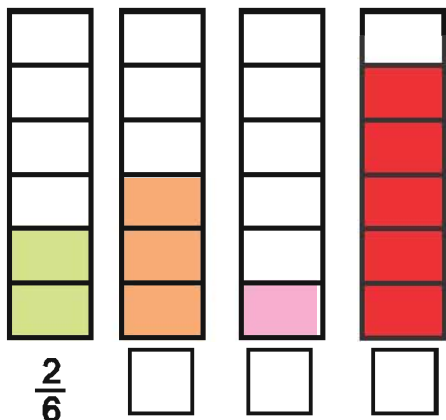
Look at the following representation of fractions.



To find an equivalent fraction, divide both the numerator and the denominator by the same number.

Like Fractions

Look at the shaded portion and write the fraction.



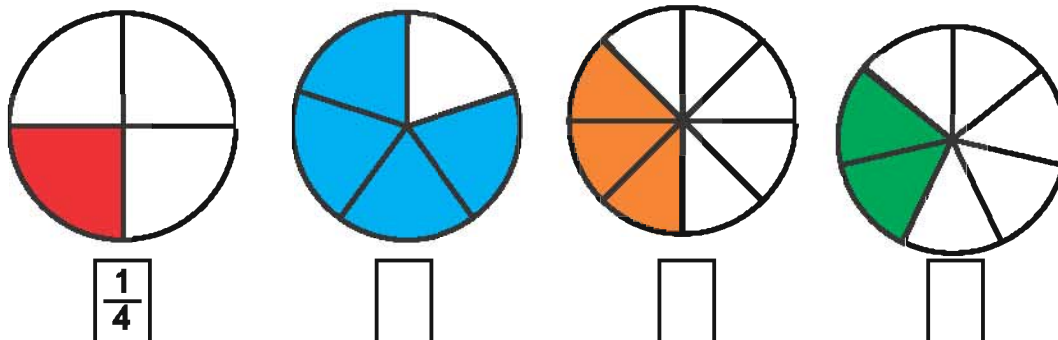
$$\frac{2}{6}$$

What is common in all these fractions?

In these fractions the whole is divided into 6 equal parts. That is, the denominator of all fractions is equal to 6.

Fractions with same denominators are called like fractions.

Observe the following shaded portion, Find the fraction



$$\frac{1}{4}$$

The whole of each is divided into different equal parts. That is, the denominators of all fractions are different.

Fractions with different denominators are called unlike fractions.



Try these

Group the given fractions into three groups of like fractions and one group of unlike fractions:

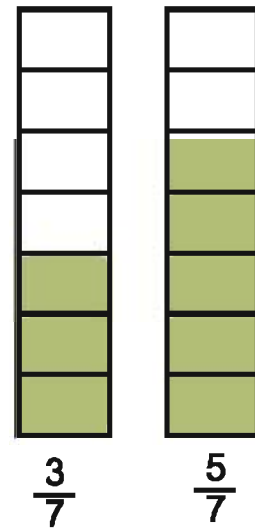
$$\frac{1}{9}, \frac{7}{9}, \frac{5}{12}, \frac{7}{15}, \frac{7}{12}, \frac{8}{15}, \frac{5}{9}, \frac{8}{9}, \frac{4}{15}, \frac{1}{12}, \frac{1}{15}, \frac{8}{17}, \frac{9}{19}, \frac{7}{8}, \frac{2}{5}$$

Comparing like Fractions

Let us compare two fractions $\frac{3}{7}$ and $\frac{5}{7}$.

In both the fractions, the whole is divided into 7 equal parts. The first and second fractions, 3 and 5 parts respectively are shaded from the divided whole. That is 3 times of $\frac{1}{7}$ is less than 5 times of $\frac{1}{7}$.

Hence $\frac{3}{7}$ is less than $\frac{5}{7}$.



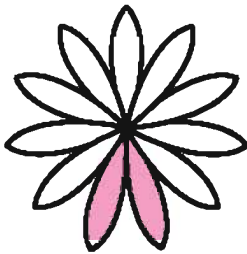
Try these

- Round the greater fraction: (i) $\frac{4}{5}$, $\frac{3}{5}$ (ii) $\frac{11}{20}$, $\frac{13}{20}$ (iii) $\frac{17}{19}$, $\frac{15}{19}$

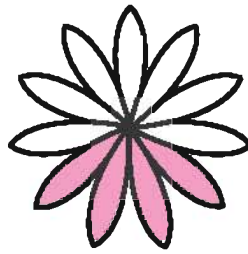
Small to Big

Arrange the following like fractions $\frac{2}{11}$, $\frac{4}{11}$, $\frac{7}{11}$ and $\frac{3}{11}$ in ascending order.

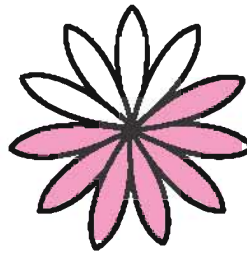
Pictorial representation of the given fractions:



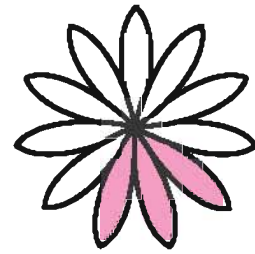
$$\frac{2}{11}$$



$$\frac{4}{11}$$

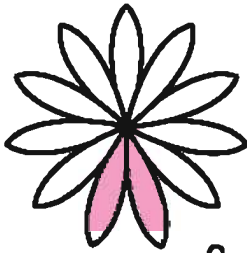


$$\frac{7}{11}$$

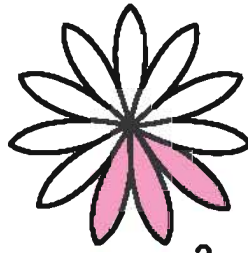


$$\frac{3}{11}$$

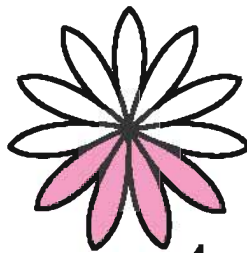
Let us rearrange them from the smallest to the greatest fractions.



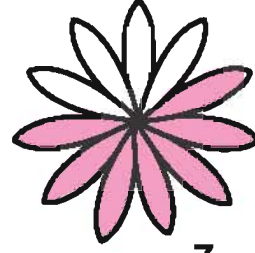
$$\frac{2}{11}$$



$$\frac{3}{11}$$



$$\frac{4}{11}$$



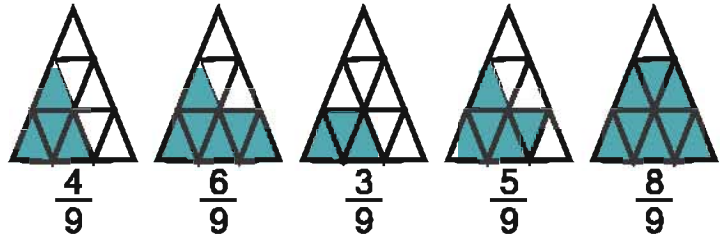
$$\frac{7}{11}$$

Ascending order of fractions are $\frac{2}{11}$, $\frac{3}{11}$, $\frac{4}{11}$, $\frac{7}{11}$

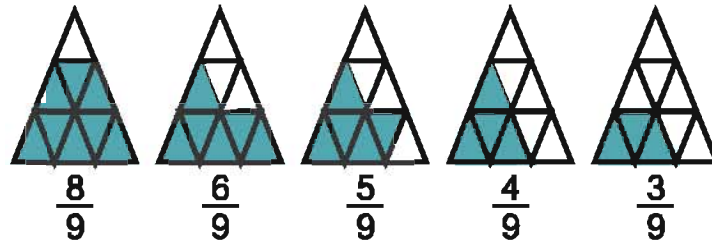
Big to Small

Arrange the following like fractions $\frac{4}{9}$, $\frac{6}{9}$, $\frac{3}{9}$, $\frac{5}{9}$ and $\frac{8}{9}$ in descending order.

Pictorial representation of the given fractions:



Let us rearrange these from the greatest to the smallest fractions.



Descending order of fractions are $\frac{8}{9}$, $\frac{6}{9}$, $\frac{5}{9}$, $\frac{4}{9}$, $\frac{3}{9}$



Remember

We observe that,

- ✦ To write the like fraction in ascending order arrange the numerator of each of the fraction in ascending order.
- ✦ To write the like fraction in descending order arrange the numerator of each of the fraction in descending order.



Practice Time

1. Write these in ascending and also in descending order

(i) $\frac{2}{8}$, $\frac{7}{8}$, $\frac{6}{8}$, $\frac{1}{8}$ (ii) $\frac{9}{7}$, $\frac{7}{7}$, $\frac{6}{7}$, $\frac{1}{7}$ (iii) $\frac{13}{12}$, $\frac{5}{12}$, $\frac{7}{12}$, $\frac{11}{12}$, $\frac{10}{12}$

2. Latha painted $\frac{3}{8}$ part of the wall in her room. Sudhakar helped her and he painted $\frac{5}{8}$ part of the wall. Find out who painted more? Write the greater fraction between the two.

3. Vani wanted to take her two daughters to a book exhibition. So, she asked both of them to say the time they needed to visit the book stall. Karthika said that it would take $\frac{1}{4}$ of two hours for her. Meghala said that it would take $\frac{3}{4}$ of an hour for her. Find who takes more time?

Activity



Take the fraction discs used for teaching fraction from the mathematics kit box. Take the disc which represents the fraction $\frac{1}{2}$ and place it separately. Then take the fractional discs which represent $\frac{2}{4}$ and place it above $\frac{1}{2}$. In the same way place the fractional discs representing $\frac{4}{8}$ and $\frac{5}{10}$ above $\frac{1}{2}$. What do you find out? Put the appropriate symbols (<, >, =) in the box below based on your observation.

$$\frac{1}{2} \quad \boxed{} \quad \frac{2}{4} \quad \boxed{} \quad \frac{4}{8} \quad \boxed{} \quad \frac{5}{10}$$

You can also make fractional parts using circular paper or chart paper prepared with the help of teacher.

Activity

Saravanan and Sankari are siblings. Their mother shared two apples by cutting each apple into two equal halves. There were totally four parts. Out of these four parts she gave three parts to Saravanan. Then she gave one full apple and the remaining one part to Sankari. Represent each one's share as fraction. Then take fractional discs from the kit box representing each one's share. Compare both the fractions by placing one above other.

4

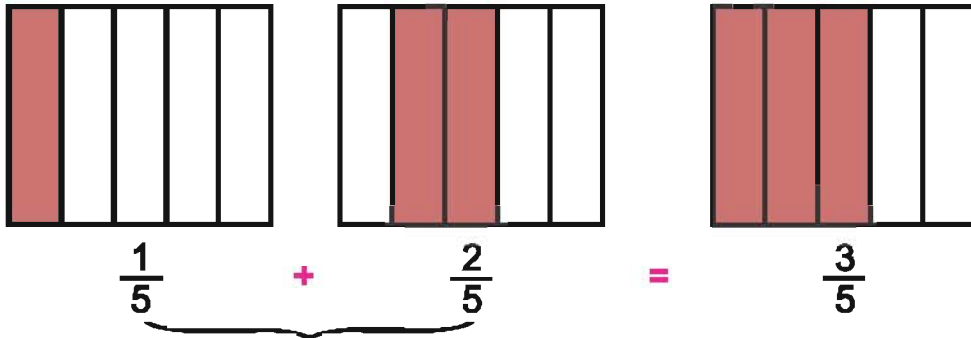
Addition, Subtraction and Multiplication of Fractions

Addition of like fractions



Geetha said that her mother uses $\frac{1}{3}$ of a litre of milk in the morning and $\frac{1}{3}$ of a litre of milk in the evening. Then the total quantity of milk she uses is $\frac{1}{3} + \frac{1}{3} = \frac{2}{3}$.

Find the sum: $\frac{1}{5} + \frac{2}{5}$



The sum of two or more like fractions can be obtained as follows.

Step 1 : Add the **numerator** $1 + 2 = 3$

Step 2 : Retain the **common denominator** 5

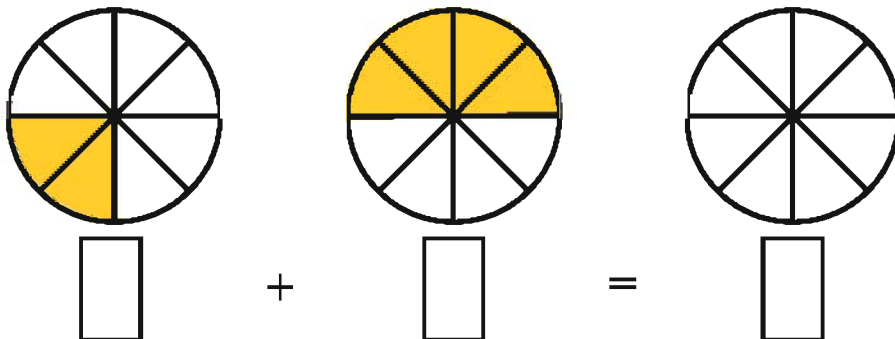
Step 3 : $\frac{\text{Result of Step 1}}{\text{Result of Step 2}} = \frac{3}{5}$

$$\frac{1}{5} + \frac{2}{5} = \frac{1+2}{5} = \frac{3}{5}$$



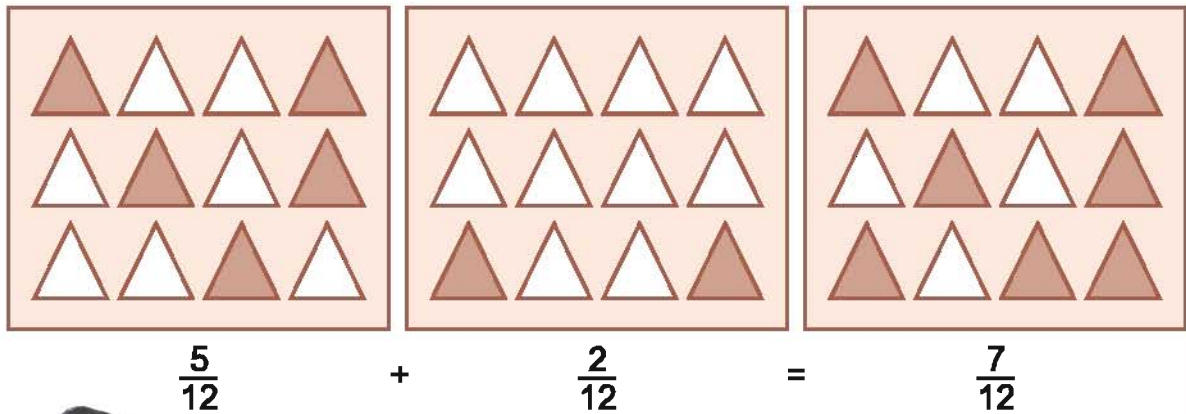
Try these

Write the fractions for the shaded part of the first two figures. Add them and shade the resultant part in the third figure.



