MATHEMATICS

Class - 5



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PREFACE

After the creation of Chhattisgarh state, the responsibility of creating new text books for children of the state has been assigned to State Council of Educational Research and Training. The books have been created by keeping in view the social, cultural and geographical background of the state.

It has also been kept in mind that the new vision which is being made in the context of the children at the national level can also benefit the children of the state.

These books were tested for two years in various areas of the state. As per the feedback of teachers, parents, children and academicians some changes were made.

At the time of creation of this mathematics text book the main thing that was put forward was that learning mathematics can be joy for children if they can relate our environment to it. Mathematics should not be confined to the text books. The knowledge of process of addition, subtraction, multiplication and division is not enough. The learner should also be able to apply these processes appropriately in real life situations. Pictorial representations have been used in the text book so that the learners easily relate mathematical concepts and process to their surroundings.

This book addresses children with easy language. It has been kept in mind while making the entire book that all the symbols and words are familiar to children. Wherever it is very necessary to use mathematical words, they are used with examples. To keep the learning process from being burdensome and boring several interesting activities have been given. By doing these activities individually or in groups, the learners will learn easily.

It has been kept in mind that the activities, examples and figures given in book are related to children's experience and interest.

According to the National Curriculum Framwork-2005 the purpose of mathematics is not merely following the algorithm and getting the result. Hence in this text book, we have put emphasis on understanding, discussion and interaction of children. There are several such lessons in the book in which children have been asked to discuss many issues with their friends and teachers. We also recognize that if children use their own language to create logical framework their concepts will be strong and clear. Here the teachers are expected to create a rapport and let them speak openly about those issues. Teachers need to listen to them and if the children are having trouble to reach the conclusion then help them. Hope this text book will be helpful in keeping the environment of the school entertaining and exciting.

In preparing these books the council has got continuous cooperation from teachers, academicians and linguist of governmental and nongovernmental sector. The council is grateful to all of them.

It is our responsibility to make our future generation beautiful. We hope that we will all be able to do something good.

Director
State Council of Educational Research and
Training Chhattisgarh, Raipur

SUGGESTIONS FOR TEACHERS AND PARENTS

There have been continuous efforts to make teaching-learning processes interesting and effective. There have been efforts to understand the objects of having different disciplines in the school syllabus and to understand and explain nature of each subject. Yet in teachers and children a reflection on clarity and good understanding does seem to be evident. This is particularly true about mathematics.

If you were to pose the question, "What is mathematics?", the answers would range from counting objects, displaying numbers, doing number operations, lines, making shapes and so on. A few answers might differ from the ones cited above, but these would be largely the things mentioned.

Before we go ahead, let us try and understand what all happens when we are attempting to solve a problem in mathematics. For example, "A bus travels a distance of 35 kilometers in 1 hour. How far will it travel in 6 hours?"

Here, time is an abstract concept. We have defined an interval as the unit of this abstract concept and expressed large time intervals in terms of these units. Similarly, for distance, we have defined a unit, which then helps us quantify it.

In the next step we explore the relationship between these two units of time and distance. We have stated, " The bus travels a distance of 35 kilometres in 1 hour". This defines a relationship, which we translate in term of an operation-for instance, either addition or multiplication.

Let us consider another example. A kilogram of rice costs Rs. 16. How much will 54 kilograms of rice cost?

In this example, we have again defined a unit for quantity of rice, and expressed the total quantity in terms of the unit. The same can be observed while solving problems related to area, etc. It is clear from these examples that mathematics is not just limited to counting or operations on numbers. In the same way, mathematics of shapes and lines is about exploring and establishing the relationships between them. Further, while we include the concept of measurement for use, the sorting, classification searching for and establishing their properties, constitute important facets of mathematics.

When a child begins learning mathematics, in order to express abstract ideas understand operations as well as simple problems faced in daily life, it becomes necessary to use concrete (real physical) objects. However, this dependence on real objects progressively decreases as mathematical skills develop.

Children then begin to build arguments. Their ability to deal with abstractions increases. They begin to abstract arguments from their daily life, and translate abstractions into reality. They also begin to seek solutions to problems of their own accord using various methods. This whole process helps children understand how and where available information can be used to solve problems.

Therefore, it is imperative that in the teaching of mathematics children be allowed to have maximum opportunity to think and work independently. This will only happen if children are not provided with ready-made solutions, and are instead encouraged to think on their own, with guidance towards the right direction. This might seem strange in the beginning, but it is difficult to teach mathematics without developing the ability to think independently and take decisions on the basis of this thought. The development of this ability will make the children self-confident and reduce the fear of mathematics that is widely prevalent.

The class 1 textbook has been developed keeping in mind that it could be used by teachers as a guide and for self-learning by children. We have also tried to provide many opportunities for students following this textbook to think and act independently.

Beginning mathematics using concrete objects and games generates interest amongst the children. Therefore, we have also begun the book with games. The first section develops the ability to focus and concentrate, develop, eye-hand coordination, learn to sort and classify objects, and make pairs. These are through games and would help develop the abilities for sorting, classification, understanding one to one correspondence and comparing quantities.

It is expected that children will be given sufficient time to use as concrete objects while working on the materials given in the book. We have given some examples of the concrete objects that can be used for this purpose but you have to think of some more. Some suggestions can also be seen from the teachers' guide which is being published separately. The purpose of having children engaged with activities

with concrete objects and for creation of supplementary materials for games is to ensure that they work with concrete objects while learning new concepts. They should work on their own, understand operations and slowly move towards greater abstractions. In this period they should be given opportunities to use language in the context of these concepts and operations. These occasions should be both in small groups and in common situations along with teachers so that they can build their self confidence. If there is an opportunity in each chapter to do this then many difficulties that arise in learning Mathematics would be destroyed from the root. Children would develop different attitudes towards mathematics there is a need to pose for a while and think about this point.

Children love stories. One sees children completely engrossed in a story being told to them, especially, if it being related well. In order to understand mathematics because of its abstraction it is useful to have it embedded in stories or contexts, understanding and enjoying stories is a prerequisite. Keeping this in mind, some characters have been created in the textbook. Children can be encouraged to name these characters imaginatively and a short story could be woven around them at the beginning of the lesson. Problems can be posed through play, activities with concrete objects and stories, which would help children form their own base for understanding mathematics better.

No lesson or activity is complete in itself. The materials in the text are just indicative. According to the needs of your classroom and the interest of the children, develop and use new materials, new interesting activities and new games. We have given some suggestions for this purpose. Wherever extra things can be thought of symbols at the bottom of the page show what is possible according to use. The key to the symbols is given at the beginning of the book. Children could be encouraged to interpret the symbols and complete the activities on their own.

To summarise:-

- ❒ Children must be given the opportunity to flip through their books, look at the pictures given and attempt to read in an independent manner

- ❒ Every page of the textbook contains interesting activities and practice exercises. Make more such tasks, ask children to develop them and also to solve them.

- ❒ Children must be given sufficient time to understand and learn a new concept. Children develop new techniques to understand concepts, and must be encouraged in these endeavors.

- ❒ The objective of solving problems is to understand the underlying mathematical concept. Solving a select set of questions or rote learning of select solutions is not the correct way to teach mathematics. Children must, therefore, be encouraged to solve problems as well as develop new problems.

- ❒ Mistakes are a natural process of learning while learning a concept or in solving problems. Children must not be discouraged on mistakes. Instead, they should be encouraged to develop new methods and ways to solve problems.

- ❒ Children learn from their peers, and therefore, must be encouraged to indulge in conversations and group work, and then to present the work that was done in the group.

- ❒ If children have difficulty in solving a problem guidance can be provided in the form of pointed questions that help students think along a certain direction.

- ❒ The materials mentioned in the book are indicative. Please develop and use new materials, innovative games, exercises, and activities depending on the needs, interest and background of the children. The use of symbols in the book indicates the areas where this is possible. Children should be encouraged to understand the symbols independently and work according to the instructions given.

This book is an attempt to dialogue with the teachers/parents and children. All suggestions to improve the book are invaluable and you must please send these to the SCERT.

Director

State Council of Educational Research and Training

Raipur (Chattisgarh)

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CHAPTER-1

Numbers

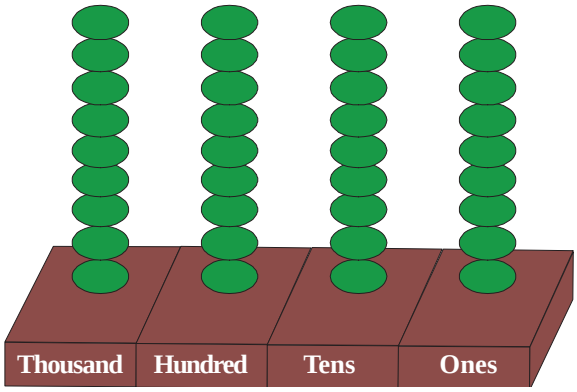
You know that-

In the abacus, when the ones position reaches the tenth bead, we put one bead in the tens position instead.

Each bead in the tens position indicates 10 ones. Similarly when the tens position reaches the tenth bead, we add one bead in the hundred position instead.

That is 10 tens = 1 hundred

We similarly put one bead in a new place when the tenth bead gets added to the hundreds position.



This new place is the thousands position

10 ones = 1 ten

10 tens = 1 hundred

10 hundreds = 1 thousand

Now look at the given picture

What number is indicated by the beads in the abacus?

.....

Now if we were to add one more bead in the ones position what will you do?

Discuss it with your friends and teacher.

If you need an abacus take it and do it yourself.

You must remember that like before on reaching the 10 beads in any position you will create a new place. You are absolutely right!

The new position is known as the ten thousands position.

9999 + 1 = 10,000

You are given some numerals in figures and words. Look at them and read the names.



12,500	Twelve thousand five hundred
52,457	Fifty two thousand four hundred fifty seven
93,509	Ninety three thousand five hundred nine
94,060	Ninety four thousand sixty
10,325	Ten thousand three hundred twenty five
27,627	Twenty seven thousand six hundred twenty seven
20,005	Twenty thousand five
30,360	Thirty thousand three hundred sixty
04,252	Four thousand two hundred fifty two



Write the given numerals in words:

90,932 _____

76,180 _____

58,151 _____

65,839 _____

09,424 _____

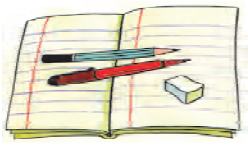
18,381 _____

77,124 _____

45,864 _____

89,691 _____

Now try making some five digit numerals on your own. Write the numbers in words and show it to your friends and teacher.



Write the following numerals in figures:

Twenty five thousand three hundred and ninety _____

Ninety one thousand two hundred and fifty five _____

Forty thousand and seventy nine _____

Eighty nine thousand _____

Seventy two thousand and nine _____

Place value

Example 1 : Write the place value of each digit of 48,567 and write it in the expanded form.

Solution :

Digit	position	place value
7	Ones	7×1=7
6	Tens	6×10=60
5	Hundreds	5×100=500
8	Thousands	8×1000=8000
4	Ten thousands	4×10,000=40,000

The expanded form of 48,567 = 40000+8000+500+60+7

Write the place value of each digit of the given numerals and write the expanded form too :

(1) 25,462 (2) 82,574 (3) 34,016

(4) 40,710 (5) 50,078 (6) 93,509

Make some numerals of 5 digits and write the place value of the digits and write the expanded form of each.

Write the numerals which come just before and just after:



_____	98,297	_____
_____	50,932	_____
_____	49,291	_____
_____	15,817	_____
_____	14,509	_____

The numeral which comes just before is called the predecessor of the given numeral
The numeral which comes just after is called the successor of the given numeral.



Now answer these:

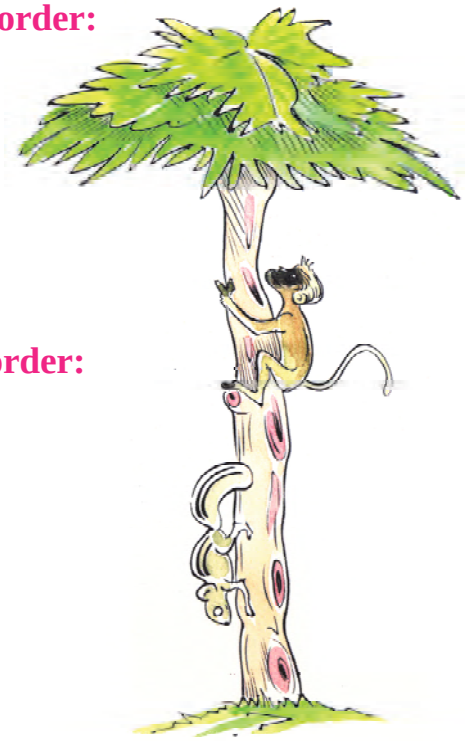
(1) Successor of 99 is _____ (2) Predecessor of 100 is _____

(3) Successor of 999 is _____ (4) Predecessor of 1000 is _____

The smallest 3 digit number comes just after the largest 2 digit number.
The largest 2 digit number comes just before the smallest 3 digit number.