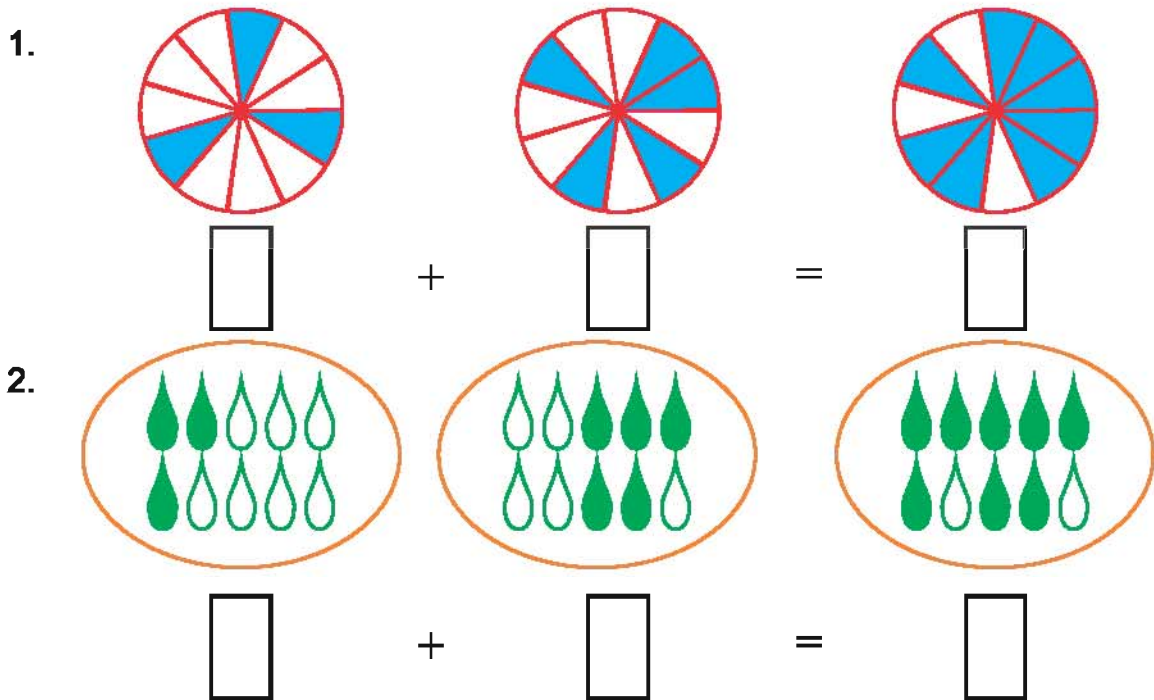


Find the sum of $\frac{5}{12}$ and $\frac{2}{12}$.



Try these

Find the sum of the following:

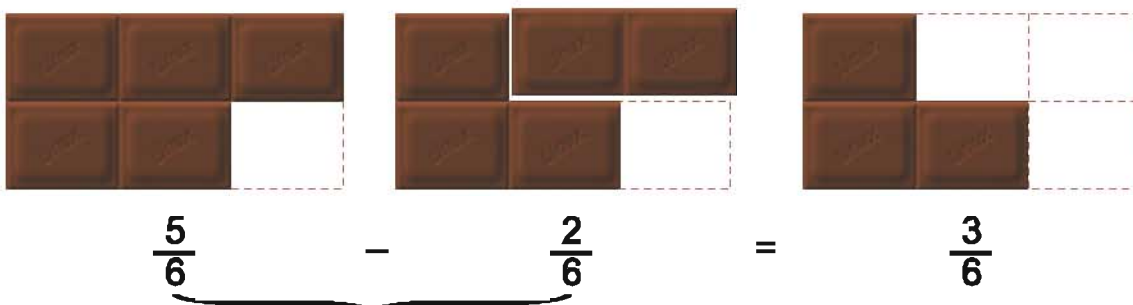


3. Add the like fractions
- (i) $\frac{3}{11} + \frac{7}{11}$ (ii) $\frac{4}{13} + \frac{8}{13}$
- (iii) $\frac{4}{17} + \frac{9}{17}$ (iv) $\frac{7}{20} + \frac{2}{20}$

Finding the Balance



Shekar has $\frac{5}{6}$ part of the chocolate bar. He gave $\frac{2}{6}$ part of it to his younger sister. How much chocolate is left with him?



Thus the difference between two like fraction can be obtained as follows.

Step 1 : Subtract the smaller **numerator** from the bigger numerator $5 - 2 = 3$

Step 2 : Retain the **common denominator** 6

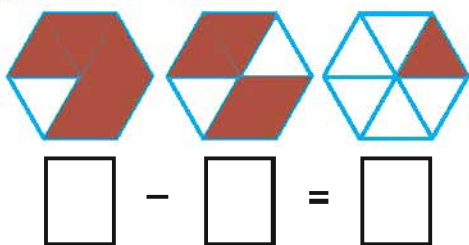
Step 3 : $\frac{\text{Result of Step 1}}{\text{Result of Step 2}} = \frac{3}{6}$ (or) $\frac{1}{2}$

$$\frac{5}{6} - \frac{2}{6} = \frac{5-2}{6} = \frac{3}{6} = \frac{1}{2}$$

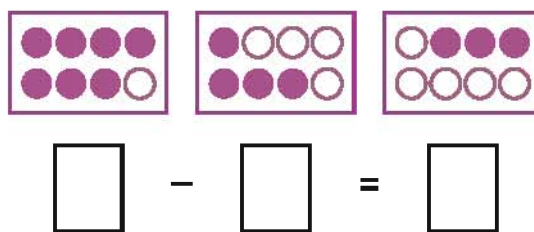


Try these

1.



2.



3. Fill in the missing fraction

(i) $\frac{13}{18} - \frac{7}{18} =$

(ii) $\frac{8}{12} - \square = \frac{5}{12}$

(iii) $\square - \frac{3}{14} = \frac{9}{14}$

(iv) $\frac{7}{9} - \square = \frac{4}{9}$

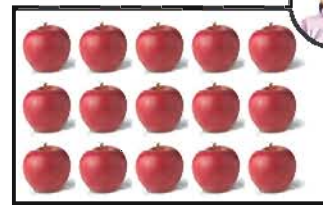
4. Can you subtract $\frac{3}{10}$ from $\frac{8}{10}$

5. Find the difference between $\frac{5}{8}$ and $\frac{7}{8}$

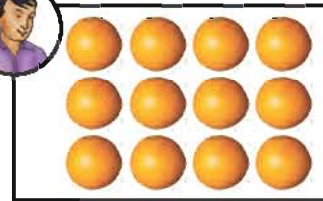
Activity



Balu bought fruits for his friend's family. He bought 15 apples, 9 pomegranates and 12 oranges. His friend's daughter Mrithika received the fruit basket and she started sharing the fruits between her brother Gowtham and her cousin Madhu keeping her own share. She grouped the apples into 3 equal parts. Each one got _____ apples.

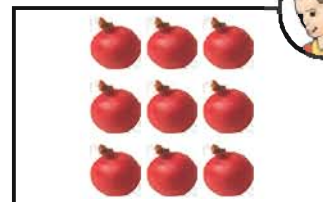


She grouped the pomegranates into 3 equal parts. Each one got _____ part of pomegranates. As Gowtham did not like pomegranate, he gave his share to Mrithika.



Now, Mrithika has $\frac{3}{9} + \square = \square$ part of pomegranates.

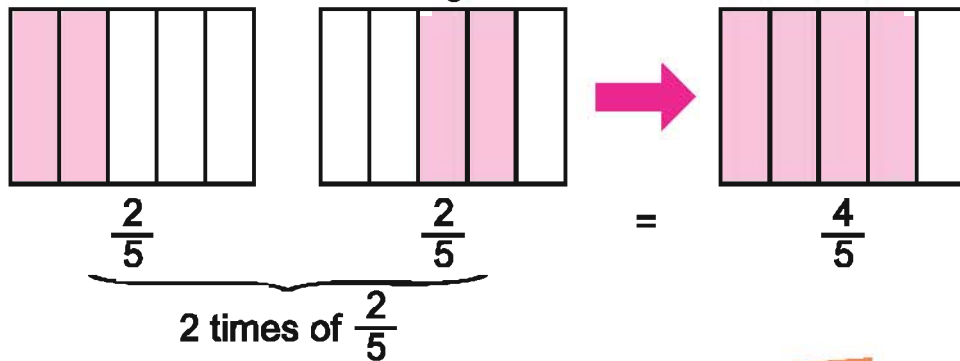
She grouped the oranges into 3 equal parts. Each one got \square part of oranges.



Multiplication of fraction



Look at the picture and find $\frac{2}{5} \times 2$.



Step 1 : Multiply the **numerator** of the fractions $2 \times 2 = 4$

Step 2 : Retain the **denominator** 5

Step 3 : $\frac{\text{Result of Step 1}}{\text{Result of Step 2}} = \frac{4}{5}$

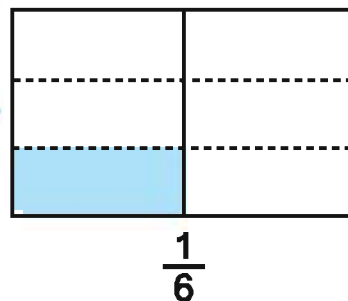
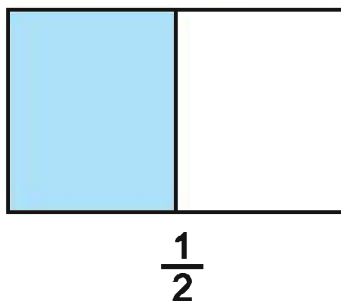
$$\frac{2}{5} \times 2 = \frac{2 \times 2}{5} = \frac{4}{5}$$

Multiply a fraction with another fraction



Find

$$\frac{1}{2} \times \frac{1}{3}$$



From the figure $\frac{1}{3}$ of $\frac{1}{2}$ is found out.

Step 1 : Multiply the **numerator** of both the fractions $1 \times 1 = 1$

Step 2 : Multiply the **denominator** of both the fractions $2 \times 3 = 6$

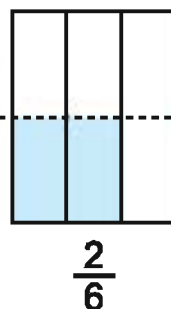
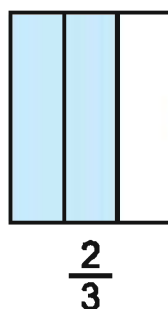
Step 3 : $\frac{\text{Result of Step 1}}{\text{Result of Step 2}} = \frac{1}{6}$

$$\begin{aligned} \frac{1}{2} \times \frac{1}{3} &= \frac{1 \times 1}{2 \times 3} \\ &= \frac{1}{6} \end{aligned}$$

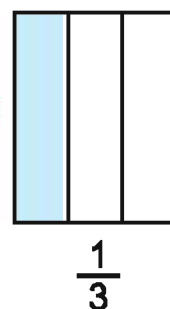


Find $\frac{2}{3} \times \frac{1}{2}$

$$\begin{aligned} \frac{2}{3} \times \frac{1}{2} &= \frac{2 \times 1}{3 \times 2} \\ &= \frac{2}{6} = \frac{1}{3} \end{aligned}$$



or



From the figure $\frac{1}{2}$ of $\frac{2}{3}$ is found out.



Try these

Find the answers for the following.

(i) $\frac{4}{7} \times 3 = \square$

(ii) $\frac{5}{9} \times 2 = \square$

(iii) $\frac{7}{15} \times 2 = \square$

(iv) $\frac{4}{11} \times 5 = \square$

(v) $\frac{3}{5} \times \frac{1}{4} = \square$

(vi) $\frac{3}{7} \times \frac{2}{5} = \square$

(vii) $\frac{7}{5} \times \frac{2}{3} = \square$

(viii) $\frac{4}{9} \times \frac{1}{5} = \square$



Practice Time

1. Round the greater fraction from the given pairs of fractions.

(a) $\frac{3}{5}, \frac{4}{5}$ (b) $\frac{1}{7}, \frac{3}{7}$ (c) $\frac{3}{8}, \frac{6}{8}$ (d) $\frac{4}{9}, \frac{7}{9}$

2. Write the following fractions in ascending and descending order.

(a) $\frac{3}{12}, \frac{6}{12}, \frac{10}{12}, \frac{5}{12}$ (b) $\frac{5}{8}, \frac{3}{8}, \frac{2}{8}, \frac{7}{8}$

3. Add

(a) $\frac{3}{8} + \frac{2}{8} = \square$ (b) $\frac{2}{5} + \square = \frac{3}{5}$ (c) $\square + \frac{3}{6} = \frac{5}{6}$

4. Subtract

(a) $\frac{4}{10} - \frac{1}{10} = \square$ (b) $\frac{7}{19} - \square = \frac{4}{19}$ (c) $\square - \frac{2}{17} = \frac{4}{17}$

5. Find the answers

(i) Subtract $\frac{2}{5}$ from $\frac{3}{5}$ (ii) Subtract $\frac{1}{9}$ from $\frac{5}{9}$

(iii) Subtract $\frac{8}{15}$ from $\frac{12}{15}$

6. The distance between Bhavani's house and her school is $\frac{1}{4}$ km. How long does she have to walk to go to school and come back?

7. Saran sleeps $\frac{1}{4}$ a day. How many hours he sleeps in 4 days?

8. In an egg case, 36 eggs can be accommodated. How many eggs will be in $\frac{1}{2}$ part of the egg case?

9. In a flower bouquet, there are 7 yellow roses and 13 red roses. Maran took 5 yellow roses and 8 red roses. Express the fraction of red and yellow roses taken by Maran also find out the fractions of roses left out in the bouquet?

10. Mani planted wheat in $\frac{3}{5}$ of his 15 acres land. In how many acres, did he plant?

11. The cost of 1 kg of Tomato is ₹ 18 and the cost of 1 kg of Onion is ₹ 16. Find the total cost of $2\frac{1}{2}$ kg Tomatoes and $1\frac{1}{4}$ kg of Onions?

A challenge for you !

An old man had 17 goats. He wanted to share these goats among his three sons. In his will, he has written as: " $\frac{1}{2}$ part of the goats will go to Dass, $\frac{1}{3}$ will go to Muthu and $\frac{1}{9}$ will go to Mohan", making sure that all the 17 goats are alive.



All the sons tried to share as per the will. They could not succeed. Finally, they approached a wise man. The wise man said, "take one of my goats and then share as per the will. After sharing, return my goat to me."



To think

How many goats did Dass get? _____
 Number of goats given to Muthu _____
 Mohan got _____ goats.
 Guess, whether the wise man has got his goat or not?

Decimals

Madan and Ravi were given a square sheet of paper with sides measuring 10cm each. They were asked to make 100 equal parts. Both of them started trying. Ravi started making small bits. Madan thought for a while and planned well. He started to cut the paper into 10 equal parts in lengthwise and breadthwise. He got 100 equal parts.



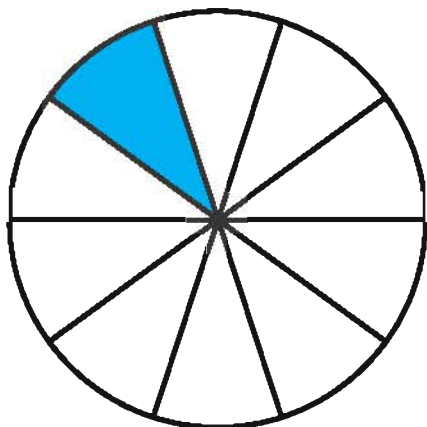
Among the 100 parts, what does each part represent? It is $\frac{1}{100}$
 Can you imagine how small $\frac{1}{100}$ is?

We see that

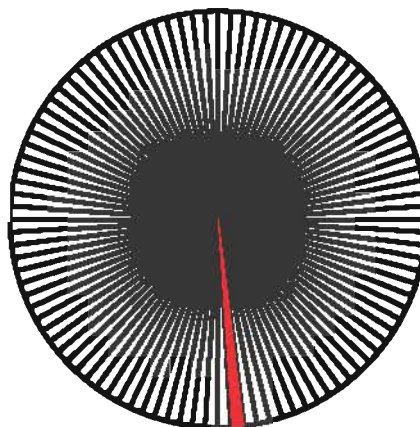
Fraction numbers whose denominators are 10 and 100 can be expressed as decimal numbers.

Here 'Deci' means ten.

Observe the following pictures.



$$\frac{1}{10}$$



$$\frac{1}{100}$$

The portion shaded in blue colour is $\frac{1}{10}$ and it is represented as 0.1

The portion shaded in red colour is $\frac{1}{100}$ and it is represented as 0.01



Change the following fractions into decimals.

(i) $\frac{2}{10} = 0.2$ (ii) $\frac{35}{100} = 0.35$ (iii) $\frac{6}{100} = 0.06$

Change the following decimals into fractions.

0.9 = $\frac{9}{10}$ (ii) 0.44 = $\frac{44}{100}$ (iii) 0.03 = $\frac{3}{100}$



Try these

1. Write decimal number for the following fractional numbers.

(i) $\frac{5}{10} = \square$ (ii) $\frac{8}{10} = \square$ (iii) $\frac{3}{10} = \square$

(iv) $\frac{36}{100} = \square$ (v) $\frac{48}{100} = \square$ (vi) $\frac{6}{100} = \square$

2. Write the fractional numbers for the following decimal numbers.

(i) 0.7 = \square (ii) 0.15 = \square (iii) 0.21 = \square

Group Activity



Take a graph paper. Divide it into 100 equal parts. Shade the decimal portion. Use a separate sheet for each sum.

(i) 0.15 (ii) 0.37 (iii) 0.45 (iv) 0.40 (v) 0.07



Worksheet

Answer the following:

1. The fraction which is less than 1 is called _____
 i) Proper fraction ii) Improper fraction
 iii) Mixed number iv) unlike fraction
2. The sum of $\frac{2}{11}$ and $\frac{1}{11}$ is _____
 i) $\frac{3}{11}$ ii) $\frac{6}{11}$ iii) $\frac{7}{11}$ iv) $\frac{9}{11}$
3. From the fractions given below the fraction which is not equivalent to the other three is _____
 i) $\frac{8}{10}$ ii) $\frac{4}{5}$ iii) $\frac{28}{35}$ iv) $\frac{5}{4}$
4. The difference between $\frac{8}{18}$ and $\frac{3}{18}$ is _____
 i) $\frac{5}{18}$ ii) $\frac{7}{18}$ iii) $\frac{1}{8}$ iv) $\frac{11}{18}$
5. $4\frac{8}{3}$ is equal to _____
 i) $\frac{8}{3}$ ii) $\frac{13}{3}$ iii) $\frac{10}{3}$ iv) $\frac{20}{3}$
6. The product of $\frac{2}{3}$ and 5 is _____
 i) $\frac{5}{3}$ ii) $\frac{7}{3}$ iii) $\frac{2}{8}$ iv) $\frac{10}{3}$
7. $\frac{1}{2}$ of 3 _____
 i) $\frac{3}{2}$ ii) $\frac{2}{3}$ iii) $\frac{1}{6}$ iv) $\frac{1}{5}$
8. If 1 litre of milk costs ₹ 20, the cost of $\frac{1}{2}$ litre is _____
 i) ₹ $20\frac{1}{2}$ ii) ₹ $10\frac{1}{2}$ iii) ₹ 10 iv) ₹ 15
9. If represents 8, represents
 i) $\frac{1}{2}$ of 8 ii) $\frac{1}{4}$ of 8 iii) $\frac{3}{4}$ of 8 iv) $\frac{1}{3}$ of 8
10. $\frac{2}{10}$ can be expressed as _____
 i) 0.2 ii) 0.5 iii) 0.1 iv) 0.02



SCIENCE

STANDARD FIVE

TERM II



Chairperson

Dr. J. MADHAVAN

Associate Professor,
Loyola College, Chennai- 600 034.

Reviewers

Dr. S. PRABHU,

Lecturer,
District Institute of Education
and Training,
Uttamapalayam, Theni District.

S. SARAVANAN,

Assistant Elementary Educational Officer,
(Science)
District Elementary Educational Office,
Kanchipuram District.

Authors

J.M. BRITTO FELICIOUS,

Block Resource Teacher Educator,
Upgraded Block Resource Centre,
Triplicane, Chennai District.

S. PONNUSAMY,

Headmaster,
TNDTA Middle School,
Perurani, Tuticorin District.

P. CHRISTOPHER JAYAKUMAR,

S.G Teacher,
Adi Dravida Middle School,
Bodinayakanpatti, Madurai District.

MARGARET GOMEZ,

Graduate Teacher,
St. Bedes Anglo Indian Hr. Sec. School,
Santhome, Chennai District.

R. MAHESWARI,

Graduate Teacher,
SBOA Mat. Hr. Sec. School,
Madurai District.

P. ELUMALAI,

S.G. Teacher,
Govt. Girls Hr. Sec. School,
Ashoknagar, Chennai District.

Laser Typeset

B. suganthi B. Yuvaraj.

Illustration

A. Kasi Viswanathan, M. Chinnasamy,
M. Jayakumar, N. Gopalakrishnan.

Layout

A. Asan Jamal Mohideen.
K. Sivakumar, K. Dhinarar.

What do these icons stand for?



Fact



Project



For your attention



Do and See / Activity



Evaluation



1. Food



Dharani ate the fruits given by her mother. Then she drank milk. She went upstairs to study. There she got the whiff of a nauseating odour... What is there? She looked here and there to find out the cause of the bad smell. She found the tumbler of milk which her mother had given her to drink two days ago. She had forgotten to drink it. The stench was from this.

What caused bad odour from the milk? – examine



Food will be spoiled if it is not prepared, preserved and handled in a proper way.

Symptoms of food spoilage

- In fruits and vegetables - growth of **fungi**.
- In tinned food items - growth of **fungi** and bad odour.
- Any change in the original state of the food item indicates spoilage.



Spoilt Pumpkin

FACT

Refrigerated food items should not be kept outside the refrigerator for a long period. If they are kept for long in the open, at room temperature, the **bacteria** and **fungi** will grow and spoil the food items.



Bread with fungus

The diseases caused by the consumption of spoiled food items.

- Food poisoning
- Indigestion
- Diarrhoea
- Stomach ache.
- Amoebic dysentery
- Fever

The food items which can decay easily can be preserved by various techniques. Shall we learn more about the need for food preservation?

- All food items are not available in all seasons. Seasonal foods can be preserved for all seasons.
- To avoid wastage of food.



- Food items will remain fresh for a longer period of time if they are preserved in their natural state..
- Preserved food items can be sent to distant places and countries without spoilage.

From ancient times we have been using various methods to protect food items from microbes.

A few are

- Salting
- Drying
- Pickling
- Freezing
- Refrigeration

Food preservatives

Salt, Sugar, Oil and honey are good, healthy and natural preservatives.

Pasteurization of milk

Milk is boiled at 60°C for half an hour and suddenly chilled. By this method, milk is pasteurized and preserved for a longer period.

Drying and Dehydration

Fresh vegetables, fruits, meat and fish are dried and preserved by spreading them out in the sun. Salting is very essential before drying, because common salt protects food items from micro-organisms.

Facts



- Vinegar and citric acid are used to prevent food spoilage.
- Louis Pasteur discovered pasteurization method of preserving milk.
- In Tamilnadu, Pasteur Institute is located at Coonoor.



ACTIVITY :

Shall we fill in?



Food Items	Method of Preservation
Paddy	Drying
Fish	
Goose Berry	
Meat	
Grapes	
Milk	
Green gram dhal	
Idly Batter	

Food storage

Food is stored by two methods

- Dry storage
- Cold storage

Cereals and pulses can be stored without spoilage for a longer period by dry storage.

Vegetables and fruits can be preserved at low temperature in refrigerators. The preserved foods remain fresh without spoilage.



A few methods of protecting food :

- Cleanliness and hygiene in food handling is very important.
- Utensils and equipment used for preparation should be cleaned well.
- Cover the containers in which food is kept.
- Cooked and uncooked food should be preserved separately.
- Food should be cooked without destroying the nutrients.



Kitchen safety :

- We should not keep easily inflammable objects in the kitchen.
- We should not keep clothes and paper bags near the stove.
- Put off the stove before leaving the kitchen.
- We should take care that steam does not fall on us while opening the pressure cooker.
- We should not keep tablets or medicines in the kitchen.
- We should not allow children and pet animals in the kitchen.
- Don't keep spoilt food items in the kitchen.
- If the stove is not in use, the gas cylinder should be shut off.

EVALUATION

I. Choose the right answer :

1. _____ is a natural food preservative.
a) Water vapour b) Common salt c) Rice bran d) Butter
2. The natural food, which does not get spoiled when it is preserved for a long period of time, is _____ .
a) Vegetables b) Fruit juice
c) Honey d) Butter
3. The Pasteur Institute in Tamilnadu is located at _____ .
a) Ooty b) Conoor
c) Kotagiri d) Kodaikanal



4. The thing which should not be kept in a kitchen is _____ .
a) Salt b) Rice c) Tamarind d) Medicine
5. Pasteurization of milk was discovered by _____ .
a) Flemming b) Louis Pasteur
c) Edison d) Sir Isaac Newton

II. Write True or False :

1. Food items should be covered and kept in closed containers.
2. Do not eat spoiled food items.
3. Allow pet animals to enter into the kitchen.
4. We can have food items in all seasons by preservation.
5. Milk is preserved by Pasteur's method.

III. Answer in one or two sentences :

1. Write any four methods of food preservation.
2. Name any three natural food preservatives.
3. What is meant by Pasteurisation ?
4. What are the symptoms of food poisoning?
5. Name the nutrients present in food.

IV. Answer in detail :

1. Describe a few methods used to protect food items.
2. Why should food items be preserved?
3. Explain any two methods of food preservation.
4. What do you know about kitchen safety?
5. Find out and list the methods used by our ancestors to preserve food for a long time without spoiling.



V. Project:



1. Visit and collect information from a nearby milk processing centre.
2. Collect pictures of cold and dry storage food items and prepare an album.
3. Collect samples of preserved food items.
4. Ask your parents about the methods of preserving food items in your house and prepare an assignment.
5. Take any six perishable food items from your house and leave it out for two or three days, observe and record the changes (colour, smell and change in state) that take place in them. Submit a report after a week.



2. Save Energy



Keerthana was very tired when she returned home from school. She kept her school bag, she went straight away to bed. Her mother was washing clothes. She called Keerthana to help her. “Mom I cannot help you, I played for a long time in the playground. I am feeling very giddy and hungry” said Keerthana. At once, her mother fed her with her favourite rice with greens. The food was very tasty and she ate everything. Now, she felt energetic. She ran to her mother and helped her.

We need energy to walk, run and to do work. We get energy from the food we eat.



From where do the plants get energy to prepare food?
 Plants prepare food by taking energy from the sun during photosynthesis.

Man gets energy from food. The following get the energy from...

	<hr/> <hr/> <hr/> <hr/>
	<hr/> <hr/> <hr/> <hr/>
	<hr/> <hr/> <hr/> <hr/>
	<hr/> <hr/> <hr/> <hr/>
	<hr/> <hr/> <hr/> <hr/>

Electrical Energy

Electricity is generated through Hydro electric power stations, Atomic power stations, Thermal power stations, and wind mills.

Fact

Electricity is generated from sunlight and from waste products.





Hydro electric power station



Atomic power station



Thermal power station

Facts

100 units of electrical energy is to be generated to provide 20 units of energy to our house. 80 units of energy is wasted when they flow through the transmission wires.



Energy Resources

Keerthana went to the shop with her father by scooter. While returning home, her father stopped at a petrol bunk to fill petrol in his scooter. There Keerthana read the advertisement written on a board and was surprised.

Petrol and diesel are non-renewable; they do not last forever. Save them for your children. Switch off the engine whenever you stop the car or scooter. Each drop saved takes you farther.



She showed the board to her father and asked why petrol and diesel would not last long. Her father answered that they are available only in a few places deep under the earth and would get exhausted shortly. We should use our vehicles only when absolutely necessary.

Non-Renewable Energy Sources

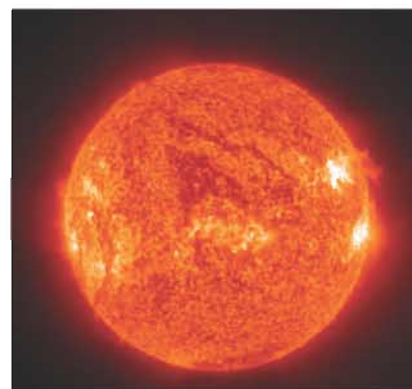
The animals and plants were buried under the earth millions of years ago. Due to high pressure and temperature, they decomposed to become coal and petroleum



Petrol, diesel, bio-gas and coal are available only in limited amounts. We consume them continually in large amounts, they are fast depleting. They could be formed again only after another million of years. They are called **non-renewable resources**.

Renewable resources:

The sources that can be produced naturally and not be exhausted are called **renewable resources**.



We get energy from many sources.
Sun is the ultimate source of all kinds of energy on earth.



Renewable resources

1. Sun
2. Air
3. Water
4. Cow dung(Organic matter)

Fact

The hawkers at the sea shore of Chennai use solar lamps at night



Solar panel



Solar lights



Uses of Solar energy

- Solar cells produce electricity during the day and store it to illuminate the lights of streets and houses at night.
- Villages at the hill stations use solar cells.
- Solar cookers help us to cook without the use of fuels.

Other equipments that use solar energy



Solar watch



Solar cooker



Solar calculator



Do and See

Take some fresh cow dung, mix it in water and pour the mixture into a bottle. Close the bottle tightly and keep for three days. When you open the bottle, a kind of gas comes out. It is inflammable. This is gobar gas. When it is produced in large quantity it is used as a fuel.