So can we say that the smallest 6-digit number comes just after the largest five-digit number? Find out.

Write the following numerals in an increasing order:



1.	15775	25525	20950	15975
2.	77777	70777	77077	77707
3.	45554	45545	45455	44555
4.	90979	89979	79989	87979

Write the following numerals in a decreasing order:

1.	17426	27246	37642	47548
2.	30636	35045	04545	40538
3.	6978	786	81316	52374
4.	33225	52233	11111	12345

Lakh, Ten lakhs, Crore

Now you know how numbers increase. Whenever we reach the 10th beads in any position, we add one bead is the next position instead of 10 beads in that position. Each new position has a new name.

We know that:

10 ones	=	1 ten		10 tens	=	1 hundred	
10 hundreds	=	1 thousand		10 thousands	=	1 ten thousand	

This continues even after the ten thousands, also.Let us know the number which come after ten thousand.

10 ten thousand	=	1 lakh		10 lakhs	=	1 ten lakh	
10 ten lakhs	=	1 crore		10 crores	=	1 ten crore	

The numerals given in the table below are written in figures and words. Understand them properly and take the help of you teacher if required.

	Crores		Lakhs		Thousand		Hundred	Tens	Ones
	Ten crore	Crore	Ten lakh	Lakh	Ten thousand	Thousand			
7,25,420 Seven lakh twenty five thousand four hundred twenty				7,00 000	20 000	5000	400	20	0
25,04,562 Twenty five lakh four thousand five hundred sixty two			20 00 000	5 00 000	0	4000	500	60	2
10,27,985 Ten lakh Twenty seven thousand nine hundred eighty five			10 00 000	0	20 000	7000	900	80	5
3,15,34,859 Three crores fifteen lakh thirty four thousand eight hundred fifty nine		300 00 000	10 00 000	5 00 000	30 000	4000	800	50	9
94,24,15,378 Ninety four crores twenty four lakh fifteen thousand three hundred seventy eight	90 00 00 000	4 00 00 000	20 00 000	4 00 000	10 000	5000	300	70	8

Maths - 5

Write the given numeral in figures or words as required

7,24,520 _____

_____ Five lakh twenty three thousand seven hundred twelve

25,54,399 _____

_____ Seventy two lakh six thousand three hundred ten

1,93,25,465 _____

_____ Three crores twenty two lakhs fourty six thousand

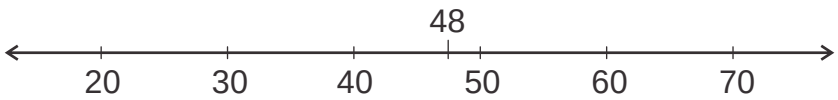
_____ Seven crores

90,00,00,000_____

Which number is nearest -

48 is the number between 40 and 50.

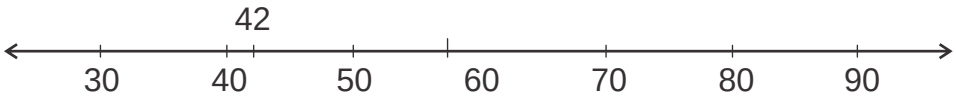
48 is nearest to which number, 40 or 50 ?



The number representation on number line we find that 48 is nearest to 50. Which is nearest ten.

42 is the number between 40 and 50

42 is nearest to which number?



The number representation on number line we find that 42 is nearest to 40. Which is nearest ten.

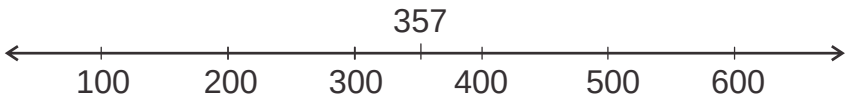
126 is nearest to which number?



The number representation on number line we find that 126 is nearest to 130. Which is nearest ten.

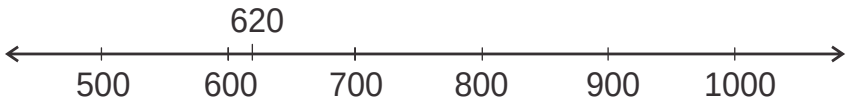
357 is between 300 and 400

357 is nearest to which number?



The number representation on number line we find that 357 is nearest to 300. Which is nearest hundred.

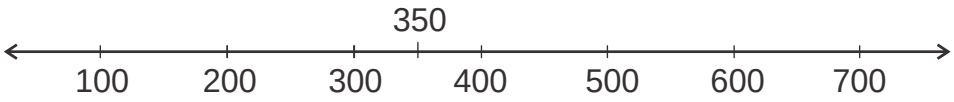
620 is nearest to which number?



The number representation on number line we find that 620 is nearest to 600. Which is nearest hundred.

Special case :- If a number is exactly between any two number, then how can we find its nearest number?

350 is nearest to which number?



350 is exactly between 300 and 400. In this condition we will take 400 as its nearest number. So 350 is nearest to 400

1. Find out the nearest tens of given numbers.

   62, 95, 93, 459

2. Find out the nearest hundred of the given numbers.

   249, 709, 698, 650

3. Find out the nearest ten and hundred of the given numbers.

   245, 808, 976, 138

Estimation of Addition –

Example – There are 63 coins in one bag and 39 coins in another bag. If we merge coins of both bags, then do the assessment of total coins.

Before assessment of (63 + 39) we have to find nearest ten of 63 and 39 and add them.

Number	Nearest ten
63	60
39	40

Estimated total

$$\begin{array}{r} 60 \\ +\ 40 \\ \hline 100 \end{array}$$

Actual total

$$\begin{array}{r} {\scriptstyle 1} \\ 63 \\ +\ 39 \\ \hline 102 \end{array}$$

By merging coins of both bags, we have to get 100 coins approximately. Like this, the difference between estimate total (100) and actual total (102) is 2 only.

Example – There are 375 mangoes in one box and 216 mangoes in another box. Do the estimation of total number of mangoes.

Before estimation of (375 + 216) we have to find nearest hundred of 375 and 216 and add them.

Number	Nearest hundred
378	400
216	200

Estimated Sum

$$\begin{array}{r} 400 \\ +\ 200 \\ \hline 600 \end{array}$$

Actual Sum (1)

$$\begin{array}{r} {\scriptstyle 1} \\ 378 \\ +\ 216 \\ \hline 594 \end{array}$$

The estimated number of total mangoes are 600, which is very nearer to actual number 594 of total mangoes.

Example – In a factory, 1789 female and 1436 male workers are working. Do the estimation of total number of workers.

Before estimation of (1789 + 1436) we have to find nearest thousand of 1789 and 1436 and add them-

Number	Nearest Thousand
1789	2000
1436	1000

Estimated Sum

$$\begin{array}{r} 2000 \\ +\ 1000 \\ \hline 3000 \end{array}$$

Actual Sum

$$\begin{array}{r} {\scriptstyle 1\ 1\ 1} \\ 1789 \\ +\ 1436 \\ \hline 3225 \end{array}$$

Find out the estimated sum by rounding off to nearest ten and also find actual sum.

(1) 46, 81 (2) 96, 15 (3) 72, 88 (4) 34, 65

Find out the estimated sum by rounding off to nearest hundred and also find actual sum.

(1) 436, 356 (2) 164, 719 (3) 506, 271 (4) 632, 225

Find out the estimated sum by rounding off to nearest thousand and also find actual sum.

(1) 4360, 5812 (2) 3756, 140 (3) 7015, 2512 (4) 3160, 6420

Estimation of difference :-

Example – The number of boys and girls in class 5th are 28 and 36 respectively. Do the estimation of difference of their numbers.

Before estimation of (36-28) we have to find nearest ten of 36 and 28 and subtract them -

Number	Nearest Ten
36	40
28	30

Estimated difference

$$\begin{array}{r} 40 \\ -\ 30 \\ \hline 10 \end{array}$$

Actual difference

$$\begin{array}{r} 36 \\ -\ 28 \\ \hline 8 \end{array}$$

The difference between estimated number of girls and boys is 10, which is very nearer to actual difference 8.

Example - Mangoes collected from two gardens are 356 and 125 respectively. Do the estimation of their difference.

We are rounding off 356 and 125 to their nearest hundred and subtract them-

Number	Nearest hundred
356	400
125	100

Estimated difference

$$\begin{array}{r} 400 \\ -\ 100 \\ \hline 300 \end{array}$$

Actual difference

$$\begin{array}{r} 356 \\ -\ 125 \\ \hline 231 \end{array}$$

Example – The cost of a TV and a bicycle is 5680 and 3140 respectively. Do the estimation of their price difference.

Number	Nearest Thousand
5680	6000
3140	3000

Estimated difference

$$\begin{array}{r} 6000 \\ -\ 3000 \\ \hline 3000 \end{array}$$

Actual difference

$$\begin{array}{r} 5680 \\ -\ 3140 \\ \hline 2540 \end{array}$$

Find out the actual difference and estimated difference by rounding off to their nearest ten.

$$\begin{array}{r} 58 \\ -\ 43 \\ \hline \\ \hline \end{array} \qquad \begin{array}{r} 92 \\ -\ 57 \\ \hline \\ \hline \end{array} \qquad \begin{array}{r} 476 \\ -151 \\ \hline \\ \hline \end{array} \qquad \begin{array}{r} 576 \\ -237 \\ \hline \\ \hline \end{array}$$

Find out the actual difference and estimated difference by rounding off to their nearest hundred.

6 3 7	3 6 5	9 2 6	4 8 1 6
− 3 5 8	− 1 5 1	−5 7 6	−1 3 8 1
_____	_____	_____	_____

Find out the actual difference and estimated difference by rounding off to their nearest thousand.

5 1 6 8	8 6 5 3	8 2 7 0
− 2 7 1 3	− 1 4 4 9	−4 1 5 9
_____	_____	_____

Estimation of multiplication –

Example –

Do the estimation of multiplication of 51 and 36

Number	Nearest Ten
51	50
36	40

Estimated multiplication

```
  5 0
X 4 0
-----
  0 0
2 0 0 0
-------
```

Actual multiplication

```
  5 1
X 3 6
-------
  3 0 6
1 5 3 0
-------
1 8 3 6
```

Example –

Do the estimation of multiplication of 432 and 261

Number	Nearest hundred
432	400
261	300

Estimated multiplication

```
  4 0 0
× 3 0 0
---------
  0 0 0
0 0 0 0
1 2 0 0 0 0
-----------
1 2 0 0 0 0
```

Actual multiplication

```
    4 3 2
×   2 6 1
-----------
    4 3 2
2 5 9 2 0
8 6 4 0 0
-----------
1 1 2 7 5 2
-----------
```

Find out the estimated product and actual product by rounding off to their nearest ten.

23×58 46×91 55×21

Find out the estimated product and actual product by rounding off to their nearest hundred.

513×156 263×449

Estimation of division –

Example – $62 \div 26$

Number	Nearest Ten
62	60
26	30

Estimated division

$$30\overline{)60}\ 2$$
$$\underline{60}$$
$$00$$

Actual division

$$26\overline{)62}\ 2$$
$$\underline{52}$$
$$10$$

Example –

$256 \div 26$

256 is nearest to 300

26 is nearest to 30

So, divide 300 by 30

Estimated division

$300 \div 30$

$$30\overline{)300}\ 10$$
$$\underline{300}$$
$$000$$

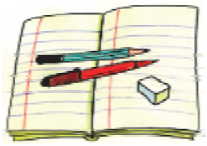
Actual division -

$$26\overline{)356}\quad 13$$
$$26$$
$$96$$
$$78$$
$$18$$

Estimated division result (10) is very nearest to actual division result (13)

Do the estimation of Division

1. $87 \div 28$
2. $75 \div 21$
3. $296 \div 31$
4. $628 \div 24$





Exercise

1. Make numbers of more than five digits. Then write all the numbers in words. Show them to your friends. Who made the maximum numbers ?
2. Make group of three digit numbers you have made. Now arrange them in ascending and descending order and show it to your teacher.
3. Write place value of the each digits of the numbers you have made and also write their expanded form.