Making Cow-dung Cakes



Gobar Gas

Facts

India stands first in annual solar power generation, Second in bio-gas, third in hydro-electric power generation and fourth in wind power generation at the world level. Tamilnadu stands first in wind power production.



Keerthana's project:



Keerthana's teacher said, "If we save one unit of electrical energy at home, we save the production of 5 units at the power station. So, we should save at least 4 units of electrical energy weekly by using the electrical appliances carefully".



With the help of her father Keerthana noted the meter reading at her house on Sunday morning of that week. She monitored the use of all the electrical appliances in her house carefully for a week.

- She unplugged the television every day at night before she went to bed.
- She switched off the fans and lights whenever they were not necessary.
- She switched off the charger as soon as her father's cell phone was completely charged.
- She opened all the doors and asked her mother to avoid the use of fans and lights during daytime.
- She reduced the use of the television.
- In the same manner she handled all other electrical appliances carefully for a month .

She was glad when her father said that they had reduced the consumption of electricity by 20 units during that month.

Ah! Keerthana saved the production of 100 units of electrical energy!

Why don't you try these methods and save electrical energy consumption of your house?

ACTIVITY :

With the help of parents children are asked to note the meter reading at a fixed time everyday. Have a discussion about the importance of conserving and saving electricity.





Facts

- Using CFL lamps(Compact Flourescent Lamps) instead of tungsten lamps would save electrical energy.
- The National Energy Conservation Day is December 14.



Saving energy means judicious use of the energy at all levels.

EVALUATION



I. Choose the right answer :

- The source of all kinds of energy on the earth is _____.
a) water b) wind c) sun d) fire
- The non-renewable energy source is _____.
a) coal b) water c) cow dung d) sun
- For which energy production does India stand first at the world level?
a) wind power b) hydro electric power
c) bio gas d) solar power
- Which is the energy produced by wind mills?
a) light energy b) electrical energy
c) heat energy d) sound energy

II. Fill in the blanks :

- A non-renewable source of energy is _____.
- The national Energy Conservation Day is _____.
- Plants use _____ energy for the production of food.
- _____ produces electrical energy using solar energy.
- It takes _____ years for the formation of petroleum.



III. Answer in one or two sentences :

1. What is the energy resource used by buses and two wheelers?
2. Which is the source that gives energy to human beings?
3. From which do the thermal power stations receive energy?
4. What kind of energy is solar energy?

IV. Which one will you select to save energy in the following situations:

1. To go to a nearby shop (Two wheeler / bicycle)
2. To heat the water for bathing (Gas stove / Solar stove)
3. To illuminate an open-yard (CFL lamps / Tungsten lamps)
4. To make the study room bright at day (Open windows / electric lamps)
5. List the renewable and non-renewable energy resources in the following:
Kerosene, Coal, Sun, Sea waves, Petrol, Gobar gas, Wind, Wood, Water

V. Answer in detail :

1. What are non-renewable resources of energy?
2. What are renewable power resources?
3. How is coal formed?
4. Why are coal and petroleum non renewable resources?

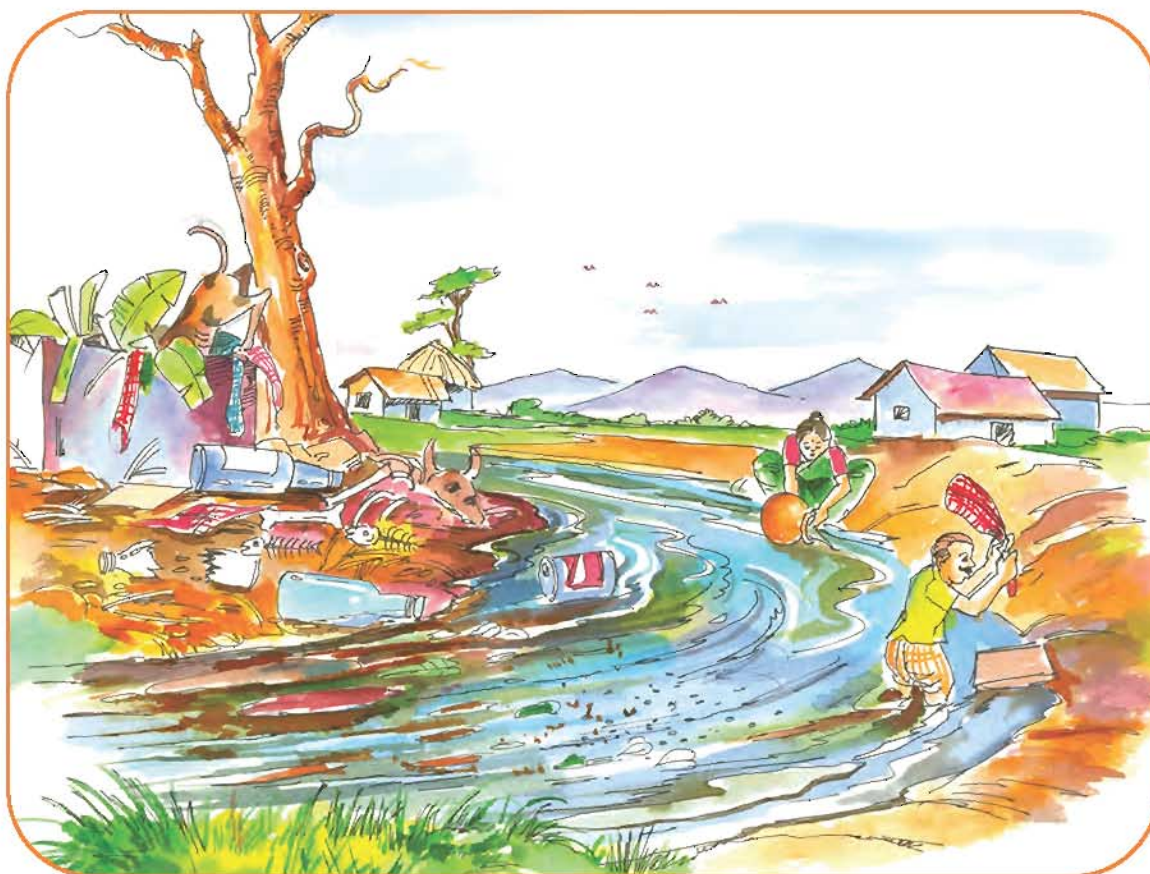
VI. Project:

List the different ways of saving energy.





3. Hygiene and Prevention of Diseases



The half yearly exams had just got over that day. That night Akalya and her brother Selvin were talking for a long time. They were thrilled because they were to visit their grandmother the next day. At last, they slept. The next day they went with the family to their native place. Akalya and Selvin went around the places of the village and happily played for two days. The third day dawned. Selvin was still sleeping. His mother tried to wake him up. She found his body terribly hot. They got worried and took him to a hospital. The doctor checked him and gave him some medication. But fever did not come down for the next two days. The doctor advised a blood test. The test confirmed that Selvin was suffering from **Malaria**.



The lakes and ponds we find in our places are highly useful for domestic use, agriculture, fishing and for creating natural environment. But the same water becomes the breeding places of mosquitoes which spread illnesses like **Malaria, Dengue and Chikungunya**. When water gets polluted by man, diseases are getting increased.

Do you welcome mosquitoes?

Warning!

- Mosquitoes spread fever like Malaria, Dengue and Chikungunya.
- Do not allow water to stagnate around the houses.
- Cover the vessels containing water.
- Breed fishes in all water sources.

Mosquitoes that spread diseases

Anopheles

Female Anopheles mosquitoes bite human beings and animals at night. They are the causes of spreading **Malarial fever**



Culex



Culex is another kind of mosquito that bites people at night. They spread filarial germs that cause a disease called Filariasis. They also spread **brain fever**.

Aedis

Aedis bites people during the day. They breed and lay eggs in the stagnating water, in old tyres, coconut shells, etc., These mosquitoes spread **Jaundice and Dengue fever**.





Diseases spread by mosquitoes:

Name of Disease	Causative Agent	Disease carriers
Malaria	Plasmodium	Anopheles
Filariasis	Wuchereria bancrofti	Culex
Brain fever	Japanese encephalitis	Culex
Dengue fever	Flavi virus	Aedis
Chikungunya	Toga virus	Aedis

Dengue fever

This disease was identified nearly two hundred years ago. **Flavivirus** causes this fever and Aedis mosquito spreads this fever. These mosquitoes bite people generally during the day.

Symptoms of Dengue

1. High fever
2. Severe headache
3. Severe joint pain and muscular pain
4. Vomiting

Ways to control Dengue

1. Protect yourself from mosquito bites.
2. Keep the surroundings clean.

Filariasis

Causative Agent

Wuchereria bancrofti



Carriers of Disease

Culex mosquito

Symptoms

Swollen legs.

Prevention of Disease

1. Take care that water does not stagnate around the houses.
2. Keep the surroundings clean.
3. Personal Hygiene.



Filariasis

Chikungunya

Causative Agent

Toga virus

Symptoms

1. Fever (102.2°F)
2. Head ache
3. Allergic to light
4. Joint pain
5. sleeplessness

Prevention of Disease

So far there is no medicine to cure this disease. There are no injections for the prevention. But, there is a blood test to confirm this disease.

- Keep safe from mosquito bites.
- Take complete rest when you are ill.



Swine Flu

Causative Agent

Influenza A, B, C viruses

Symptoms

Fever (above 100 °F), Cough, Headache, muscular pain, tiredness, difficulty in breathing, vomiting etc.

Treatment of the disease

Medicines like **Tamiflu** and **Relenza** are to be taken within 48 hours after the onset of fever.

Ways to control the spread of swine flu.

- Keep the living place and the surroundings clean.
- Wash your hands frequently using soap and wipe them with a clean towel.
- Cover your mouth with towel while you cough.

Fact



In **1918**, the virus **H1N1** which spreads swine flu had affected and caused death of nearly **5 crores** of people.

Disease that spread through air

Name of Disease	Causative Agent	Symptoms	Control and prevention
Common cold	Viruses	Cough, sneezing, head ache, running nose	Complete rest, intake of warm liquids. The duration of cold can be reduced by taking foods rich in vitamin C.



Disease that spread through water

Name of Disease	Causative Agent	Symptoms	Control and prevention
Cholera	Vibrio cholerae (Bacteria)	Continuous Diarrhoea, Vomiting, Rapid dehydration, Reduced urine output.	Take hygienic food. Take preventive injection. Consume plenty of liquid.

Controlling of Disease carriers

Controlling of disease carriers include watching the movements of the carriers, cleaning up their breeding places, controlling them using biological and chemical techniques and creating awareness among the people.

Biological Control

The **Gambusia fishes**, grown in the water sources, consume the larvae of mosquitoes as their food. Controlling a species by growing another species is known as **biological control**.





Chemical control

Malathion, DDT and organophosphates can be sprayed on the roof and walls of the house in order to control mosquitoes. This method is known as chemical control.



How to prevent diseases from spreading?

- ◆ Don't spit in common places.
- ◆ Drink only boiled and filtered water.
- ◆ Cover your mouth and nose while coughing and sneezing.
- ◆ Strictly avoid using public place as toilet.

There are so many diseases that are spreading through air and water. Our government is taking different steps to control diseases. We should also learn to keep away from diseases by keeping our surroundings and ourselves clean. Only then we can prevent diseases from spreading.

ACTIVITY :

Divide the class into groups. By means of lots, each group chooses the name of a disease. Through role - play, each person of the group tells the class anyone of the following.

- a. Disease causing agent.
- b. Symptoms of the disease.
- c. Control and preventive measures.





Health Care Centres

Nowadays, Public Health Care Centres like primary health centres in villages, Government Hospitals in towns and District Government Hospitals at every District Headquarters are functioning effectively. These centres not only provide free medical care to the economically backward classes, but also conduct Health Awareness Programmes and Preventive Measures to control diseases.



EVALUATION

I. Choose the right answer :

1. Which mosquito bites people during the day?
 - a) Culex
 - b) Aedis
 - c) Male Anopheles
 - d) Female Anopheles
2. Kind of fish that are bred in water resources to control mosquitoes
 - a) Mullet
 - b) Marine Cat Fish
 - c) Gambusia
 - d) Tilapia
3. Mosquito that spreads Malaria
 - a) Culex
 - b) Aedis
 - c) Male Anopheles
 - d) Female Anopheles
4. Brain Fever affects people
 - a) who are below age 10
 - b) above age 10
 - c) above age 15
 - d) people of all ages.





5. Tamiflu is used as medicine for which disease

- a) Dengue b) Malaria c) Chikungunya d) Swine flu

II. Match the following :

- | | |
|----------------|--------------------------|
| 1. Malaria | a) Japanese encephalitis |
| 2. Filariasis | b) Plasmodium |
| 3. Dengue | c) Influenza |
| 4. Brain fever | d) Wuchereria bancrofti |
| 5. Swine flu | e) flavivirus |

III. Answer in one or two sentences :

1. What is biological control?
2. Differentiate Culex and Aedis mosquitoes.
3. What are the ways of preventing the spreading of swine flu?
4. What are the symptoms of chikungunya?
5. Write a note on prevention of diseases.
6. Mention the name of any two disease carrying insects.
7. Mention the chemicals used to control Mosquitoes.
8. Write a note on Filariasis.

IV. Answer in detail :

1. Explain any one disease that spreads through air.
2. Explain any one disease that spreads through water.
3. Describe Swine flu.
4. What do you know about Chikungunya?
5. List any five diseases that are spread through carriers and write causative agents.



V. Project :



1. Collect information from your nearby Health Centre about contagious diseases.
2. Prepare an assignment about the diseases that spread during the rainy season and how we can be aware of them.



4.

Materials around us and different types of Houses



It was a Sunday morning. Elango and his friends sat under a tree after a hard game of foot ball. But soon, they all sprang up shaking their legs. They found a multitude of ants. They were struck with wonder at the sight of rows and rows of ants carrying particles to build their house. The following Sunday, Elango and his friends, to their surprise, found a huge ant-hill under the same tree. What a wonder! Particles by which the whole universe is built is called in general as matter.

Matter is of three kinds. They are

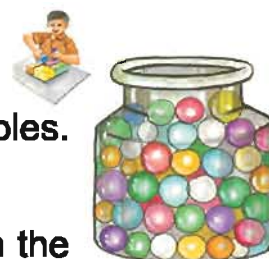
1. Solid
2. Liquid
3. Gas

Properties of matter

Do and see

Take a glass jar. Fill it carefully with marbles. what are the shapes of Marbles?

How much space do the marbles occupy in the jar?



Matters that occupy specific spaces and have specific shapes are called solids.

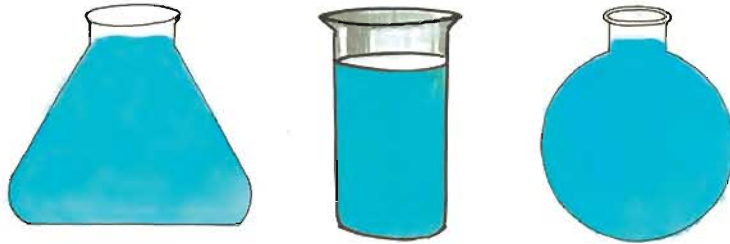


Do and see



What is the shape of water ?

Take a conical flask, beaker and round bottom flask. Fill them with water. Observe the shape of water.



Liquid has no specific shape or size. It takes the shape of the container that holds the liquid.

Can you mention how much space water occupies in the above shown glass container?

Matter which has no specific shape but occupies a specific space is called liquid matter.

SCIENCE

Do and see



What is the shape of air?

Take five balloons. Blow them up with air to different sizes. Can you now mention the shape of air?





Gaseous matter has no shape. They take the shapes of the things that contain them.

Can you mention correctly how much space air occupies in each balloon?

Matters which do not occupy specific space and have no specific shapes are called gaseous matter.

Anything that occupies space and has a specific mass is called matter.

Examples: stone, water, air.

Do and see



1. Keep a stone on the floor. Does it move by itself?
2. Pour a bucket of water on the same floor. Does water splash fast and flow in one direction?
3. Take a balloon filled with air. Prick it with a needle. Does air rush out?

Solid matter does not flow by itself. Liquid matter flows by itself. Gaseous matter flows by itself in all direction.

Do and see



1. Take a stone, press it. What happens?





2. Fill an open vessel with water. Press the surface of the water with your hands. What changes do you see?



3. Press a balloon filled with air. What changes do you see?



Solid matters and liquid matters do not undergo any change due to pressure. But the space occupied by gaseous matter gets reduced due to pressure.

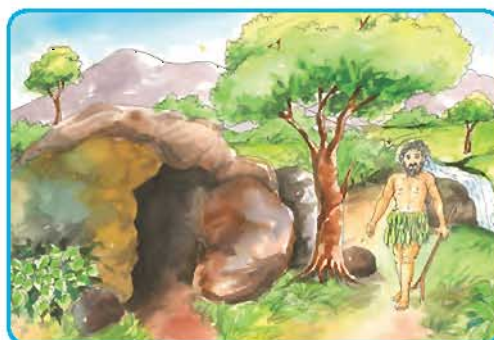
Since

1. Solid matters have definite shape.
2. It occupies specific space.
3. It does not under go any change due to pressure.

We are using solid materials to build houses.

House

A house is the dwelling place for human beings. Ancient men lived in caves. The caves protected them from wild animals, air, rain and cold weather. Is there anyone who still lives in caves? In modern days, houses are built according to the environment and weather.





Kinds of houses

1. Snow Houses

These types of houses are found in Arctic parts. Since the temperature remains below -46°C throughout the year, these houses do not get melted. Eskimos live here.



These houses look like the shell of a tortoise. The snow houses are called as igloos.

2. Bamboo houses

We find this type of houses especially in earthquake prone places.



Mostly, these are found in Andaman, Indonesia and Japan. Even if the houses get affected during earthquake and volcanoes people are not injured due to the light weight of these houses.

3. Apartment type of houses

Concrete houses built in many layers are called apartment type of houses. The foundation for this building should be very strong. Pillars are raised from the foundation and each floor is connected with strong bond. Many families can reside in this type of houses. These types of houses are found in cities like Chennai and Mumbai.





4. Tents

They are temporary houses. They are built using cloth, ropes, nylon, polythene and wire. The **soldiers, N.S.S** and **NCC students** make these type of houses for their stay **during camps**. They are also called mobile houses.



5. House built on a tree

They are called **safe houses** or **upper houses**. These houses are built by the people in jungles and mountains to protect themselves from wild animals. They are built on trees.

A platform is first constructed on the tree at the required height. The trunk of the tree itself becomes the pillar for the platform. The light wood is used for building the rest of the house. A ladder is used to enter the house. During the night, the ladder is removed to protect the inhabitants from animals. Such houses are also found in coastal islands.



6. Skyscrapers

These type of buildings are found in large cities. They look as if they are touching the sky. These type of buildings are built on account of the space crunch in large cities. These houses have got many floors. There is lift facility to go to each floor.





Facts

The tallest building in the world is in Dubai and it is known as Burj khalifa. The height of this building is 828 meters. It has got 160 floors.



Characteristics of a good house

- A house should be built in such a way that it has enough ventilation for air and light. The flooring of the house must be level.
- The doors and windows of the house should be large enough and it should ensure the safety of the house.
- Rain water harvesting must be provided.
- It should have drinking water facilities.
- It must have good toilet facilities.

Maintenance of a house

- Sweep and clean the house daily.
- Wash the bathrooms and toilets every day.
- A good drainage system should be there so that water does not stagnate around the house.
- The cleanliness of the surroundings will help for the healthy atmosphere of the house.
- Painting the walls, windows and doors will give a neat look to the house.





EVALUATION



I. Choose the right answer :

- The type of housing found in the Arctic region
 - Igloo
 - Bamboo houses
 - Apartment type houses
 - Tiled houses
- The houses built to protect us from animals
 - Bamboo houses
 - House built on trees
 - Apartment type houses
 - Huts
- Housing found in earthquake prone areas
 - Apartments
 - Igloo
 - Huts
 - Bamboo houses
- Substance that does not flow
 - Oil
 - Brick
 - Water
 - Air
- Solid matter is
 - hard
 - has no shape
 - flows
 - soft

II. Fill in the blanks :

- _____ materials do not undergo any change due to pressure.
- _____ has no specific shape.
- The house found in Japan is made of _____.
- Snow house is also called _____.
- The houses found in cities are mostly _____.



III. Match the following :

- | | |
|------------------------|------------------|
| 1. Bamboo houses | a) Moving houses |
| 2. Snow houses | b) Indonesia |
| 3. Houses on the trees | c) Eskimos |
| 4. Tents | d) Dubai |
| 5. Sky scrapers | e) Safe houses |

IV. Answer in one or two sentences :

1. Touch and press with your finger an iron ball and water in a glass separately. What do you feel? Why?
2. How does a liquid get its shape?
3. Gaseous matter has flowing nature. Explain it with an example.
4. Write a short note on tree houses.
5. What do you know about skyscrapers?

V. Answer in detail :

1. Differentiate solid, liquid and gaseous matters.
2. Explain with experiment any two characteristics of solid, liquid and gaseous matters.
3. Describe the different kinds of houses.
4. What are the characteristics of a good house?

VI. Project



1. List the types of houses you find on the way from your home to the school.

1. _____

2. _____

3. _____

4. _____



2. Shall we design the rooms in our home!



Kitchen



Guestroom



Bathroom



Studyroom

SCIENCE

3. Make use of the waste materials you find in your home and design a house and decorate it.
4. Collect pictures of different types of houses and prepare an album.
5. Collect information on unique buildings found in different parts of the world and make an assignment.



SOCIAL SCIENCE

STANDARD FIVE

TERM II



TEXTBOOK TEAM

AUTHORS

Tmt. KANNAMMAL,
Sri Sankara Vidyalyaya Matric.
Hr. Sec. School, Pammal, Chennai.

Tmt. S.UMA MAHESWARI,
Govt.Boys Hr.sec.school,
Perundurai, Erode District.

Tmt. S. CHITRA,
Govt. High School, 17, Asthinapuram,
Kanchipuram District.

Thiru. MARUTHACHALAM,
SBOA Matric. Hr. Sec. School,
Anna Nagar, Chennai.

Tmt. GEETHA MANI,
Sri Sankara Vidyalyaya Matric.
Hr. Sec. School, Pammal, Chennai.

Tmt. INDRA KOSALRAM,
Govt.Hr.Sec.School,
Perangiyur, Villupuram District.

AUTHORS-CUM-REVIEWERS

Tmt. N. BHUVANESWARI,
(Former Teacher) Good Shepherd Matric.
Hr. Sec. School, College Road, Chennai - 6.

Tmt. ARUNA RATHNAM,
Education Advisor, UNICEF,
Adayar, Chennai - 20.

AUTHOR-CUM-CHAIRPERSON

Tmt. SUDHA VYAS, M.A., M.Ed.,
(Former Teacher), Good Shepherd Matric.Hr. Sec. School, College Road, Chennai - 6.

DTP

Thiru.R. KABILAN MARADONA.

BOOK COVER DESIGN

Thiru.R. BALASUBRAMANIAN,
Govt.Hr.Sec.School,Surilipatti,Theni District.

ARTISTS' TEAM

Thiru.P. GAJENDRAN, Govt.Hr.Sec.School, Kaanai, Villupuram District.

Thiru.S. MANOHARAN, Govt.Hr.Sec.School. Silamalai,Theni District.

Thiru.M. JOHN RAJA, Panchayat Union Primary School, Vengadesapuram, Cuddalore District.

LAYOUT DESIGN

Thiru N. SRINATH
Thiru.S. DHILIP, Govt.High School,, Melpappampadi, villupuram District.



1. OUR GREEN COVER

NATURAL VEGETATION

Just as **soil** is important for **agriculture** and **human settlement**, natural vegetation is important for **rainfall and wildlife**.

Natural vegetation in India is **not uniform**. Climate, soil type, amount of rainfall and the competition with other organisms influence the growth of plants in distinctive forms.

MAJOR TYPES OF FORESTS

Indian forests are broadly classified into five types. They are

1. Tropical Evergreen Forests
2. Tropical Deciduous Forests (Monsoon forests)
3. Mangrove Forests
4. Thorn Forests
5. Himalayan Forests

TROPICAL EVERGREEN FORESTS

These forests are found in the areas of the Western Ghats, the North-eastern States of Himalayas and Andaman and Nicobar Islands which receive more than **200 cm rainfall**.

Ebony, Mahogany, Bamboo, Rubber, Rose Wood and Sandalwood are the important trees grown here.

Tiger, Rhinoceros, Bears, Leopards, Pythons and Swamp deer are found here.



TROPICAL DECIDUOUS FORESTS (MONSOON FORESTS)

Peninsular India and the Northern parts of India are covered by monsoon forests. These areas receive **100 cm rainfall**.

Teak, Sandalwood, Sal, Deodar, Bamboo and Ebony are some of the important trees grown here. These trees **shed / drop their leaves** during summer because of less rainfall. These forests are called deciduous forests.



These types of wood are used for making furniture.

Do you know?

Very little wildlife can be found here as the forests are not dense .

MANGROVE FORESTS

Mangrove forests are seen in the Indian coastal line, in the Ganga delta and Brahmaputra region, in some backwater areas and salt marshes.

The roots of the trees of most forests are found usually under the ground. But **salt water trees** have **aerial roots** which are above the water in order to survive in the salt water. These prevent **soil erosion** and prevent fertile soil from being washed away into the ocean.



Vedaranyam and Pichavaram areas in Tamilnadu have mangrove forests.

Pichavaram forests protected many people from **Tsunami** waves in **2004**.

Do you know?

Deltas are formed when sand mounds are formed by wind and waves.

THORN FORESTS

Thorn forests are found in the areas which receive less than **50 cm rainfall**.

Parts of Deccan Plateau, South Punjab and Thar Desert have thorny trees like acacia, babul and palmyra.



HIMALAYAN FORESTS



The Himalayan Forest types are varied according to the height of the slopes.

The leaves of the trees found here are **conical** in shape, so we call these as coniferous forests.

The lower Himalayas have evergreen forests. The Middle Himalayas have temperate forest trees like Pine, Birch, Cedar, Oak,

Chestnut, Walnut and Apple.

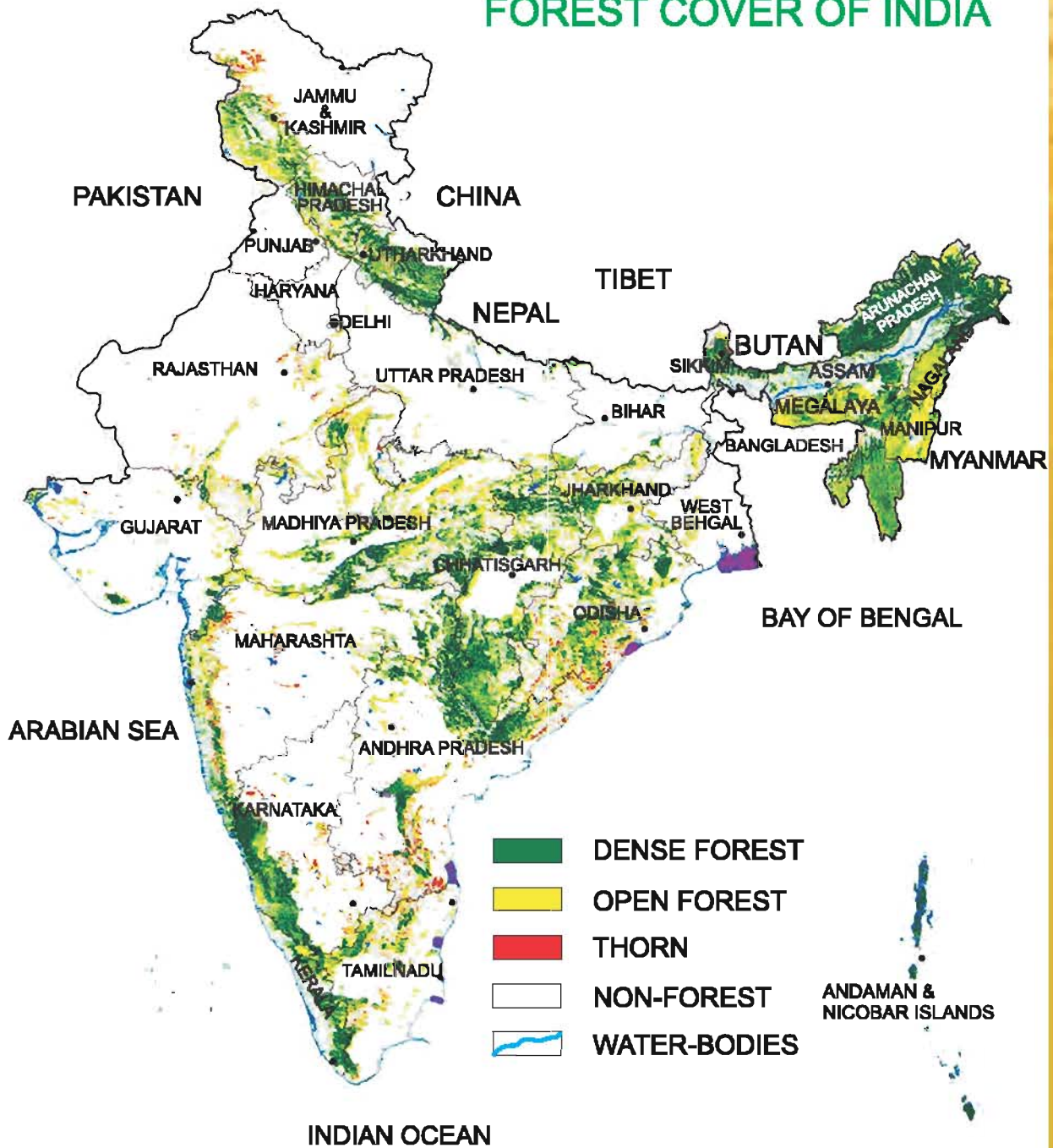
You can see some of these trees in Ooty, Upper Nilgiris and Kodi Hills.