CHAPTER-2

Operations

Addition & Subtraction

We have done addition and subtraction of numerals in 4 digits in the previous class. Let us revise :

A. Solve

(1) $\begin{array}{r} 3\,7\,2\,1 \\ +\,2\,5\,1\,0 \\ \hline \\ \hline \end{array}$

(2) $\begin{array}{r} 1\,5\,7 \\ 6\,8\,3\,2 \\ +\,5\,3\,1\,8 \\ \hline \\ \hline \end{array}$

(3) $\begin{array}{r} 9\,5 \\ 7\,2\,1 \\ 5\,3\,2\,8 \\ +\quad 3\,7 \\ \hline \\ \hline \end{array}$

(4) $\begin{array}{r} 2\,7\,3\,1 \\ -\,1\,5\,4\,2 \\ \hline \\ \hline \end{array}$

(5) $\begin{array}{r} 6\,7\,1\,0 \\ -\quad 5\,2\,8 \\ \hline \\ \hline \end{array}$

(6) $\begin{array}{r} 5\,6\,3\,2 \\ -\,3\,3\,0\,7 \\ \hline \\ \hline \end{array}$

B. Fill in the boxes with the correct number:

(1) $\begin{array}{r} 6\,8\,8\,2 \\ +\,2\,\square\,3\,8 \\ \hline \square\,3\,\square\,0 \\ \hline \end{array}$

(2) $\begin{array}{r} 4\,2\,4\,5 \\ +\,3\,1\,\square\,8 \\ \hline 7\,\square\,3\,\square \\ \hline \end{array}$

(3) $\begin{array}{r} 5\,3\,0\,\square \\ +\,\square\,8\,\square\,8 \\ \hline 9\,\square\,0\,7 \\ \hline \end{array}$

(4) $\begin{array}{r} 5\,8\,2\,0 \\ +\,3\,\square\,3\,7 \\ \hline \square\,0\,8\,\square \\ \hline \end{array}$

(5) $\begin{array}{r} 8\,3\,3\,8 \\ +\,\square\,6\,2\,\square \\ \hline 9\,\square\,\square\,9 \\ \hline \end{array}$

(6) $\begin{array}{r} \square\,7\,\square\,6 \\ +\,2\,6\,8\,\square \\ \hline 7\,\square\,1\,7 \\ \hline \end{array}$

Addition of numerals with 5 digits

See and understand

Example 1:

	Tth	Th	H	T	O
	3	2	7	8	5
+	1	3	2	1	3
	4	5	9	9	8

Example 2 :

	Tth	Th	H	T	O
	6	5	8	6	5
+	2	6	0	2	6
	9	1	8	9	1

Add :-

(1) 56,784 and 48,765

(2) 27,835 and 308

(3) 20,312 and 5040 and 809

(4) 6221 and 563 and 51,738

(5) 53,817 and 37,405



Subtraction of numerals with 5 digits

See and understand

Example 1 :

	Tth	Th	H	T	O
	6	8	9	3	5
–	4	7	8	1	4
	2	1	1	2	1

Example 2 :

	Tth	Th	H	T	O
	3	3	9	1	8
–	1	4	7	0	9
	1	9	2	0	9

Subtract:-

(1) 59,726 from 80,780

(2) 68,349 from 73,405

(3) 4236 from 47,895

(4) 23,562 from 78,354

(5) 31,405 from 53,817



After having solved the above questions you will have realised that the subtraction and addition of a 5 digit number is exactly the same as you would do with a 4 digit, 3 digit or 2 digit number. In fact, the addition and subtraction of numbers with more than five digits is also the same.

See and understand :

Example 1 :

Lakh	Tth	Th	H	T	O
7	5	3	4	2	8
+ 1	4	8	5	6	3
9	0	1	9	9	1

Example 2 :

Ten lakh	Lakh	Tth	Th	H	T	O
7	6	3	5	4	8	7
+ 2	0	8	3	8	0	6
9	7	1	9	2	9	3



Exercise

(1) 2 6 3 7 0 3
+ 7 8 3 9 5

(2) 5 5 0 0 7
+ 1 7 3 8 6 0

(3) 3 7 8 3 5 4 6
+ 6 2 3 5 6 2 7

(4) 9 9 4 2 5 5
+ 5 9 3 5 0 9

(5) 6 0 2 7 6 2 7
+ 9 4 0 0 0

(6) 8 3 8 1 2
+ 9 1 9 4 1 4 1

(7) 6 2 7 3 9 0 4
+ 4 0 6

(8) 3 8 9
+ 8 9 2 3 1 3

Subtraction of six digit or seven digit numerals

See and understand-

Example 1 : 7 8 6 5 3 8
− 2 3 8 7 1 5
5 4 7 8 2 3

Example 2 : 2 4 4 7 8 2 3
− 1 6 3 8 7 1 5
0 8 0 9 1 0 8



Exercise

(1) 7 8 5 0 2 5 2
− 6 2 4 1 0 4 9

(2) 5 1 2 4 2 8 6
− 2 5 2 6 2 1 4

(3) 9 9 2 6 4 6
− 6 9 6 6 2 7

(4) 8 6 8 2 2 3
− 2 2 3 1 0 4

(5) 5 5 9 3 4 7 5
− 5 8 7 5 2

(6) 4 4 6 7 8 9 5
− 5 9 3 2 5 1

(7)
$$\begin{array}{r} 674868 \\ -\ 26789 \\ \hline \\ \hline \end{array}$$

(8)
$$\begin{array}{r} 252457 \\ -\ 9509 \\ \hline \\ \hline \end{array}$$

Now make numerals with 5 digits. Take them in groups of two and add them. Also from each group subtract the smaller numeral from the larger.

Similarly make numerals with 3 digits. Take them in groups of two and add them. Get them checked by your teacher.

Ask your friends and find out who made the maximum number of questions.

Very nice!

After solving the questions you must be eager to know whether your solutions are correct. Here we will tell you how you can check your solution. Let us understand the method.

25308 +76397 101705	Total is 101705 Subtract 25308 from this	101705 –25308 76397

Here we can say our answer is correct if we subtract from the total any one of the given numbers, we should get the other.

Now check your answer by this method.

Statement sums

(1) One businessman deposited Rs. 13,71,802 in his account in the first year and Rs. 12,18,625 in the second year. What is the total amount in his account in the two years?

(2) Find the sum of the largest 6 digit number and the smallest 7 digit number.

(3) The population of one town is 6,52,561 and that of another town is 7,11,332. What is the total population of the two towns?

(4) In a state there are 4,32,795 children studying in primary schools; 2,99,890 children in middle schools and 2,09,372 children in (secondary) schools. So how many total children are studying in this state?

(5) The town has total population of 4,53,572 women and men, If 2,25,780 of them are men, what is the number of women?

(6) The sum of two numbers is 2,30,560. If one of the number is 92,640, then what in the other number?

(7) There are 3 candidates standing for election. The first candidate got 2,88,562 and the second candidate got 1,91,072 votes. If a total of 8,15,624 votes were cast, what number of votes did the third candidate get?

(8) Ravi bought a house for Rs 6,80,000 and Rakesh bought another house for Rs. 5,50,000. What is the total cost of the two houses?

(9) Find the difference between the smallest 4 digit number and the largest 3 digit number.

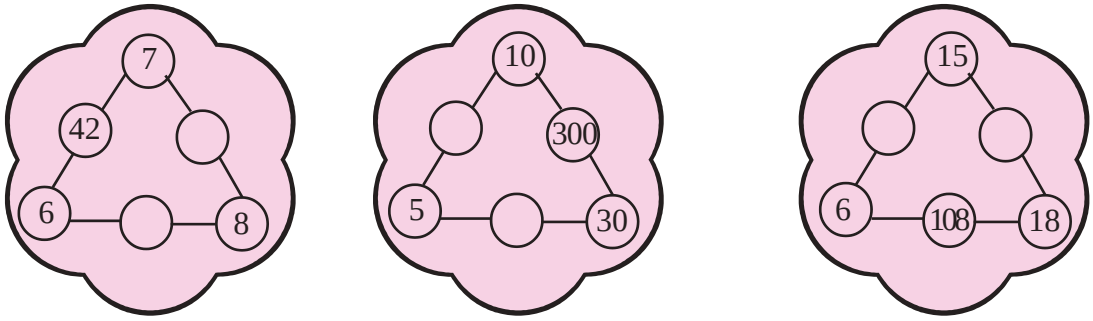
(10) By subtracting 1 from the smallest 6 digit number, which number would you get? How many digits would it be?

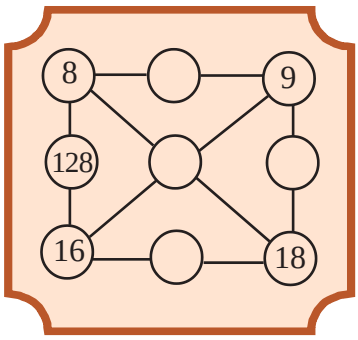
(11) Write two numbers whose sum is 9876.

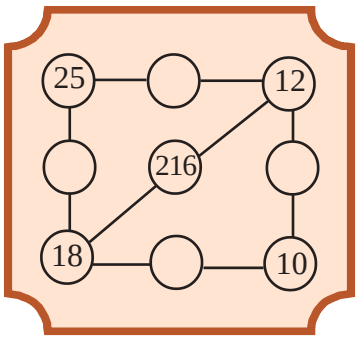
(12) Write two 5 digit numbers whose sum is 89,854.

Multiplication

Observe, understand and complete the following-







Make some similar questions and give them to your friends to solve.

Let us do and learn-

You have already learnt the method of multiplying a two digit number with another two digit number.

The examples given below will make it clear how you can multiply a three digit number with a two digit number.

Example 1 : 463 x 58 = ?

Solution :

$$\begin{array}{r} 463 \\ \times\ 58 \\ \hline 3704 \\ +23150 \\ \hline 26854 \\ \hline \end{array}$$

$$\begin{aligned} & 463 \times 58 \\ = & \ 463 \times (50+8) \\ & 463 \times 8 = 3704 \\ & 463 \times 50 = 23150 \\ & \qquad\qquad 26854 \end{aligned}$$

Example 2 : 645 × 273 = ?

Solution :

$$\begin{array}{r} 645 \\ \times\ 273 \\ \hline 1935 \\ +45150 \\ 129000 \\ \hline 176085 \\ \hline \end{array}$$

$$\begin{aligned} & 645 \times 273 \\ = & \ 645 \times (200+70+3) \\ & 645 \times 3 = 1935 \\ & 645 \times 70 = 45150 \\ & 645 \times 200 = 129000 \\ & \qquad\qquad 176085 \end{aligned}$$

Now try these :

(1)	735×27	(2)	665×51
(3)	513×236	(4)	640×70
(5)	867×458	(6)	888×222
(7)	306×204	(8)	6438×30
(9)	2284×746		

Make some similar questions on your own and show the solutions to your teacher.

Statement sums

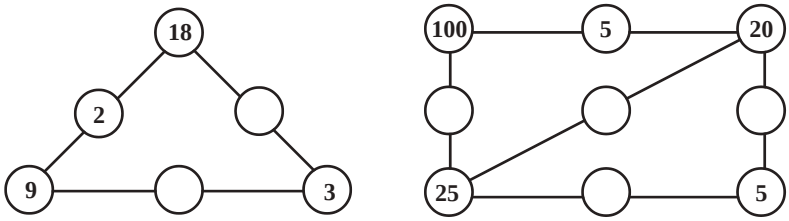
1. A cooler costs Rs. 4350. If a hostel purchases 15 coolers, what would the total cost of the coolers?
2. A cycle costs Rs. 1975. If there are 217 girls in a high school and each child is given one cycle. Find the total amount required for purchasing the cycles.
3. 4635 meter cloth is made in a factory in one day. What is the total length of cloth produced in the month of January?
4. A godown has 8734 sacks of grain. If each sack contains 75 kg. of grain, What is the total quantity of the grain in the godown?
5. Mohan saves Rs. 750 each month in his savings account. What amount would he save in 5 years?

Division

You have already learnt how to divide a three digit number by a one digit or a two digit number. Let us see some questions of this type:-

(1)	$365 \div 5$	(2)	$816 \div 8$
(3)	$978 \div 7$	(4)	$735 \div 13$
(5)	$625 \div 12$	(6)	$432 \div 15$
(7)	$999 \div 11$	(8)	$384 \div 9$
(9)	$589 \div 19$		

Observe, understand and complete the following :-



Checking your answer

Now we will let you know the method of checking your answer.

Look at the following example and understand:-

978 ÷ 7 = ?

Solution :

$$
\begin{array}{r}
139 \\
7\overline{)\,978} \\
-\,7 \\
\hline
27 \\
-\,21 \\
\hline
\times 68 \\
-\,63 \\
\hline
\times 5
\end{array}
$$

you know that in the given question

Dividend = 978 Divisor = 7

Quotient = 139 Remainder = 5

Dividend = (Quotient × Divisor) + Remainder

= 139 × 7 + 5

= 973 + 5

= 978

which is the given dividend hence we can say that our solution is correct.

Now you know that

If Quotient × Divisor + Remainder = Dividend
then our solution is correct.

You can check your earlier solutions and see whether they were correct or not.