Activity

The next time you visit these areas, observe them and get more information from your teachers.

Compare the trees of other forests with respect to size, shape, structure of the leaves etc.

FOREST COVER OF INDIA



Think over: How can we increase the forest cover in India?

THE USES OF FORESTS

- ★ Forests provide oxygen for living things.
- ★ Forests provide timber / wood for various types of construction work from house to ship building.
- ★ Forests give us firewood, fruits, nuts and medicinal leaves (herbs).
- ★ Forests have their own value; forests bring rainfall, control soil erosion and purify the air by providing Oxygen and Nitrogen cycles.
- ★ Forests give revenue to the Government and employment opportunities to people
- ★ Forests provide shelter for wild animals like Lion, Tiger, Elephant, Bison, Deer and hundreds of birds and wild creatures.
- ★ The dry leaves combine with the soil and change into manure thus adding fertility to the soil.
- ★ Forests are used to produce paper, gum, resin, olive oil and natural dyes.

But... Children

Nowadays the benefits have declined considerably... Do you know why?

This is because of all our activities. The growing population has reduced the forests to less than 17 % of our country's total area.

Remember, a country should have more than 33% of area under forest cover to get the maximum benefits from forests and for remarkable economic development.

Man has cleared the forests for human settlements, industrial purposes, construction of roads, railways and dams. Clearing of forests is called **deforestation**.

Other than this, valuable trees are illegally cut down and animals are hunted by poachers.

In this way we have lost a lot of our forest wealth.

Results of that ...

- ✿ We receive unseasonal and irregular rainfall.
- ✿ The earth's temperature is gradually increasing. "Man cannot tolerate the Earth's temperature after 300 years" is the prediction of US Climate Agencies 2010.
- ✿ We have lost our rare variety of plants and animals which are our country's rich heritage.
- ✿ Our National animal Tiger is facing the danger of extinction.

Do you know?

Over half of the world's wild tigers live in India, Nepal and Bangladesh.

- ✿ To protect some endangered animals there are some sanctuaries.
 - ✿ Gir forest in Gujarat for lions.
 - ✿ Mudumalai forest in TamilNadu for elephants.
 - ✿ Kaziranga in Assam for the rhinoceros.

"Grow more trees Save the Earth"

CHIPKO Movement

CHIPKO movement for the protection of trees began in Chamoli, a place in Uttarakhand. The people here are very keen that trees should not be cut. If all Indians have a similar aim the future generations will benefit.

Song of a tree

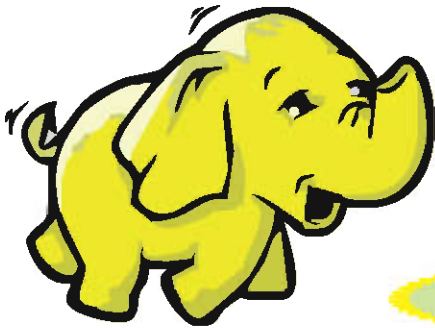


I am a tree , a tree ,
 A useful thing am I ;
 I give you oxygen free
 And the air I purify.
 My leaves, flowers and fruits
 Give shade, give food, as you can see
 The soil is held tight by my roots
 Animals and birds find homes in me.
 I give wood, I bring rain
 I protect weather naturally;
 Please don't give me pain!
 Don't cut me! Don't cut me!

Sudha Vyas

Interesting Facts

- ★ 19.39% of the total area of India is covered by forests.
- ★ 90% of the land of Andaman and Nicobar Islands is covered by forests.
- ★ Assam is the largest producer of Tea in the world.
- ★ Uttar Pradesh is the largest producer of Sugarcane in India.
- ★ The major hill stations of India namely Nainital, Mussoorie, Almora and Ranikhet are in Uttar Pradesh.
- ★ Kodaikanal and Ooty are the summer hill resorts of Tamil Nadu.
- ★ The Indian state of Kerala accounts for 90% of the rubber production in the country.
- ★ Sikkim exports medicinal herbs.
- ★ Punjab stands first in the cultivation of wheat.
- ★ Manipur has a valley filled with flowers.
- ★ Meghalaya is the only state with a museum of butterflies.



Exercise

I. State whether each of the statements is true or false

1. Natural vegetation is uniform.
2. Evergreen forests have trees that shed their leaves.
3. Thorn forests are found in desert areas.
4. Mangrove forests have trees with aerial roots.
5. Forests bring rainfall.

II. Mention any two crops or trees that grow in these forests

1. Tropical evergreen forests
2. Monsoon forests

III. Match the following

- | | | |
|---------------------|---|-----------------------|
| 1. Vedaranyam | - | a) Deciduous forests |
| 2. Andaman | - | b) Coniferous forests |
| 3. Peninsular India | - | c) Thorn forests |
| 4. Middle Himalayas | - | d) Mangrove forests |
| 5. Thar | - | e) Evergreen forests |

IV. Write a note on conservation of forests and wildlife

Project

Let us grow more trees-Save Nature

Name of student :

Class :

Date of Birth :

Name of the parents :

Address :

Phone number:

Mobile number:

Sir/Madam,

Subject:-Tree plantation

My son/daughter will plant a tree (type of tree)_____on(date)

_____ at (place) _____ as a part of the project

“Conservation of trees”.

Signature of the student

Signature of the parent

Date:

Place:



2. TREASURES UNDER THE GROUND

Among the following things pick out those we use for purposes like cooking, travelling and making ornaments.

petroleum	gold	cotton	wool
coal	copper	aluminium	leather



We call products like petroleum, coal, copper and gold minerals.

Minerals are products that are found in **rocks** and under the **ground**. The **mining industries** are responsible for obtaining minerals. A **mine** is an **excavation** in the earth from which **ores** of minerals can be extracted. The availability of minerals helps to establish many industries which contribute to the development of a country.

India is rich in mineral wealth. **Minerals** are of **two kinds** namely **Metallic and Non-metallic**. Iron, manganese, bauxite, copper and gold are the important metallic minerals while petroleum and coal are the important non-metallic ones. Most of these minerals are found in the Deccan Plateau and Chota Nagpur Plateau of India.

Do you know?

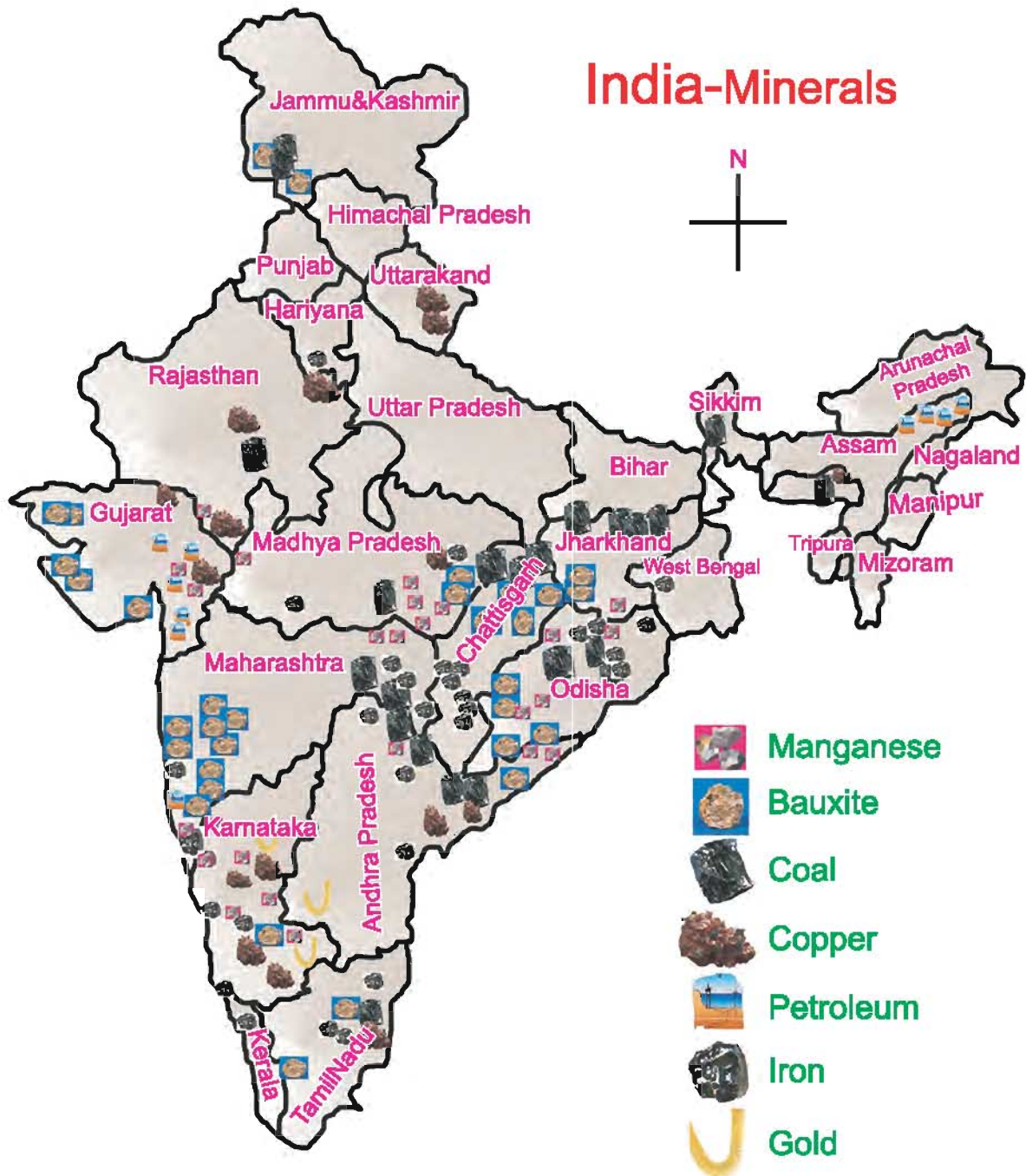
The study of minerals is called Mineralogy.

Iron

Iron is called the **key** mineral. Industries are mainly dependent on it. The best variety of iron ore is found in India in the states of Bihar, Odisha and Karnataka. Iron is also found in Jharkhand, West Bengal, Madhya Pradesh, Tamil Nadu and Maharashtra.



(eg.) USES OF IRON



One-fourth of all the iron ore in the world is found in India. Iron is useful to us in many ways. We make different vehicles and machines using iron. It is also used in buildings and bridges.

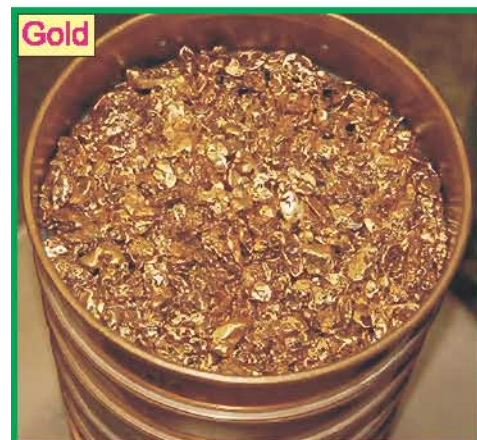
Iron is one of the **major exports of India**. Through the ports of Paradweep in Odisha and Vishakapatnam in Andhra Pradesh, iron is exported to different foreign countries.

EXPORT AND IMPORT

When we **send** products from our country to other countries it is termed as **export**. When we **bring** products from other countries to our country it is termed as **import**.

More export and less import will contribute to the progress of our country.

GOLD



Gold enjoys great **popularity** in India. Indians love gold ornaments and objects made of gold. The gold industry is booming in India. It is even importing gold.

Gold was primarily found in the mines of Kolar in Karnataka and a few places in Andhra Pradesh.

MANGANESE

Manganese is found in abundance in India. This is used in making **iron products** and in the **glass industry**.

Manganese is largely found in Odisha. It can also be found in Madhya Pradesh, Andhra Pradesh, Goa and Karnataka.



Manganese

BAUXITE



Bauxite is an **ore** of **aluminium**. Aluminium is **light** in nature. It is used in making vessels, electrical wires, automobiles, machines and aircraft.

It is found in the following states: Tamil Nadu, Odisha, Madhya Pradesh, Bihar and Andhra Pradesh.

COPPER

Copper was the **first metal** used by **human beings**.

It is widely used in **electrical equipments**. Copper is mined in Uttaranchal, Jharkhand, Madhya Pradesh and Rajasthan.



COAL

Coal is one of the **most important** minerals found under the earth.

Coal is primarily used as **fuel**. Asia accounts for **one-third** of the total coal found in the world. Railway engines, iron factories, industries and houses use coal as fuel for industrial use and cooking.



Coal is largely found in Madhya Pradesh, Bihar, West Bengal, Odisha, Tamil Nadu and Andhra Pradesh. Neyveli in Tamil Nadu has a number of coal mines.

PETROLEUM

Petroleum is a **natural resource**. It is believed that petroleum was formed over millions of years from the decayed and creatures buried under the earth.



The **by-products** of petroleum are **petrol, diesel** and **kerosene** all of which are used for generating energy and as fuel. Petroleum gel or paraffin is also another by-product.

Petroleum is found in large quantities at Digboi in Assam and Ankuleshwar in Gujarat. It is also found in the offshore station of Mumbai under the sea.

Petroleum is purified in Mumbai, Chennai and Cochin and many by-products are derived from it.

These two underground **Non-Metallic Minerals, Coal** and **Petroleum** play a **vital** role in the industrial development of India.

CONSERVING OUR MINERALS

Our minerals are being consumed so rapidly that there is a danger of their running out. We must learn to save them by using them wisely.



Alternate sources of energy and fuel are being considered. Chief among them are **solar and wind energy**. This aims at conserving the available mineral resources from being rapidly depleted.

Points to remember

- ✳ Minerals are found in rocks and under the earth.
- ✳ Through mines these minerals are obtained.
- ✳ Iron, copper and gold are the most used minerals in India.
- ✳ Coal and petroleum are non-metallic minerals.
- ✳ Conserve the minerals and use them wisely.

Some interesting facts:-

- ★ Karnataka is the only state where mercury is found.
- ★ Bihar is the only state in India where pyrite is found.
- ★ Platinum has been discovered in Namakkal District recently.
- ★ Some years ago, dentists used gold to fill cavities in teeth.
- ★ Gypsum is found in the state of Himachal Pradesh in India.

Exercise

I. Do you agree?

1. Gold was found in Karnataka.
2. Half of the Coal in the world is found in Asia.
3. Copper is found in Rajasthan.
4. Aluminum is heavy.
5. Solar energy is a natural resource.

II. Answer the following questions

1. What are minerals?
2. Name the major minerals found in India.
3. How was petroleum formed?
4. What is the state of minerals in the world today?
5. What are the alternate sources of energy?

III. Activity

1. Find out if there are minerals found in your area. Tell your friends about them.
2. Form two groups and find out what minerals are used at home and in your school and for what purposes.
3. Write a small report of your findings and read it out.

Project

1. Bring samples of some minerals. Display them on a table. Label them and appoint students to speak about each of the minerals.
2. Make a model of a plane or engine or car using some of the minerals and cardboard.



3. BEYOND FRONTIERS

SPACE

Human beings have been extremely curious to know more about space. What is space? The atmosphere surrounds the earth upto a distance of 1600kms. Beyond this is the limitless space. It is an extension of the sky. The solar system is part of this space. Ancient Indian scientists and astronomers like Aryabhata and Bhaskara have given a lot of facts about space and the heavenly bodies through their intense studies and research. Research about space continues even today.

ARTIFICIAL SATELLITES

Space scientists have created artificial satellites to study space. Satellites are **machines** specially made by **scientists**. These satellites are sent into space by means of rockets. Space stations are set up in space to conduct research.

Russia and U.S.A have competed with each other in sending satellites into space. On Oct 4-1957 Russia sent **Sputnik -1**. This was the first space satellite. In the very same year during the month of November, Russia sent a dog **Laika** in **Sputnik 2**, an another satellite. After this, America sent its own satellite "**Explorer**" to space.



Do you know?

From the year 1975 to July 2010, India has sent 56 satellites into space.

INDIAN SATELLITES

On 19th April 1974, India sent its first satellite Aryabhata into space followed by Bhaskara 1, Rohini, Apple, Insat-1A, Insat-1B, PSLV C-etc.

In October 2008 India sent **Chandrayaan-I**, an unmanned satellite to the moon. It was intended to study the surface in detail.

In July 2010 through the satellite **PSLV C - 15**, five smaller satellites have been launched for space research.



For your information

PSLV C -15 was launched from Satish Dhawan space centre in Sriharikota. Images taken by its camera can be used for planning roads in villages, building harbours, preparing accurate maps etc.

THE FIRST MAN IN SPACE

Russia realized its dream of being the first to send a man into space. On April 12th, 1961, **Yuri Gagarin**, a Russian cosmonaut, became the first human to travel into space in **Vostok I**. After his return, he became an instant celebrity.



Do you know?

Astronauts - Name given to space travellers by USA.

Cosmonauts - Name given to space travellers by Russia.

Neil Armstrong



THE FIRST MAN ON THE MOON

America was not far behind in space travel. In July, 1969, **Neil Armstrong** of America was the first to set foot on the moon. The second man was **Edwin Aldrin** who went along with him in the spaceship **Apollo XI**. They brought back samples of rock and soil from the lunar surface.

Armstrong spoke the famous words, "One small step for man, a giant leap for mankind". Aldrin and Armstrong said that they had come from the planet earth in a spirit of friendship and peace. They signed under these words on a plate and left it on the moon.

Edwin Aldrin



SPECIAL TRAINING GIVEN TO SPACE TRAVELLERS

1. To swim in the deep water of the ocean.
2. To wear a space suit and play Tennis in water.
3. To stay in a room with low atmospheric pressure for hours together and rectify the defects of the machines.
4. To stay in a place with less gravitational force for certain hours.
5. To operate all the machines connected with a space vehicle.

THE SPACE SUIT

Astronauts need to wear a special dress known as the space suit while going into space. This protects them from breathlessness as there is no air in space. This saves the body from excessive cold. This suit is also designed to provide enough **oxygen** to breathe and it helps to keep up the blood pressure of the body. Without this suit, space travel is impossible.



SPACE STATION

16 Nations of the world set up an international space station in space to conduct thorough research and gather information. Astronauts from different countries spend time there and send useful information to the earth.



INDIAN ASTRONAUTS



On 2nd April 1984 India sent **Rakesh Sharma** into space in Soyuz T-11 a spacecraft. He became the first Indian space traveller. He spent 8 days in space aboard the Salyut 7 space station in order to do research.

India ranks 7th in sending satellites into space.

Apart from Rakesh Sharma two women of Indian origin namely **Kalpna Chawla** and **Sunitha Williams** went into space to do research.

Do you know?

Valentina Tereshkova was the first woman to go into space.

KALPANA CHAWLA

Kalpna Chawla of Indian origin went to space in the space ship **Columbia** in the year 1997. In her first mission she was mission specialist and prime robotic arm operator on space shuttle STS 87. In her second mission she was one of the seven members of the crew of STS-107 as mission specialist. This mission from 16th January 2003 to 1st February 2003 lasted 15days, 22hours and 21 minutes in space. The crew conducted nearly 80 experiments related to microgravity, earth and space science, advanced technological development and astronaut's health and safety. Unfortunately while returning, the space craft exploded in space. All the astronauts on board were killed.



SUNITHA WILLIAMS

Sunitha Williams was born on September 19th 1965 in Cleveland in the district of Ohio in USA. Her father is Doctor Deepak Pandya of Indian Origin.

EDUCATION

Sunitha was full of grit and determination from childhood itself. After her graduation in 1987, she joined in navy and flew helicopters. She has the experience of 2770 flying hours in 30 different types of aircraft.

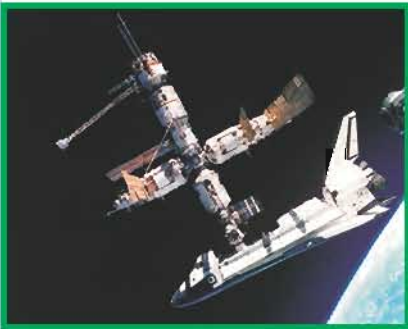
AMBITION TO BECOME AN ASTRONAUT

She dreamt of flying into space as she flew helicopters. In order to qualify herself for this, she did higher studies in engineering in the Institute of Technology in Florida. She was selected in 1998 as an **Astronaut**.

SPACE TRAVEL

On December 9, 2006 she travelled to the international space station in STS-116 launched by the shuttle **Discovery**. She spent 6 months there.

She installed a new instrument in the space station to get electricity from solar rays. She completed **3 space walks** in 9 days.



INTERESTING EXPERIENCES IN SPACE

In space, eating and drinking should be done with utmost care. Once when Sunitha Williams started taking almonds, all slipped away from her hand and began to float in the space craft. She had to swim inside to pick them up one by one.

she had another interesting experience, when she tried to mix sauce in her food. As she opened the packet, the sauce came out with force and floated here and there. She tried to catch it and failed. Then she found the lid and closed the packet with great difficulty.

ACHIEVEMENTS IN SPACE

Doctor Catherine held the record of the longest stay in space. Sunitha Williams broke this record by staying 195 days in space. This became the longest stay of any person in space.

NASA is planning another trip to space in **Soyuz 31**, in June 2012. Sunitha Williams is expected to be a part of that team. She is 24th in the list of astronauts who have achieved heights in space travel.



Recent News : A group of scientists under the leadership of astro-scientist Crowther Paul of London Sheffield university has discovered a star 320 times bigger and brighter than the sun. They have named it the "Monster star". This is 265 times heavier than the sun.

USES OF SATELLITES

Satellites are useful to mankind in many ways.

1. They have contributed significantly towards understanding the earth based activities.
2. They help us in understanding about the ozone layer.
3. They help us in discovering the archeological sites or geological formations which were impossible to identify otherwise.
4. They connect people of all countries through effective communication.
5. They help us in understanding climatic changes.

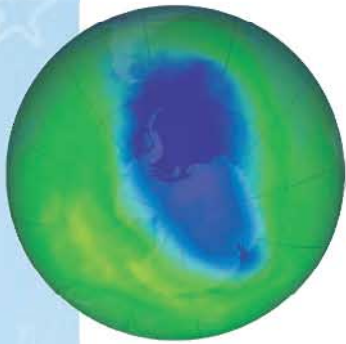
Space will continue to fascinate people. Everyday newer and newer information continues to emerge. A day will come when space tourism may become possible.



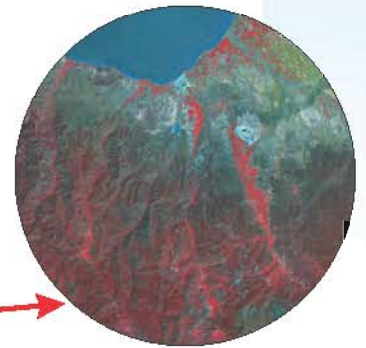
Agriculture



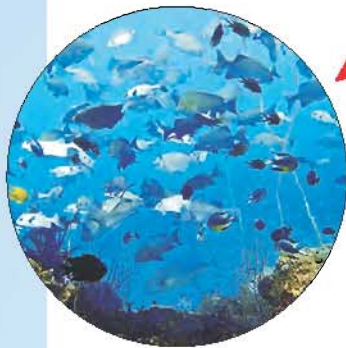
Seismic Activity



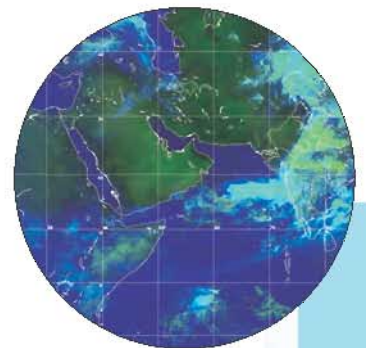
Ozone Layer



Mineral Wealth



Fishing



Climatic Changes



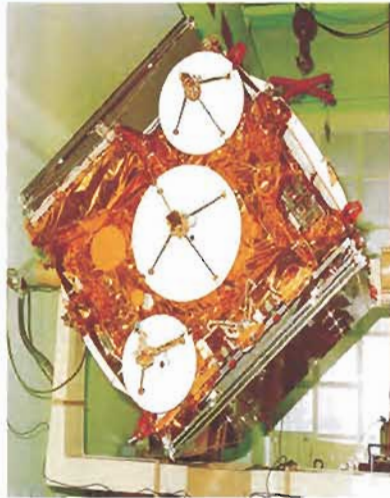
Communication

Some interesting facts.

1. The youngest person to fly in space is Gherman Titov. He was 25 years old when he flew Vostok 2.
2. The oldest person to fly in space was John Glena. He was 77 years old when he flew on STS – 95.
3. SHAR stands for Sriharikota. It is the launching centre for all Indian satellites.
4. Dr.Vikram Sarabhai is considered as the father of the Indian Space Programme.
5. The main factor in space travel is the gravity change experienced by the body.
6. To do any work in space, Astronauts have to move only the body parts like hands and legs and not the entire body.
7. The famous motto of Kalpana Chawla was “Follow your dreams”.
8. Chandrayaan's most important discovery was the presence of water molecules in lunar soil.

Expansions:

- | | | |
|------------------|---|---|
| 1. INSAT | - | Indian National Satellite System |
| 2. EDUSAT | - | Educational Satellite |
| 3. PSLV | - | Polar Satellite Launch Vehicle |
| 4. GSLV | - | Geo –synchronous Satellite Launch Vehicle |
| 5. ISRO | - | Indian Space Research Organization |
| 6. NASA | - | National Aeronautics and Space Administration |



INSAT-2C in preparatory stage (1995-1996)



The first Indian Satellite to the moon



Chandrayaan-1



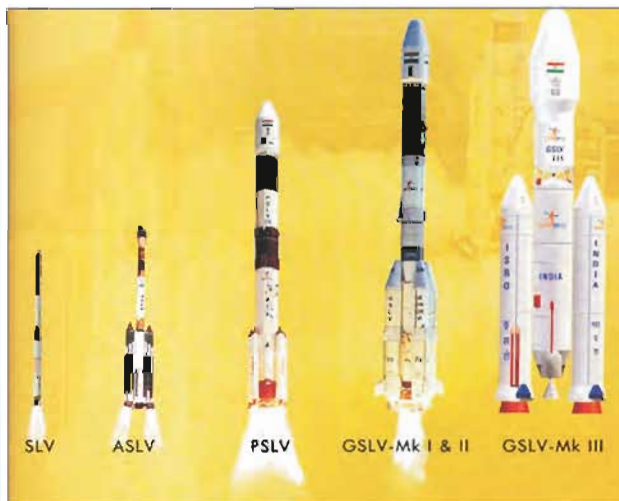
Fixing the Satellite



Rocket carrying the Satellite



Satellite launch



Indian Missiles



Artificial Satellites around the earth

Exercise

I. Choose the correct answer.

1. Cosmonauts is the name given to space travellers by
a. Russia b. USA c. Germany
2. The first country to launch a satellite into space was
a. America b. Russia c. India
3. The first satellite in space was
a. Sputnik I b. Explorer c. Bhaskara
4. The space ship in which Sunitha Williams travelled was
a. Discovery b. Apollo c. Explorer
5. The number of days spent by Sunitha Williams in space was
a. 200 b. 195 c. 190

II. Answer in a word.

1. First animal in space _____.
2. First man in space _____.
3. First man to set foot on the Moon _____.
4. The first satellite launched by India _____.
5. Name of India's satellite to the Moon _____.

III. Fill in the blanks.

1. Y—r—G—g—r—n
2. Sr—ha— —k—t—
3. A—y—b—a—t a
4. A—dr— —
5. R—h—n—

IV. Write brief answers.

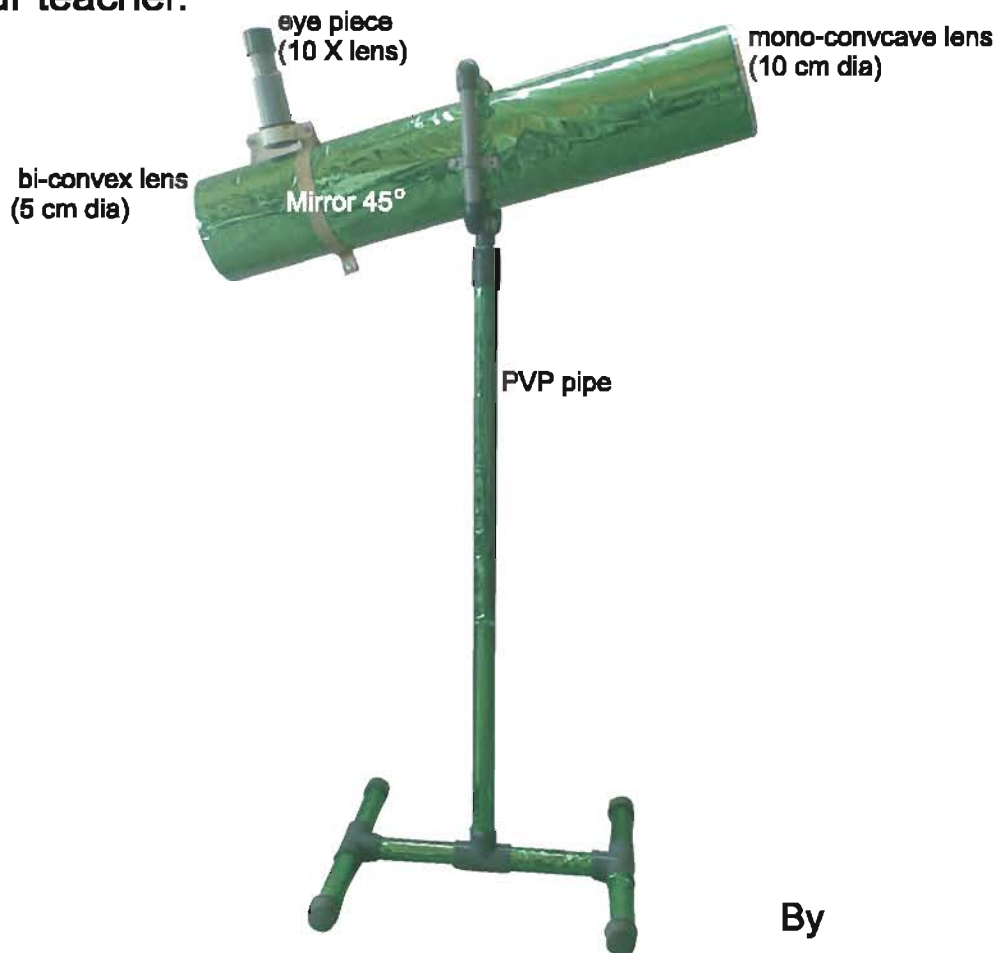
1. Experience of Sunitha Williams in space.
2. The Space Suit.
3. Any two uses of satellites.