Division of a four digit and five digit number

You have seen earlier that addition, subtraction and multiplication for a five digit number is same as that for a two, three or four digit number.

Example 1:

```
        264
    ┌──────
27  │ 7128
  − 54
    ──
    172
  − 162
    ───
    108
  − 108
    ───
    000
```

Quotient = 264

Remainder = 0

Example 2:

```
        1611
    ┌──────
58  │ 93456
  − 58
    ──
    354
  − 348
    ───
     65
  −  58
    ──
     76
  −  58
    ──
     18
```

Quotient = 1611

Remainder = 18

Before doing the division if you write the table of the divisor it will be easy for you to do the division.

Now find the solution of the given questions and check your answers:-

(1) 6531÷82 (2) 23671÷47

(3) 4035÷24 (4) 35152÷32

(5) 71839÷113 (6) 55679÷36

Make some more questions, solve them and show them to your teacher.

Statement Sums

1. The daily wages of 25 labours is Rs. 1750. So what is the daily wage of each labour?
2. On dividing 21,500 by a certain number we get 125 as the quotient. find the divisor?
3. The product of two numbers is 1,15,625. If one of the numbers is 125, find the other?
4. The total cost of 35 mobile sets is Rs. 37,825, then what is the cost of each mobile?

5. If the divisor is 48, the quotient is 403 and the remainder is 5, find the dividend.

6. Do this:

Division method of more than 5 digit numbers is same as the division of 5 digit numbers.

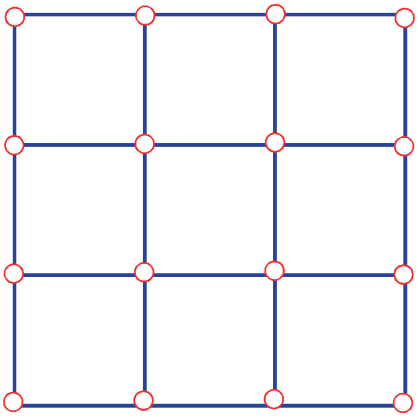
So make some questions with more than five digits and find their solutions.

Find out who amongst your friends solved the maximum number of questions.

Now for some fun!

1. The given figure has 9 equal squares made with matchsticks.

Now remove only four matchsticks in such a way that you are left with five equal squares.



Make this figure using matchsticks and then

a) Remove four matchsticks

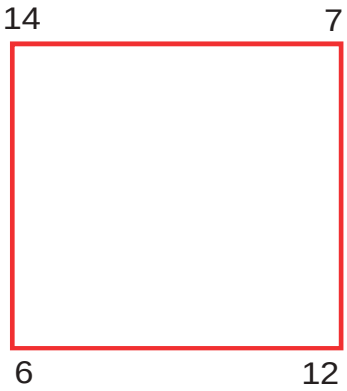
Such that you are left with seven equal squares

b) Remove two matchsticks

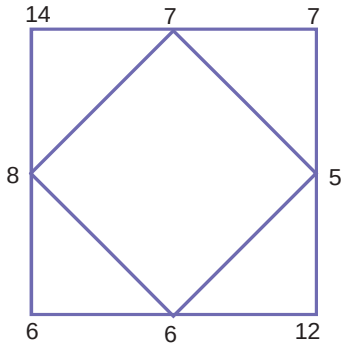
Such that you are left with seven equal squares.

2. Do this also -

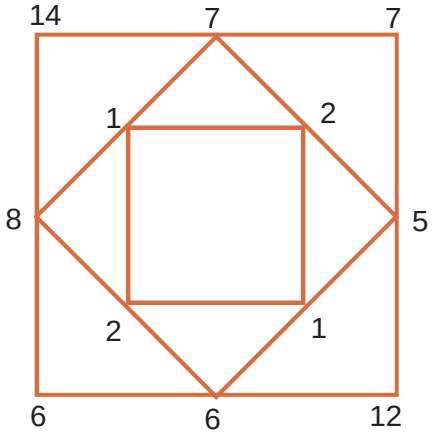
Step 1 : Make a square and write the numbers 14, 12, 6 and 7 at its edges.



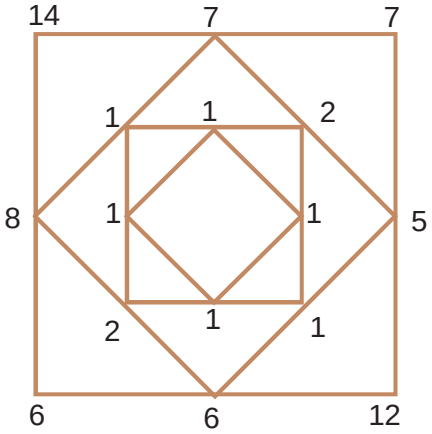
Setp 2 : Join the mid points of this square to get another square. Write the difference of the numbers of the earlier square at the edges of the second square.



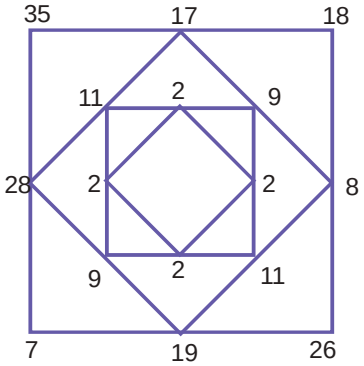
Step 3 : Repeat what you did in step 2 to get 3rd square in the centre.



Step 4 : Repeat the same procedure to get 4th square, you will observe that you will get the same number at the edges of the fourth square. This is the last square.



Below given one figure. Observe it and try to understand.



Note :- *While solving this type of squares the numbers of steps may be increased or decreased.*

Now you can also make such squares on your own.

3. Given below are some magic squares. Fill the blank boxes with the correct digits as per the instructions given below.



		7
10		
		9

Total is 18

	13	
10		14

Total is 33

22		
		21
		28

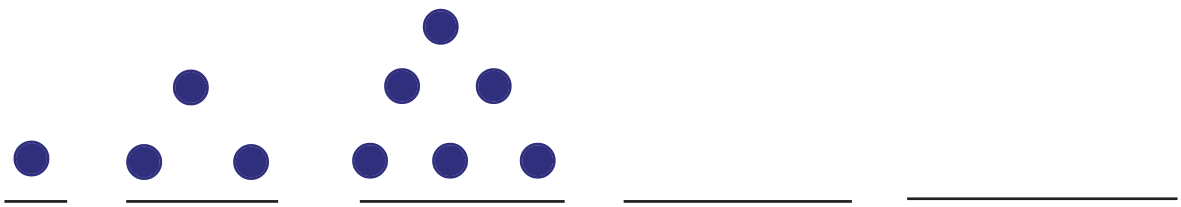
Total is 75

While solving the magic square see that the sum total of each line, each column and each diagonals is same.

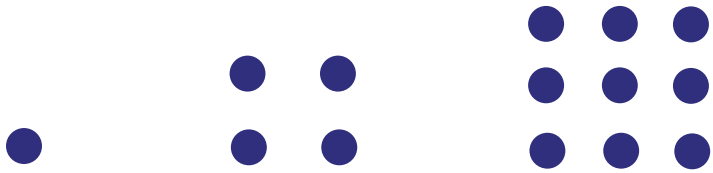
4. Look at the given pictures carefully.



Make at least two more pictures by moving this sequence forword.



The numbers taken in this order makes a long series. These numbers are called triangular numbers because points taken equal to these numbers make triangular figure.



Numbers taken in this order makes a long series. These numbers are called square numbers because points taken equal to these numbers make square figure.

5. Understand the given pattern and write at least three more terms in the given sequence:



1) 1, 1+2, 1+2+3, ___ ____ ____

2) 3, 7, 11, ___ ____ ____

3) 1, 4, 9, 16, ____ ____

4) 1 2 4 ____ _____ ____

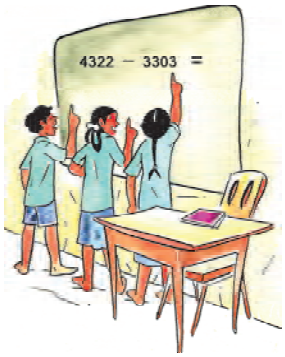
5) 3 9 27 ____ _____ ____

6. Some questions are given below. Understand them and answer carefully:

1. One child can see upto a distance of three kilometers, then how far 6 children can see?
2. Three children plucked 20 mangoes, so how many total mangoes did they pluck together ?
3. There were 20 birds sitting on a tree. A hunter fired a shot at a bird but missed, now how many birds are left on the tree?

Have you been able to answer these questions correctly?

Make some more questions of your own and ask your friends to solve them.



CHAPTER-3

Profit and Loss

Sanjay's father has a fruits shop. One day his father was writing some calculations on a piece of paper. Sanjay was watching it. The calculations were as shown below.

Item	Bought (in Rs.)	Sold at (in Rs.)
Apples	650	730
Bananas	300	380
Grapes	250	200
Oranges	300	300



His father said - Today, a profit was made on apples and Bananas and a loss on grapes.

Sanjay asked - How?

Father - I sold the apples and bananas at a price which was more than the price at which I bought them so there was a profit on those. But the grapes were sold at a price lower than the price at which I bought them. So there was a loss on those.

Sanjay - Why did you get less price for the grapes?

Father - Because some of the grapes were rotten.

Sanjay - You bought orange for Rs. 300 and sold them for the same price.

Father - Yes, so there was neither a profit nor a loss on the sale of oranges.

Now you know-

If a shopkeeper sells at a price higher than the buying price a profit is made and if he sells at a price lower than the buying price, a loss is made.

The price at which items are bought is known as cost price and the price at which it is sold is known as selling price.

In the table below, are given the cost price and selling price of certain items. Understand and complete the table.



Cost price	Selling price	Profit, or Loss, ...	Amount in Rs.
145	165		
525	540		
330	330		
480	510		
640	635		

Profit = selling price - cost price

Loss = cost price - selling price

So if we have the cost price and selling price, we can get the profit or the loss incurred.

Example 1 : One shopkeeper bought a fan for Rs. 525 and sold it for Rs. 575, what is his profit or loss?

Solution :



Cost price of the fan = Rs. 525

Selling price of the fan = Rs. 575

The selling price is more than the cost price so there was a profit.

As profit = selling price - cost price

= 575 - 525

= Rs. 50

So the shopkeeper made a profit of Rs. 50

Example 2 : Balram bought a watch for Rs. 330 and sold it for Rs. 250, so what was his profit or loss?

Solution : The cost price of the watch = 330

The selling price of the watch = Rs. 250

Here the cost price is more than the selling price, So Balram incurred a loss.

and as loss = cost price - selling price

= 330 - 250

= Rs. 80



Hence Balram had a loss of Rs. 80.

If we know the cost price of an item and its profit or loss, then could we calculate its selling price? Let us see how-

Example 3 : If the cost price of an item is Rs. 700 and the shopkeeper made a profit of Rs. 50 on selling it, what would be its selling price?

Solution : The cost price is Rs. 700.

Profit made Rs. 50.

Since a profit of Rs. 50 has been made, the selling price should be more than the cost price and we will get it by adding the cost price and profit-

Selling price = cost price + profit

= 700 + 50

= Rs. 750



So the selling price is Rs. 750.

Example 4 : If an item was bought for Rs. 900 and on selling it a loss of Rs. 70 was incurred then find the selling price.

Solution : Cost price - Rs. 900

Loss - Rs. 70

Since an item of Rs. 900 was sold at a loss of Rs. 70 the selling price would be less than the cost price and we shall get it by subtracting the loss from the cost price.

Selling price = Cost price - Loss

= 900 - 70

= Rs. 830

Thus, the selling price of the item would be Rs. 830

Now let us see how can we get the cost price if we are given the selling price along with the profit or loss.

Example 5 : On selling an item for Rs. 560, a shopkeeper makes a profit of Rs. 70, what would be its cost price?

Solution :

Here the selling price = Rs. 560

profit = Rs. 70

By selling at Rs. 560, a profit of Rs. 70 is made and the cost price will be lesser than the selling price which we would get by subtracting the profit from the selling price.

Hence, cost price = selling price - profit

= 560 - 70

= Rs. 490

So the cost price of the item would be Rs. 490

Example 6 : If the selling price of an item is Rs. 480 and a loss of Rs. 56 is incurred, what would be its cost price be?

Solution :

By selling at Rs. 480, a loss of Rs. 56 is made which means the cost price would be more than the selling price.

To find the cost price we have to add the selling price and the loss.

Hence, cost price = Selling price + loss

= 480 + 56

= Rs. 536

The cost price of the item is Rs. 536



Exercise

1. The amount of loss or profit :

1. Cost price Rs. 136, selling price Rs. 143, profit Rs. 7
2. Cost price Rs. 452, selling price Rs. 430, _____ _____
3. Cost price Rs. 512, selling price Rs. 580, _____ _____
4. Cost price Rs. 750, selling price Rs. 775, _____ _____
5. Cost price Rs. 645, selling price Rs. 650, _____ _____

2. Fill in the blanks :

1. Selling price Rs. 725, cost price Rs. 650, so profit or loss _____
2. Cost price Rs. 980, loss Rs. 250, so selling price _____
3. Selling price Rs. 830, profit Rs. 125, so cost price _____
4. Selling price Rs. 675, loss Rs. 50, then cost price _____
5. Cost price Rs. 565, profit Rs. 35, so selling price _____

Statement Sums

1. A trader bought 100 kg. of wheat for Rs. 850 and sold it at the rate of Rs. 95 for 10 kg. so how much profit or loss did he make?
2. Raju bought 20 litre milk for Rs. 200 and sold it for Rs. 12 per litre. What was his profit or loss?
3. Jamuna bought a fan and sold it for Rs. 690 at a loss of Rs. 180. Find the cost price of the fan.
4. Mona bought a clock for Rs. 435 and he wants sell it at a profit of Rs. 55, so what would its selling price be?
5. Sunil sold 5 chairs for Rs. 850. He made a profit of Rs. 100, so what was the cost price of the chairs.
6. Bharti bought a cow for Rs. 3750 and sold it after a few days at a profit of Rs. 150, so what was its selling price?

7. Suresh sold a fan for Rs. 895 at a loss of Rs. 52. What was the cost price of the fan?

8. Geeta bought 5 watches for Rs. 805 and sold three of them for Rs. 182 and two of them for Rs. 138. Did Gopal make profit or did he incur a loss?

9. Deepak bought 5 kg. sugar at the rate of Rs. 20.25 per kg. He sold 3 kg sugar at the rate of Rs. 20 per kg and 2 kg sugar at the rate Rs. 21.30 per kg. Did he make a profit or loss?

10. A shopkeeper bought a sack of rice for Rs. 1250 and sold it at a profit of Rs. 75. What was its selling price?



CHAPTER- 4

Unitary Method

You are given below a list of items and their unit cost.

Look at it carefully-

Pen	-	Rs. 5	Pencil	-	Rs. 2
Rubber	-	Rs. 1	Copy	-	Rs. 6
Box of chalk	-	Rs. 12	Slate	-	Rs. 15

From the above given rates, complete the table given below :-



S.No.	Item	Quantity	Cost
1.	Pen	08	
2.	Slate	05	
3.	Pencil	10	
4.	Rubber	10	
5.	Copy	06	
6.	Box of chalk	03	

What did you do to complete the table?

Ask your friends how they completed the table?

Have you used the same methods as your friend? Discuss this with your teacher.

If the rate of each item is known and we want to find the cost of several items, we have to multiply the number of item bought with the rate of each item.

Example 1 : If the rate of one copy is Rs. 8, then what would the price of 6 copies?

Solution : Given that the cost of one copy = Rs. 8

We have to find the cost of 6 copies = ?

Number of copies	cost
1	Rs. 8
6	?

As the cost of each copy = Rs. 8

Therefore the cost of 6 copies = $8 \times 6 = 48$

Example 2 : What would the cost of 5 watches, if the cost of each is Rs. 350?

Solution : Given that cost of one watch = Rs. 350

We need to find the cost of 5 watches = ?

Number of watches	Cost (in Rs.)
1	Rs. 350
5	?

The methematical symbol since is ∵ and for therefore is ∴

Since the cost of one watch = Rs. 350

Therefore the cost of 5 watches = 350×5 = Rs. 1750

Look at the table given below :

S.No.	Item	Quantity	Cost
1.	Pen	7	Rs. 28
2.	Register	5	Rs. 60
3.	Chalk	6 Boxes	Rs. 72
4.	Pencil	10	Rs. 20

On reading the table we get the cost of 7 pens, 5 registers, 10 pencils but not the cost of 1 pen, 1 register or 1 pencil.

- Can you use the information given in the table to find the cost of 1 pen?
- Discuss with your friends.
- Before this we have found out the cost of many items when the cost of one item was given.
- Now we need to find the cost of one item when the cost of many items are given. The method we need to follow is exactly the opposite of the earlier method.
- You know that the operation opposite to multiplication is division. So when we want the cost of one item from the cost of many we have to divide the cost by the number of items.

Come let us find a solution-

We are given the cost of 7 pens = Rs. 28

We want to find the cost of 1 pen = ?

Number of pens	Cost
7	Rs. 28
1	?

The cost of 7 pens = Rs. 28

The cost of 1 pen = 28 ÷ 7 = Rs. 4

Now use the information given in the above table and find the cost of one register, one pencil and one box of chalk sticks.

Meeta's problem

Meeta's brother got some vegetables from the market. Meeta asked- 'How much did you pay for this bottle gourd?' Her brother said- 'I bought the 2 kg. bottle gourd for Rs. 12.' Her brother thought he would test Meeta's mathematical ability, so he asked- 'Meeta, can you tell me how much I have to give for 10 kg. bottle gourd?'

Meeta thought to herself- I know how to find the cost of one when the cost of many is given. I also know how to find the cost of many when the cost of one is given however here I have been given the cost of many and I have to find the cost of a different number. Let me write it down

Meeta wrote is her copy-

Quantity of gourd	**Cost**
∵ 2 kg	Rs. 12
∴ 1 kg	12 ÷ 2 = Rs. 6
∴ 10 kg	10 × 6 = Rs. 60

Her brother looked at the solution and said- 'You are absolutely correct, Meeta. You are very clever.

Example 3 : If the cost of 12 kg. tomatoes is Rs. 60, then what is the cost of 15 kg. of tomatoes?

Solution : Given that the cost of 12 kg. of tomatoes = Rs. 60

We have to find the cost of 15 kg. of tomatoes = ?

Kilogram	Cost (in Rs.)
12	Rs. 60
15	?

12 kg. tomatoes cost = Rs. 60

1 kg. tomatoes cost = $60 \div 12$ = Rs. 5

15 kg. tomatoes cost = 5×15 = Rs. 75

Example 4 : If the cost of 6 chairs is Rs. 642, what is the cost of 4 chairs?

Solution : Given that the cost of 6 chairs is Rs. 642

We have to find the cost of 4 chairs = ?

Number of chairs	Cost (in Rs.)
6	642
4	?

$\because$ Cost of 6 chairs = Rs. 642

$\therefore$ Cost of 1 chair = $642 \div 6$ = Rs. 107

$\therefore$ Cost of 4 chairs = 107×4 = Rs. 428



Exercise

1. If 1 kg. grapes are available for Rs. 35, how much would 7 kg grapes cost.
2. Find the cost of 1 cycle when 3 cycles cost Rs. 6360.
3. If a labour charges Rs. 385 for 7 days work, then what amount would he take for 12 days?
4. If 3 litre of petrol costs Rs. 156, what is the cost of 8 litre of petrol?
5. If the cost of 5 kg sugar is Rs. 60, how much sugar would you get for Rs. 120?
6. How many cups of capacity 200 ml.would be needed to fill 1600 ml. of milk?
7. 3 pens can be bought for Rs. 15; How much would you have to pay to buy 15 pens?
8. One packet containing 5 pencils is available for Rs. 13. Another packet containing 10 pencils is available for Rs. 25. Which packet has a lesser rate per pencil?

CHAPTER- 5

Average



Raju has a milkman living in his neighbourhood. One day Raju asked him how much milk do you get everyday? The milkman told him 30 liters. Raju said, "You have 5 cows which means each cow gives around 6 litre of milk." The milkman said, "No, some cow gives more than 6 litre and some give less than 6 litre, but in all there is a total of 30 litre of milk.

Raju : How is that? I don't understand.

Milkman : The white cow gives 3 liters, the red one gives 4 litre, the brown cow gives 6 litre and both the black ones give 7 and 10 litre respectively. Does it not add to give 30 liters?

Raju could not understand this and he thought a lot about it, After going to school he asked his teacher if 5 cows give a total of 30 liters milk each cows would give 6 liters but the milkman told him that the cows gave 3,4,6,7 and 10 liters of milk.

Teacher : Raju what is the least amount of milk given by the cows.

Raju : 3litre.

Teacher : And the maximum amount?

Raju : 10 litre.

Teacher : The 6 litre you talked about is in the middle of these two. The measure of this middle value is known as an average.

Raju : How did we get this average?

Teacher : The very method by which you found it. Come let us do it on the blackboard and understand this properly.

The number of cows = 5

The amount of milk given by each = 3,4,6,7 and 10 litres

The total quantity of milk = 3+4+6+7+10 = 30 litres

If all the cows were to give same amount of milk then

each would give = 30 ÷ 5= 6 litres

Hence each cow gives an average of 6 litres milk. Let as take another example to understand this.

One student measured the height of his classmates and wrote it down as follows:-

Name	Height (in cms)
Santosh	125
Mona	123
Anju	133
Salma	124
Vineet	140
Yash	131
Neha	120

Now let us find the average height of the students

Number of children = 7

The total of their heights = 125+123+133+124+140+131+120 cm

Average = 896 cm ÷ 7

Hence the average height = 128 cm

From the examples given above we can see that the numbers are giving some information. These numbers are called observations.

The height of the students can be taken as observations.

$$\therefore \text{ Average } = \frac{\text{Sum of all the observations}}{\text{Total number of observations}}$$

Example 1 : In a primary school in Navagaon, the attendance of the students of classes 1 to 5 on Tuesday was respectively 15,17,15,14 and 19. What was the average attendance in a class on Tuesday?

The attendance of classes 1 to 5 was 15,17,15,14 and 19

Number of observations = 5

$$\text{Average attendance} = \frac{\text{Sum of all the observations}}{\text{Total number of observations}}$$

$$\text{Average attendance} = \frac{15+17+15+14+19}{5}$$

$$= 80 \div 5$$

$$= 16$$

Hence the average attendance of students of classes 1 to 5 on Tuesday was 16

Example 2 : There are 6 rows in a mango grove. There are 10,15,12,10,11 and 14 trees respectively in the rows. So what is the average number of trees in each row?

$$\text{Average} = \frac{\text{Sum of the observations}}{\text{Total number of observations}}$$

$$\text{Average} = \frac{10+15+12+10+11+14}{6}$$

$$= 72 \div 6$$

$$= 12$$

Thus, there are 12 trees on an average in each row in the mango grove.



Exercise

1. A vegetable vendor's earnings in 5 days were Rs. 45, Rs. 50, Rs. 43, Rs. 52 and Rs. 60 respectively. What was his average earning?
2. Ramlal has 3 cows which give 12 litre , 8 litre and 7litre of milk respectively. So what is the average milk given by Ramlal's cows?

3. The weight of four students of class 4 is 27,23,28 and 30 kg respectively. Find the average weight.

4. Deepak secured 38 marks in Hindi, 42 in Mathematics, 41 in environmental science and 65 in English during quarterly examination. Find the average marks.

5. Rukhsana has 6 vessels of 25,27,24,32,33 and 15 litre respectively. Find the average capacity of the 6 vessels.

6. A family of five members have a monthly income of Rs. 1650, Rs. 2500, Rs. 2300, Rs. 2000 and 1900 respectively. What is their average income?

7. Amit paid Rs. 180, Rs. 140, Rs 210, Rs. 785, Rs. 205 and Rs. 208 respectively as the telephone bill for 6 months. So what was the average payment that he made each month?

8. A cricketer made 60, 75, 100, 25 and 50 runs respectively in five matches. So what was his average score in each match?

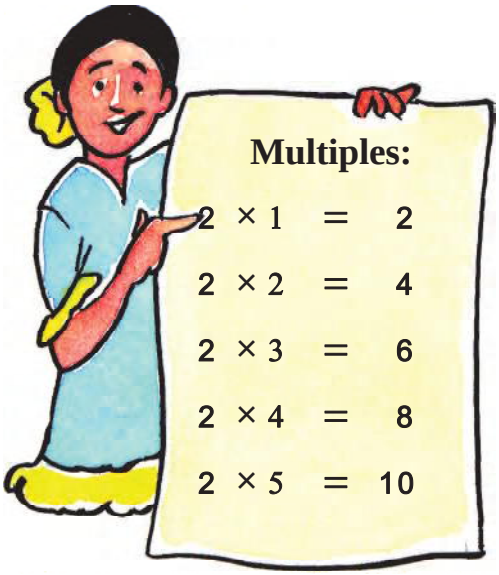
9. Niti, Riti, Ranu and Sweety, Paro and Shalu made respectively 24, 23, 15, 40, 25 and 35 chapattis. What was the average number of chapattis made by each?

10. One vegetable vender sold respectively 250, 275, 310, 280, 320, 300, 330 Rupees worth of vegetables in a week. So what was his average sale in that week ?