V. Activity.

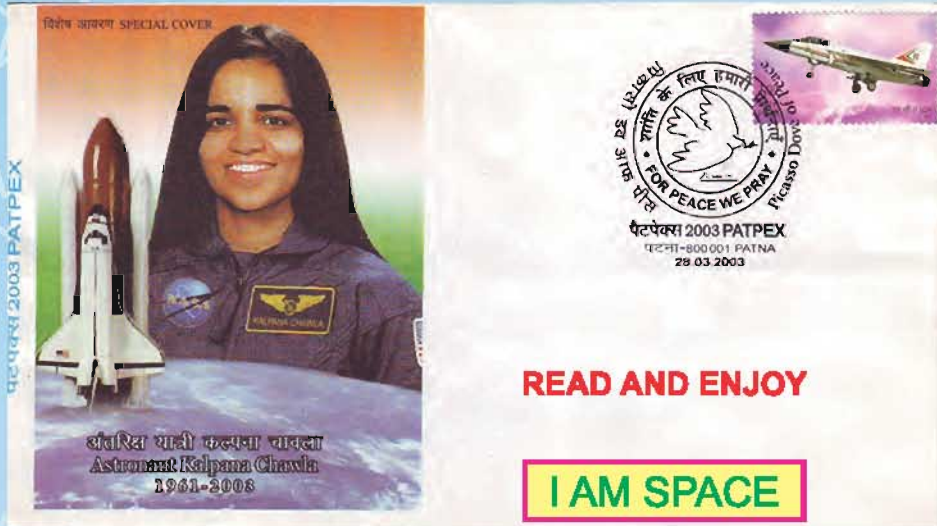
Discuss with your teacher about the changes that take place during Space Travel.

Project

- Visit the Birla Planetarium and record your observations.
- Try to make a telescope using PVC pipes with the help of your teacher.



By
S.Kumaresan



READ AND ENJOY

I AM SPACE



I am the limitless space here
 To speak to you Children dear!
 Humans to explore me did aspire,
 In rockets did fly higher and higher,
 Yuri Gagarin, Neil Armstrong - two brave hearts,
 Were the world's pioneer astronauts.
 Russia and America, then came India,
 She sent her own Rakesh Sharma.
 Then came the gritty Kalpana
 Followed by adventurous Sunitha.
 More and more to me are drawn
 Space Research is going on and on...
 So children! have faith, dream and fly
 Be brave and set your goals high!

N.Bhuvanewari





4. OUR GOVERNMENT

Elango's family is visiting Delhi. His parents, Elango and Minnal, his sister visit the **Parliament House of India** in New Delhi. They see the Rashtrapathi Bhavan too, which is the residence of the Indian President. Both Minnal and Elango asked a lot of questions about the President, the Prime Minister and other ministers governing our nation. His mother, Mangai who is a government employee in the Secretariat, Chennai responds to their curious queries by explaining about the government, State Government, Central Government and Union Territories.

We live in groups because many conveniences like roads, water, electricity, transport, schools and hospitals can serve all of us. It is cheaper and more efficient when we share such facilities. But at the same time, we need rules on how to live in groups. We select some people among us to write these rules and ensure that all of us follow these rules.

Those whom we select to do these tasks form a government. Government makes common rules into laws. All of us need to follow the laws laid down by the government. The government is the agency which enforces these common rules or laws upon society.



Government functions at different levels. Just as you have classrooms in your school and then primary school, middle school and high school sections, we have different levels of government. Chennai for example is a city. It has a form of government called "**Municipal Corporation**". Villages have a local government called **panchayat**.

Chennai is in a larger piece of land called Tamil Nadu, just as your class is part of the primary section of your school. Larger areas like Tamil Nadu are called states. We who live in this area elect members of the government. This government is called the **state government**.

Tamil Nadu is part of a larger land and society called India, just as the primary section of your school is part of the whole school. There are 28 such states. All these states together form the Indian Union and we have a **Union or Central Government**.

Democracy is the government of the people, by the people and for the people.



Democratic country



India follows a **democratic** form of governance. In a democratic country, people elect their representatives or leaders through elections. Citizens of 18 years and above can cast their vote in the elections. These **elected leaders** form the government. The majority of our population lies in the villages and the rest live in towns and cities. It is not possible for the central government to see to the needs of the people living in many states. So, in India, we have the following three levels of government.

- ★ The Central Government or Union Government
- ★ State Governments
- ★ Local Self Governments

DO YOU KNOW ?

The Constitution has laid down some directions for the government to follow. These are called Directive Principles .They help the government to function better for the welfare of the people.

Important subjects like foreign affairs, defence and finance are with the central government. During any crisis the central government comes to the rescue of the state government.

THE CENTRAL GOVERNMENT

This consists of the President, Vice-president and a Council of Ministers headed by the Prime Minister. The Parliament is the law making body. It consists of the President and the two houses namely- **Lok Sabha** and **Rajya Sabha**.



THE LOK SABHA OR THE LOWER HOUSE

It consists of 545 members. Its members are elected directly by the people. So this is also called the **House of the People**. This is the primary source of political power in the country. The members of the Lok Sabha are elected for a term of 5 years. Any Indian who is 25 years of age can contest in elections for the Lok Sabha.

The country is divided into many constituencies. The candidate who gets the highest number of votes in a constituency is declared as a member. The Lok Sabha can have a maximum of 552 members.

The Lok Sabha elects one of its own members as its **Presiding Officer** and he is called the **Speaker**. He is assisted by the Deputy Speaker, who is also elected by the Lok Sabha. The conduct of business in the Lok Sabha is the responsibility of the speaker.

DO YOU KNOW ?

The first Lok Sabha was formed in 1952. After the last General Elections Ms.Meira Kumar became the first woman Speaker of the Lok Sabha.

THE RAJYA SABHA OR THE UPPER HOUSE

The members of Rajya Sabha are elected by Members of State Legislative Assemblies. There can be a maximum of 250 members.-238 elected members and 12 members nominated by the President of India. They are elected for a term of 6 years. One third of its members retire every 2 years. New members replace them. The **Vice-President** is the **Chairman** of the **Rajya Sabha**.



DO YOU KNOW ?

The Rajya Sabha is a permanent body. It cannot be dissolved. The Lok Sabha however can be dissolved by the President.

THE PRESIDENT (FIRST CITIZEN OF THE COUNTRY)

The members of the two houses are called Members of Parliament or MPs. The members of the Parliament and the State Legislative Assemblies elect the President of India. The President of India is the Head of the country. He resides at the **Rashtrapathi Bhavan**. The President is elected for a term of 5 years.

DO YOU KNOW ?

Mrs. Pratibha Patil is the first woman President of India.

HOW IS GOVERNMENT FORMED?

The most important feature of our democracy is the multi-party system. Different parties put up their candidates for election. The party that gets the maximum number of votes forms the government.

The party that forms the government then elects its leader. The President appoints him as the Prime Minister and on his advice the other ministers. But the Prime Minister is the powerful and effective head of the government. The Prime Minister chooses ministers for different portfolios like foreign affairs, agriculture, defence etc. They are appointed by the president and together they form the council of ministers or Union Cabinet. The ministers in the Union Cabinet can be either from the Lok Sabha or Rajya Sabha.

STATE GOVERNMENT

Government at the state level is called State Government. Every state has the Legislative Assembly. The representatives who win the elections are called Members of Legislative Assembly (M L As) They are elected by the people who are 18 years of age and above. They are elected for a term of 5 years.

The President appoints the Governor of the state, who is the head of the state. The Governor appoints the leader of the majority party as Chief Minister. The Chief Minister forms his / her council of ministers.

UNION TERRITORIES

A Union Territory is an administrative division of India. Unlike states, which have their own governments, **Union Territories** are directly ruled by the **Central Government**.

During the British rule, some of our regions were either directly ruled by the British or as Princely States by the local rajas. After 1956, these colonies especially French and Portuguese colonies in India were incorporated into the Republic as Union Territories..

S.No	Union Territories	Capitals
1.	Andaman and Nicobar Islands	Port Blair
2.	Chandigarh	Chandigarh
3.	Dadra & Nagar Haveli	Silvassa
4.	Daman & Diu	Daman
5.	Lakshadweep	Kavaratti
6.	Puducherry (Pondicherry)	Puducherry
7.	National Capital Territory of Delhi	New Delhi

Activity

Enact a role play of Central Government and its ministers and State Government and its ministers in the class with the help of your teacher to discuss an urgent problem to be solved at once.

JUDICIARY

In India, our constitution has provided an independent judiciary. The **Supreme Court** in New Delhi is the highest judicial body. Its decision is final in any legal case. The **Chief Justice** of Supreme Court is appointed by the **President** on the advice of the **Prime Minister**.



The highest court in the State is the **High Court**. There are **District Courts** at the district level.

You will come to know more about the Judiciary in the higher classes.

Find Out

The name of the present Chief Justice of India.

INDIA AND HER NEIGHBOURING COUNTRIES

India as a sub-continent is surrounded by some countries which are known as neighbouring countries. Indian neighbouring countries are as colourful as India herself. India's neighbours are Pakistan, Bhutan, Nepal, Sri Lanka, China, Bangladesh and Afghanistan.

The SAARC

The South Asian Association for Regional Co-operation is an economic and political organization of eight countries in Southern Asia. They are India, Nepal, Bhutan, Bangladesh, Sri Lanka (formerly known as Ceylon), Maldives, Pakistan and Afghanistan. SAARC was established and its charter was adopted on December 8th 1985. It also encourages co-operation in agriculture, health, population control, rural development and science and technology.



MYANMAR

Myanmar, formerly known as Burma, is taking some constructive steps towards becoming a member of the SAARC family.

Add to your memory

Majority party-The political party that gets the maximum number of votes in the election.

Points to remember

- ❁ India follows a democratic form of governance, where any citizen who is 18 years of age and above can cast his/her vote.
- ❁ The Parliament is the law making body. It consists of the President and the Two Houses- Lok Sabha and Rajya Sabha.
- ❁ The President is the first citizen of our country.
- ❁ Members of the two houses are the Members of Parliament.
- ❁ The Prime Minister chooses various ministers in the cabinet for different portfolios.
- ❁ The Governor is the head of the state and he appoints the Chief Minister of the state.
- ❁ The Supreme Court in New Delhi is the highest judicial body in the country.

Interesting Facts

- ❁ The national emblem of India is an adaptation from the Sarnath lion.
- ❁ The design of the Indian National Flag was adopted by the constituent assembly of India on 22nd July 1947.
- ❁ The new rupee symbol is ₹. It was created by Udaya Kumar.
- ❁ Satyameva Jayathe means “Truth Alone Triumphs”.
- ❁ Our National Anthem “Jana Gana Mana” should be sung within 52 seconds.
- ❁ Sri Aurobindo translated “Vande Mataram”, our National song into English.
- ❁ Populationwise India stands second in the world.

Exercise

I. Answer in two or three sentences.

1. How is the President of India elected?
2. How are the members of the Lok Sabha elected?

II. Answer briefly.

1. Write in brief about SAARC.
2. Write about the relationship of India with her neighbouring countries.

III. Which is the odd one out?

- | | | |
|------------------------|---------------------|-------------------------|
| 1. a) Supreme Court | b) High Court | c) Legislative Assembly |
| 2. a) Puducherry | b) Goa | c) Uttar Pradesh |
| 3. a) Union Government | b) State Government | c) Chief Justice |
| 4. a) Nepal | b) Bhutan | c) Canada |
| 5. a) Floods | b) power cut | c) earthquake |

IV. Complete the pairs.

- | | |
|---|---------------------|
| 1. Lok Sabha = Lower House | Rajya Sabha = _____ |
| 2. President = Central Government | Governor = _____ |
| 3. Lakshadweep = Kavaratti | Andaman = _____ |
| 4. Myanmar = Burma | Sri Lanka = _____ |
| 5. Member of Legislative Assembly = MLA | |
| Member of Parliament = _____ | |

V. Match the following.

- | | | |
|------------------------|---|----------------------------------|
| 1. Mrs. Pratibha Patil | - | Highest Judicial Body |
| 2. Mrs. Meira Kumar | - | Permanent House |
| 3. Rajya Sabha | - | First Woman President of India |
| 4. Lok Sabha | - | First Woman Speaker of Lok Sabha |
| 5. Supreme Court | - | House of the People |

VI. Guess who I am.

I am one of the beautiful buildings of INDIA

I am in NEW DELHI, where leaders meet to discuss the matters related to the development of our country.

VII. Among the Presidents of India who has inspired you and why?

Fun to do

Find out the hidden words related to government in the word grid given below.

Grid

C	Q	P	C	H	I	E	F	M	I	N	I	S	T	E	R
O	I	S	U	P	R	E	M	E	C	O	U	R	T	E	A
U	R	P	R	E	S	I	D	E	N	T	V	E	N	R	J
N	S	T	U	H	I	G	H	C	O	U	R	T	O	S	Y
C	P	A	R	L	I	A	M	E	N	T	R	I	A	P	A
I	V	X	E	L	E	C	T	I	O	N	M	O	N	E	S
L	T	R	G	O	V	E	R	N	O	R	T	H	M	A	A
P	R	I	M	E	M	I	N	I	S	T	E	R	M	K	B
Q	S	O	V	L	O	K	S	A	B	H	A	R	Q	E	H
A	S	S	E	M	B	L	Y	B	V	O	T	E	P	R	A

Project

Conduct an election in your class for Class Leader and 2 Assistant Leaders.

Hints:-

1. Symbol
2. Candidates
3. Campaign
4. Booth
5. Ballot paper
6. Marker
7. Election Officers
8. Booth agents
9. Counting
10. Announcing results.