CHAPTER- 6

Multiples and Factors

You have learnt how to multiply by making use of tables. We shall talk more about the values you get when you make use of tables and multiply the number respectively by 1,2,3,...



By multiplying 2 with 1,2,3..... respectively we get 2,4,6,.... There are known as multiples of 2.

When we divide these numbers by 2

They get completely divided without a remainder.



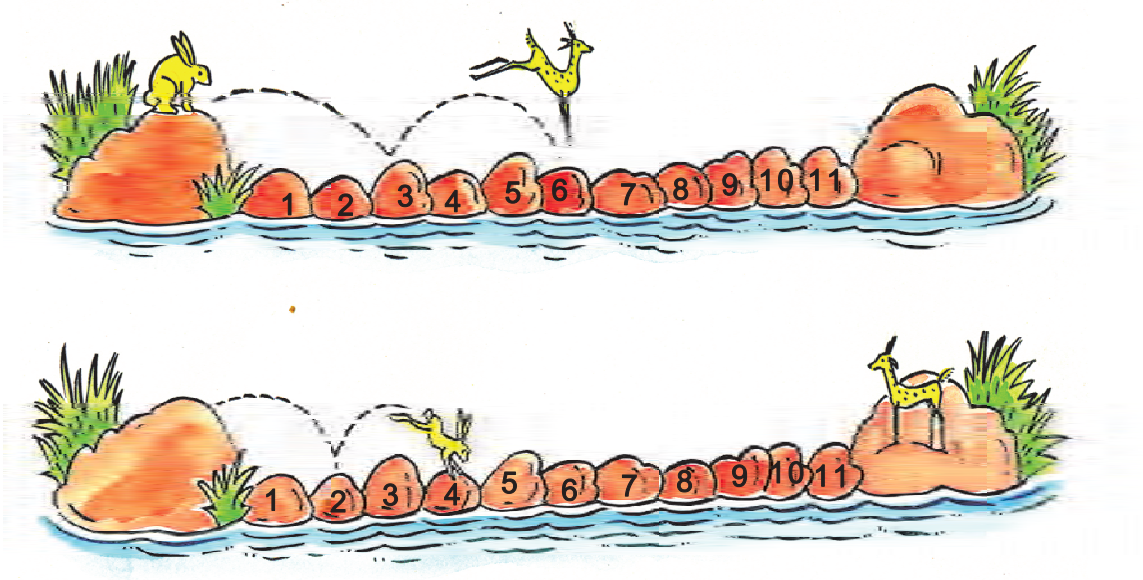
Now we will do the same with 3.

3 × 1	=	3
3 × 2	=	.....
3 × 3	=	.....
3 × 4	=	.....

On multiplying 3 by 1,2,3,4.... what numbers do we get? Write in the space given below:

.....

The numbers you have written here are all multiples of 3. On dividing these numbers by 3 they get completely divided without a remainder.



Look at the picture and answer the questions:

- The deer will jump on which rocks to reach the other side?
- The rabbit will jump on which rocks to reach the other side?

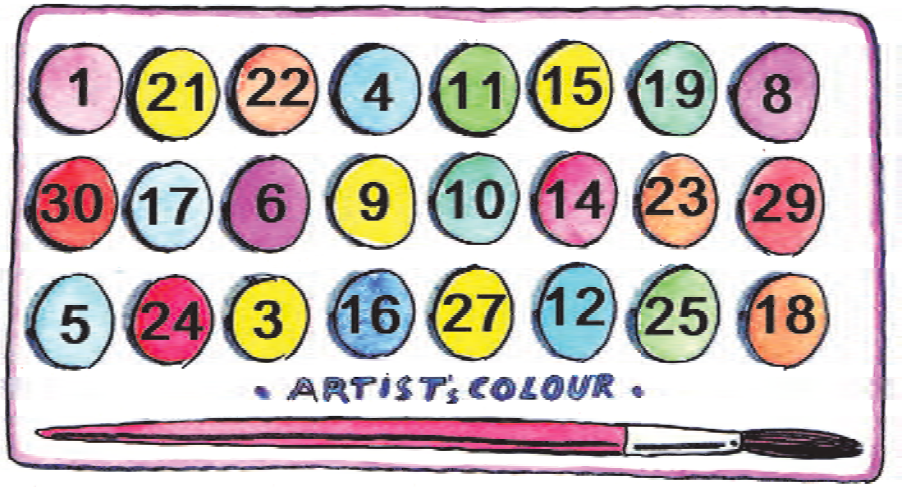
Now multiply the numbers given below by 1,2,3,..... and find their multiples

Multiples of 4 .....

Multiples of 5 .....

Multiples of 9 .....

Look at the numbers given below and answer the given questions:



- Which of them are multiple of 2?

  .....

- Can you write four multiples of 2 which are not given?

  .....

- Which of them are multiples of 4?

  .....

- Can you write three multiples of 4 which are not given?

  .....

- Besides 2 and 4 which other numbers multiples are given here?

  .....

- Out of the given numbers which are not the multiples of 2?

  .....

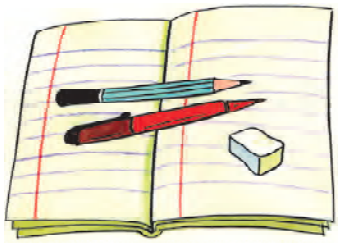
- Which are the given numbers which are not the multiples of 5?

  .....

- List the numbers which are multiples of 2 and 3 both.

  .....

The biggest multiple



Write as many multiples of 3 as you can.

3,6,9, ...

.....

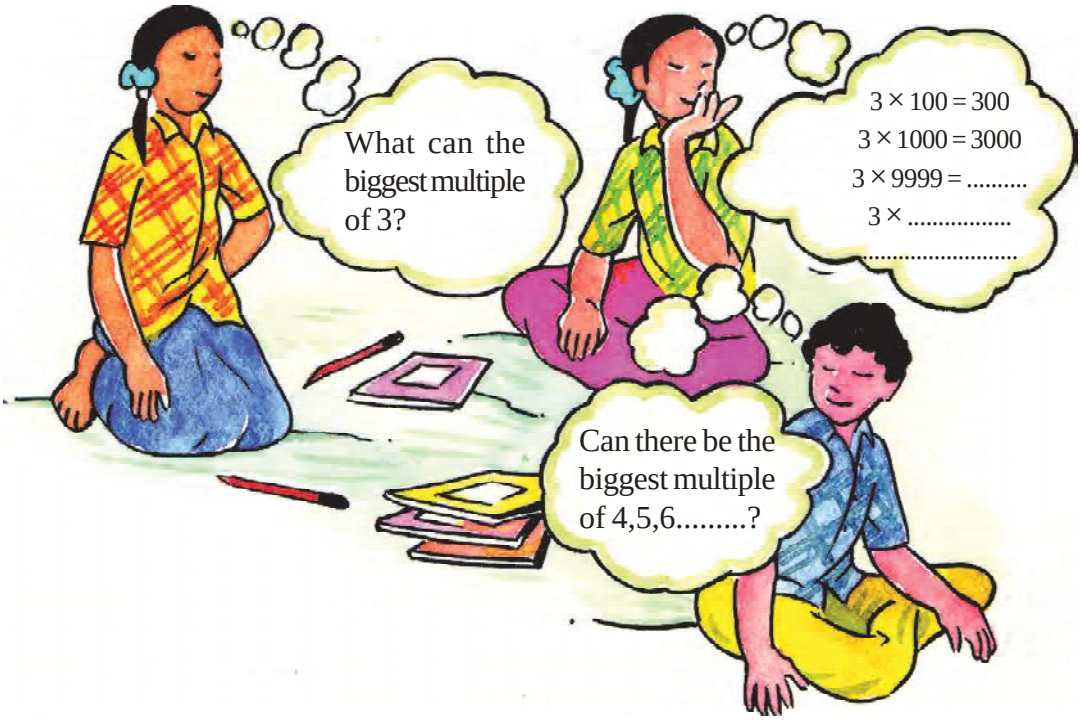
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.....

Which of these is the biggest multiple? .....

Can there be a bigger multiple than this? .....



Least common multiple

Try to identify the multiples of 2 and 3 form the table given below and colour the space given below as shown.

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
Multiples of 2																	
Multiples of 3																	

Observe the table and write:

- The multiples of 3

  .....

- The multiples of 2

  .....

- Are there some numbers which are multiples of both 2 and 3? Note it down.

  .....

These numbers are the common multiples of 2 and 3 both.

Which of these is the smallest common multiple?

.....

This the least common multiple of 2 and 3.

Hence the least common multiple means it is that number which is a multiple both of the given numbers and the smallest of all the common multiples.

Let us find the least common multiple of 4 and 5:

The multiples of 4 : 4, 8, 12, 16, 20, 24, 28, 32, 36, 40, 44, ...

The multiples of 5 : 5, 10, 15, 20, 25, 30, 35, 40, 45, ...

The common multiples of 4 and 5 are

20, 40, ...

and the smallest common multiple = 20

Hence 20 is the smallest number which is divisible completely by both 4 and 5

Now find the least common multiple of the numbers given below:

Example 1 : 2 and 5

Solution : Multiples of 2 .....

Multiples of 5 .....

Common multiples of 2 and 5 .....

The smallest common multiple .....

Hence least common multiple of 2 and 5 is.....



Try these:

(1) 8 and 12

Solution : .....

.....

.....

.....

(2) Can you find the least common multiple of 3 numbers?



Solution :

To find this let us take 3 numbers 6, 10 and 15

Multiples of 6 .....

Multiples of 10 .....

Multiples of 15 .....

Common multiples of 6,10,15 .....

The smallest common multiple .....

Hence the least common multiple of 6,10,15 is .....

Now take two or three numbers and find the LCM and show it to your teacher.

Factors

How can you write 12 as a product of two different numbers?

●●●●●●●●●●●●	1×12	12
●● ●● ●● ●● ●● ●●	2×6	12
●●● ●●● ●●● ●●●	3×4	12
●●●● ●●●● ●●●●	4×3	12
●●●●●● ●●●●●●	6×2	12
●●●●●●●●●●●●	12×1	12

Can you write the number which completely divide 12 and leave no remainders?

.....

All these numbers are factors of 12.

Those number are known as factors of a given number if they completely divide the given number.

Find the factors of the numbers given below:

- Factors of 6 are 1, 2, 3, 6
- Factors of 8 are .....
- Factors of 12 are .....
- Factors of 15 are .....

You can also determine factors by dividing the given number respectively by 1,2,3..... and identifying those which divides the given numbers completely.

Give reasons to say whether the given statements are true or false.

Example 2 :

3 is a factor of 8 **False**

Because 3 does not divide 8 completely and gives a remainder 2 on dividing.

1. 6 is a factor of 36 .....

.....

2. 8 is a factor of 8 .....

.....

3. 5 is a factor of 12 .....

.....

4. 7 is a factor of 25 .....

.....

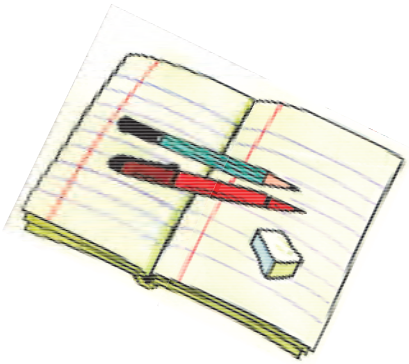
5. 6 is a factor of 48. .....

.....

6. 12 is a factor of 96. .....

.....

Write the factors of the numbers given below:



Factors of 2 .....

Factors of 3 .....

Factors of 4 .....

Factors of 5 .....

Factors of 8 .....

Factors of 12 .....

Factors of 7 .....

1. Which number is a factor of all the numbers?

.....

2. Is there a number which is not a factor of itself?

.....

3. Write down those numbers which have exactly two factors.

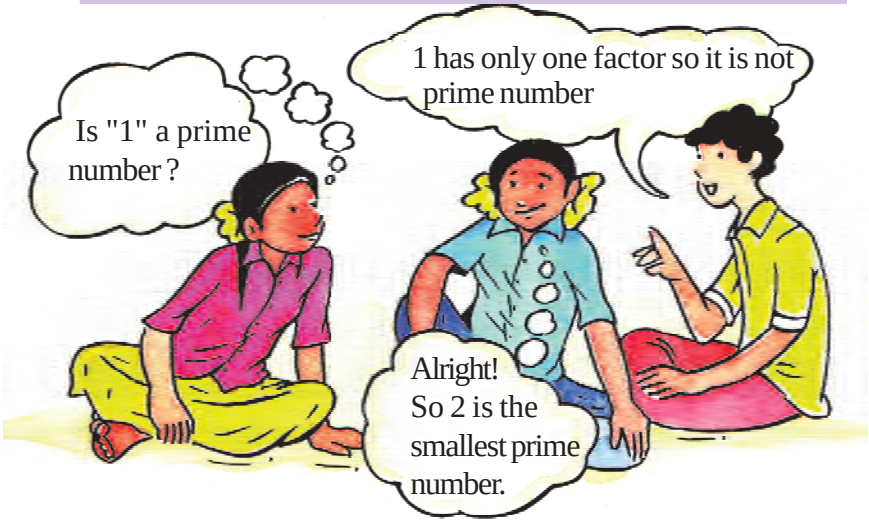
.....

Numbers which have exactly two factors are called prime numbers

The numbers which you have written in which there are numbers which have more than two factors. List those numbers.

.....

Numbers which have more than two factors are called composite numbers



- circle the prime numbers-

  12, 22, 15, 23, 17, 25, 21, 19, 20, 35
- Write the prime numbers between 4 and 10.
- Which is the prime number nearest to 35?
- Write the prime numbers less than 4.
- Write the composite numbers between 1 and 10.

Highest common factor

You know that the factors of a number completely divides that number.

Can you write all the factors of 12?

Let us see which numbers have 12 is their tables.

1,2,3,4,6 and 12

All of these numbers divide 12 completely and are therefore factor of 12

Now write all the factors of 18.

.....

.....

Are there any factors of 18 which are also factors of 12?

Let us write the factors of both 12 and 18.

.....

They are known as the common factors of 12 and 18

Now let us try to find the common factors of 16 and 20.

Factors of 16 - 1, 2, 4, 8, 16

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

The common factors of 16 and 20 are 1, 2 and 4. 4 is the biggest common factor and is known as the highest common factor (HCF)

So, the highest common factor of given numbers is the largest number of the common factors.

Let us find the highest common factor of 16 and 32.

Factors of 16 - 1, 2, 4, 8, 16

Factors of 32 - 1, 2, 4, 8, 16, 32

The common factors are 1,2,4,8 and 16 and the largest among these is 16, hence 16 is the highest common factor of 16 and 32.

Find the HCF of-

(1) 8 and 12 (2) 10 and 20 (3) 16 and 20

(4) 9 and 27 (5) 13 and 39 (6) 15 and 22

Now take any two numbers and find their HCF. Show the result to your teacher.

Take 12,18 and 24 and find their HCF.

Now take any 3 numbers by yourselves and try finding their HCF. Confirm with your teacher.

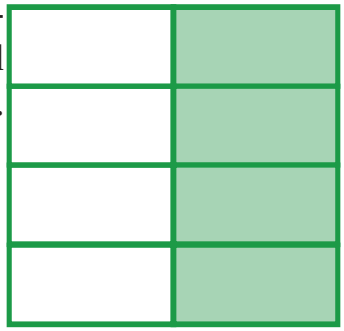
Think and answer-

1. Can you find the smallest multiple of 8 and 12?
2. Can you find the largest multiple of 8 and 12? Discuss with your friends and teacher.
3. What will be the highest common factor of prime numbers like 5 and 7?

CHAPTER- 7

Fractions

Abhay and Kittu were solving some questions of fractions. Kittu showed Abhay the adjacent picture and asked him to write down the fraction to represent the shaded part.

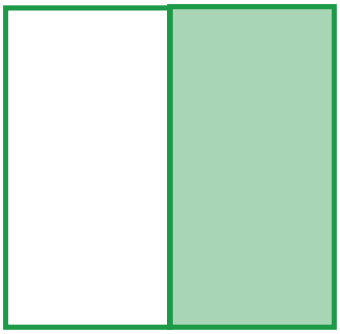


Abhay wrote $\frac{1}{2}$

Kittu said, 'No', it is $\frac{4}{8}$

They started arguing. Ultimately they decided to ask LaxmiDidi as to who was right.

'Laxmi Didi , I am saying that the shaded part representing a fraction is one by two, and Kittu says it is four by eight. Can you tell us who is correct?' Abhay asked.

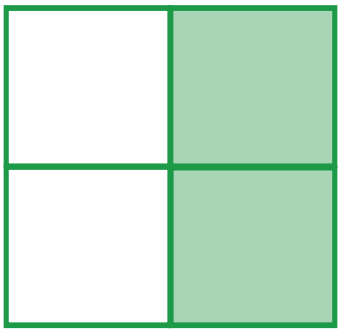


Laxmi Didi smiled and said, "Both of you are right".

"Let us understand by folding a paper. I have taken a paper folded it through the centre and opened it. Now look at it and tell me how many parts are made? And what part is each part of the whole paper?"

"The paper is divided into two equal parts and each part is one by two of the whole", Abhay answered.

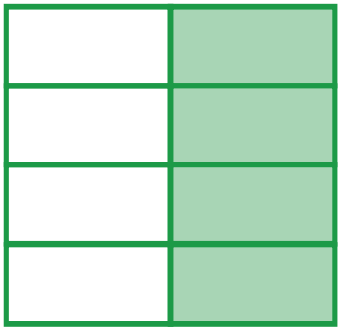
Laxmi didi coloured one half ot the paper and again folded it horizontally and then asked, "Now what part is the shaded part of the whole?"



Kittu said - "Total parts are four and coloured parts are two, so the coloured part is two by four of the whole."

Kittu can we say this as $\frac{1}{2}$?

"Yes, we can say so, since one by two and two by four is the same coloured part of the paper."



Laxmi Didi again folded the paper horizontally and asked- "Now tell me what part is the coloured part of the whole?

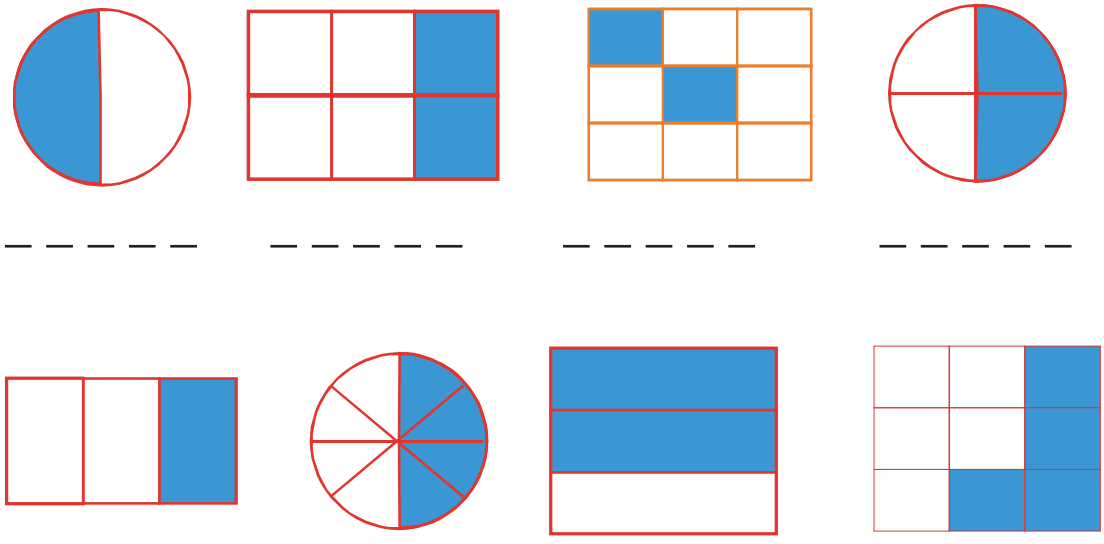
Abhay thought a little and answered, "The total parts of the paper are 8 and coloured parts are four so the coloured part is four by eight of the whole."

"Now think whether one by two, two by four and four by eight are all equal?" Laxmi asked.

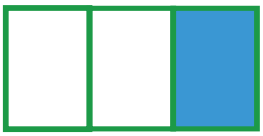
"Yes didi, all three of them are representing the same coloured part. So all three are equal. "Abhay answerd.

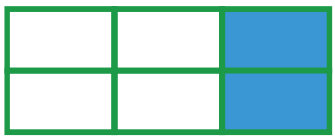
All such fractions which represent the same part of a whole are called equivalent fractions.

Now look at the pictures given below, write the fraction to represent the shaded parts and say which of them are equivalent fractions:



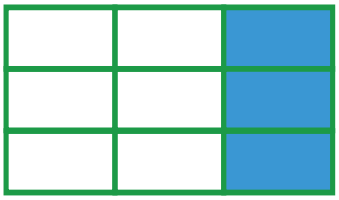
Now write the fraction, represented by the shaded parts in the following pictures:

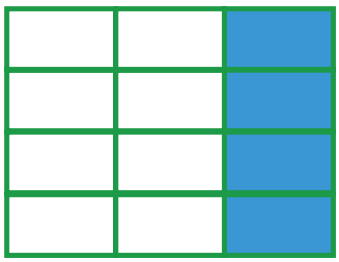




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– – – – –





– – – – –

– – – – –

Is the shaded part the same in all the pictures? .....



Then, are $\frac{1}{3},\frac{2}{6},\frac{3}{9},\frac{4}{12}$ all equivalent fractions? .....

You are right $\frac{1}{3},\frac{2}{6},\frac{3}{9}$ and $\frac{4}{12}$ are all equivalent to each other.

Among these $\frac{1}{3}$ is known as the fraction in the simplest form.

Now, if you were not given any pictures and you had to find equivalent fractions, what would you do?

Let us understand-

You have seen above that the equivalent fractions of $\frac{1}{3}$ are $\frac{2}{6},\frac{3}{9},\frac{4}{12}$,..... etc.

If we factorise the numerator and denominator, we get.

$\frac{2}{6}=\frac{1\times2}{3\times2}$ $\frac{3}{9}=\frac{1\times3}{3\times3}$

$\frac{4}{12}=\frac{1\times4}{3\times4}$

You can see that we are getting equivalent fractions of $\frac{1}{3}$ by multiplying the numerator and denominator with 2,3,4 etc. respectively.

Let us find some equivalent fractions of $\frac{3}{5}$

As mentioned above we would find equivalent fractions of given fraction by multiplying the numerator and denominator by 2,3,4..... respectively.

Hence the equivalent fractions of $\frac{3}{5}$ are:

(i) $\frac{3}{5}\times\frac{2}{2}=\frac{6}{10}$ (ii) $\frac{3}{5}\times\frac{3}{3}=\frac{9}{15}$



(iii) $\frac{3}{5}\times\frac{4}{4}=\frac{12}{20}$ (iv) $\frac{3}{5}\times\frac{5}{5}=\frac{15}{25}$

(v) $\frac{3\times6}{5\times6}=\frac{18}{30}$

Hence equivalent fractions of $\frac{3}{5}$ are $\frac{6}{10},\frac{9}{15},\frac{12}{20},\frac{15}{25}$.....etc.

Exercise

Write equivalent fraction of the following -

1. $\frac{2}{3}$ 2. $\frac{8}{10}$ 3. $\frac{3}{5}$ 4. $\frac{4}{6}$ 5. $\frac{1}{7}$

Can we get equivalent fraction by dividing the numerator and the denominator by any number?

Now if you want to write the simplest form of a fraction,what would you do?

Let us understand-

In the fraction $\frac{8}{12}$.

The common factor of numerator 8 and denominator 4, are 2 and 4.

Therefore, the numerator and denominator can be divided by 2 as well as by 4.

After dividing 2 from the numerator and denominator of $\frac{8}{12}$, we get

$$\frac{8}{12} = \frac{8 \div 2}{12 \div 2} = \frac{4}{6}$$

In the same way by dividing 4 from numerator and denominator, we get

$$\frac{8}{12} = \frac{8 \div 4}{12 \div 4} = \frac{2}{3}$$

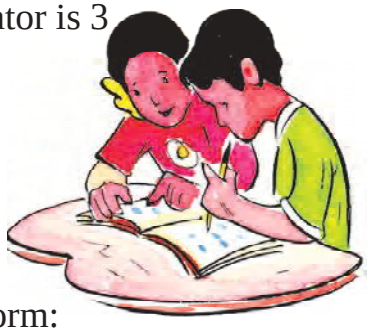
$\because$ By dividing 2 and 4 from the numerator and denominator of $\frac{8}{12}$, we get $\frac{4}{6}$ and $\frac{2}{3}$ which are equivalent fraction of $\frac{8}{12}$, here $\frac{2}{3}$ is the simplest form of $\frac{8}{12}$.

Let us take another fraction $\frac{6}{15}$

The common factor of the numerator and denominator is 3

Hence simplest form of $\frac{6}{15} = \frac{6 \div 3}{15 \div 3} = \frac{2}{5}$

$\therefore$ Simplest form of $\frac{6}{15} = \frac{2}{5}$

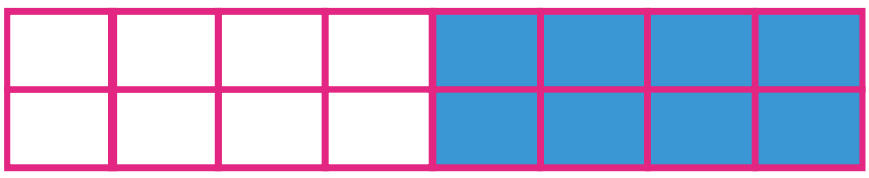


Now write the following fractions is their simplest form:

(i) $\frac{3}{9}$	(ii) $\frac{36}{40}$	(iii) $\frac{4}{12}$	(iv) $\frac{56}{64}$
(v) $\frac{8}{10}$	(vi) $\frac{35}{45}$	(vii) $\frac{12}{20}$	(viii) $\frac{4}{10}$
(ix) $\frac{15}{25}$	(x) $\frac{22}{55}$	(xi) $\frac{4}{5}$	(xii) $\frac{3}{8}$

Do this also:

Write as many equivalent fractions as you can for the shaded part of given picture.



You can use a paper to obtain the different fractions-

Addition and subtraction of fraction -

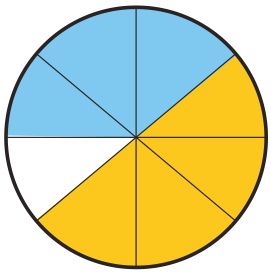
Adding fractions with the same denominator:

Example 1 : Munnu had white washed $\frac{4}{7}$ portion of the wall by the first day and the next day, he white washed the $\frac{1}{7}$ portion. During these two days he white washed $\frac{5}{7}$ portion of the wall.



$\frac{1}{7}+\frac{4}{7}=\frac{5}{7}$ or $\frac{1+4}{7}$

Example 2 : Add $\frac{3}{8}+\frac{4}{8}$ $= \frac{3}{8}+\frac{4}{8} = \frac{7}{8}$ or $\frac{(3+4)}{8}$



Hence we can say-

To add fractions with the same denominators we add the numerators and write it as a numerators and the denominator is written only once.

Solve these -

1. $\frac{5}{16}+\frac{7}{16}=\frac{5+7}{16}=\frac{12}{16}$

2. $\frac{2}{7}+\frac{3}{7}$ = ...=

3. $\frac{5}{8}+\frac{1}{8}$ = ...=

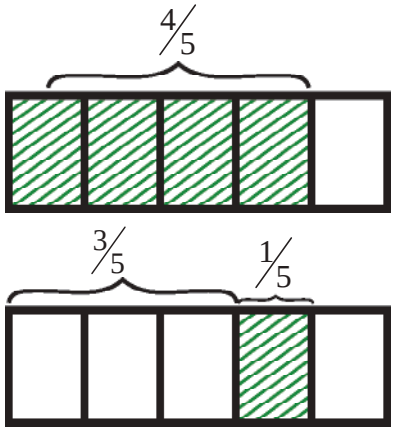
4. $\frac{2}{9}+\frac{6}{9}$= .....=

Let us now learn how to subtract such fractions:

A farmer planted $\frac{4}{5}$ part of the farm

He then harvested $\frac{3}{5}$ of it

So the part left with crops on it was $\frac{1}{5}$

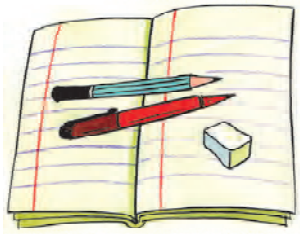


$\frac{4}{5}-\frac{3}{5} = \frac{1}{5}$ or $\frac{4-3}{5}$

Hence we can say-

To subtract fractions with same denominators we subtract the numerators and write it as the numerator and the denominator is written only once.

Subtract:



1. $\frac{2}{3}-\frac{1}{3}=\frac{2-1}{3}=\frac{1}{3}$
2. $\frac{5}{8}-\frac{2}{8}=\ldots\ldots\ldots=\ldots\ldots\ldots$
3. $\frac{4}{7}-\frac{3}{7}=\ldots\ldots\ldots=\ldots\ldots\ldots$
4. $\frac{6}{13}-\frac{2}{13}=\ldots\ldots\ldots=\ldots\ldots\ldots$
5. $\frac{7}{10}-\frac{3}{10}=\ldots\ldots\ldots=\ldots\ldots\ldots$

Addition of fractions with the different denominator



$\frac{1}{3}+\frac{1}{4}=?$

Here denominator of both the fractions are different. We have added fractions with same denominators, so let us try to make the denominators of $\frac{1}{3}$ and $\frac{1}{4}$ the same. This can be done by obtaining equivalent fractions of both these fractions.

Equialent fractions of $\frac{1}{3}$ are $\frac{2}{6},\frac{3}{9},\frac{4}{12},\frac{5}{15},\frac{6}{18}$ .....

Equivalent fractions of $\frac{1}{4}$ are

$\frac{2}{8},\frac{3}{12},\frac{4}{16},\frac{5}{20},\frac{6}{24}$ .....



We see that the equivalent fraction $\frac{4}{12}$ of $\frac{1}{3}$ has same denomi-

nator as equivalent fraction $\frac{3}{12}$ of $\frac{1}{4}$

So $\frac{1}{3}+\frac{1}{4}=\frac{4}{12}+\frac{3}{12}$

Now these can be added as before $\frac{1}{3}+\frac{1}{4}=\frac{4}{12}+\frac{3}{12}$

$\frac{4+3}{12} = \frac{7}{12}$

So $\frac{1}{3}+\frac{1}{4}=\frac{7}{12}$



Let us understand again-

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

The denominators are not same. So we need to find equivalent fractions of $\frac{1}{5}$ and $\frac{1}{2}$ with same denominators:



Equivalent fractions of $\frac{1}{5} = \frac{2}{10},\frac{3}{15},\frac{4}{20},\frac{5}{25}$.....

Equivalent fractions of $\frac{1}{2} = \frac{2}{4},\frac{3}{6},\frac{4}{8},\frac{5}{10},\frac{6}{12}$.....

Out of these the fractions with same denominator are $\frac{2}{10}$ and $\frac{5}{10}$.

Therefore $\frac{1}{5}+\frac{1}{2}=\frac{2}{10}+\frac{5}{10} \quad =\frac{2+5}{10} = \frac{7}{10}$

Hence $\frac{1}{5}+\frac{1}{2}=\frac{7}{10}$

Now do this exercise:

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

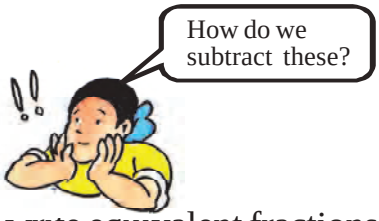
4. $\frac{3}{4}+\frac{2}{8}$ 5. $\frac{3}{7}+\frac{1}{3}$ 6. $\frac{6}{7}+\frac{7}{8}$

Subtraction of fractions with different denominators.

You have learnt how to add fractions with different denominators. Now see some examples of how to subtract fractions with different denominators.

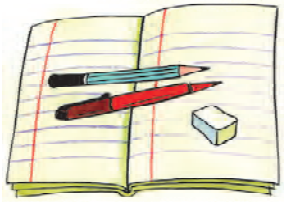
Example:

$\frac{2}{3} - \frac{1}{4} = ?$



To find fractions with same denominator, we will have to write equivalent fractions.

Equivalent fractions of $\frac{2}{3}$ are $\frac{4}{6}, \frac{6}{9}, \frac{8}{12}, \frac{10}{15}, \frac{12}{18}$.....



Equivalent fractions of $\frac{1}{4}$ are $\frac{2}{8}, \frac{3}{12}, \frac{4}{16}, \frac{5}{20}, \frac{6}{24}$.....

The fractions with same denominator are $\frac{8}{12}$ and $\frac{3}{12}$

So $\frac{2}{3} - \frac{1}{4} = \frac{8}{12} - \frac{3}{12}$

$= \frac{8-3}{12} = \frac{5}{12}$

$\therefore \quad \frac{2}{3} - \frac{1}{4} = \frac{5}{12}$



Now do these exercise:

1. $\frac{2}{3} - \frac{1}{6}$ 2. $\frac{1}{2} - \frac{1}{4}$ 3. $\frac{1}{3} - \frac{1}{6}$

4. $\frac{4}{5} - \frac{1}{2}$ 5. $\frac{6}{7} - \frac{2}{3}$ 6. $\frac{4}{9} - \frac{1}{3}$

Note : - *Addition and subtraction of the fractions can be done by finding the L.C.M. of denominators. Get it confirmed with your teacher.*

Multiplication of fractions:

Multiplication of fraction by a whole number :-

You have multiplied two whole numbers. Let us how to multiply a fraction by a whole number?

1. $\frac{2}{10} \times 3 = \frac{2}{10} + \frac{2}{10} + \frac{2}{10}$

$= \frac{2+2+2}{10} = \frac{6}{10}$



Can we write this as?

$\frac{2}{10} \times 3 = \frac{2 \times 3}{10} = \frac{6}{10}$

2. $\frac{3}{16} \times 4 = \frac{3}{16} + \frac{3}{16} + \frac{3}{16} + \frac{3}{16}$

$= \frac{3+3+3+3}{16} = \frac{12}{16}$

Can we write this as?

$\frac{3}{16} \times 4 = \frac{3 \times 4}{16} = \frac{12}{16}$

Do the questions given below by both these methods. Are the answers same?

$\frac{2}{8} \times 3 = \frac{2}{8} + ---+-=$ or $\frac{2 \times 3}{8} = ------ = (\quad)$

$\frac{3}{14} \times 2 = \frac{3}{14} + ----= $ or $\frac{3 \times 2}{14} = ------ = (\quad)$

$\frac{5}{21} \times 4 = \frac{5}{21} + --+--+--= $ or $\frac{5\times}{21} = ------ = (\quad)$

$\frac{3}{9} \times 2 = ----------= $ or $----------= (\quad)$

Multiplying a fraction by a fraction -

The sums you did above have a fraction as a multiplicant and a whole number as a multiplier. If both these were fractions, how would you multiply? Let us understand -

Solve :- $\frac{1}{2} \times \frac{1}{3}$

We can say these as $\frac{1}{3}$ of $\frac{1}{2}$.

Try to remember that what did you do when you wanted to get $\frac{1}{3}$ of one.

By the same way we will get $\frac{1}{3}$ of $\frac{1}{2}$.

First of all divide one unit into two equal parts. Each part shows $\frac{1}{2}$ of 1 unit. Dark any one part.

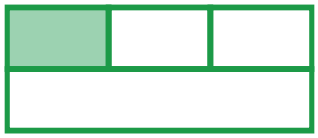


Now, we will find its $\frac{1}{3}$ part. Mark 3 equal parts of the darken part. Each part shows $\frac{1}{3}$ of $\frac{1}{2}$.



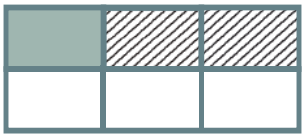
Now put colours on any one of the darken portion.

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



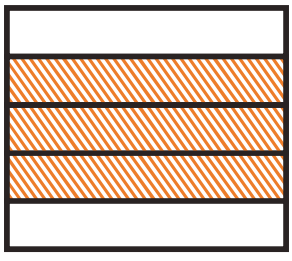
But each part is $\frac{1}{6}$ of the whole

$\therefore \frac{1}{2}\times\frac{1}{3}=\frac{1}{6}$



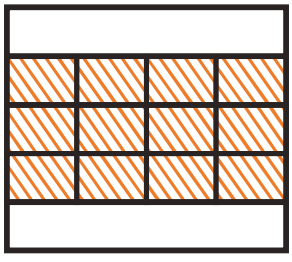
Take one more example-

Shade $\frac{3}{5}$ th part of one whole.

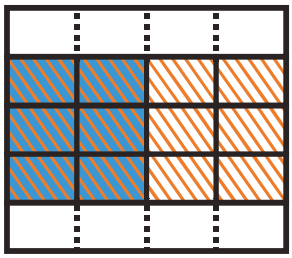


Then to obtain $\frac{2}{4}$ th part of this we divide it into 4 equal parts. Each part shows $\frac{1}{4}$ of $\frac{3}{5}$.

We need two such parts to get $\frac{2}{4}$ of $\frac{3}{5}$. So those two parts represent $\frac{2}{4}\times\frac{3}{5}$



But the whole is divided into 20 parts $\frac{3}{5}$ and we have taken 6 parts out of those. So the shaded parts represents $\frac{6}{20}$ of the whole.



Hence $\frac{3}{5}\times\frac{2}{4}=\frac{6}{20}$

Yes, so, this is same as

$\frac{3}{5}\times\frac{2}{4} \quad = \frac{3\times2}{5\times4} \quad = \frac{6}{20}$

So, when two fractions are multiplied the resulting fraction is obtained by multiplying the respective numerators and the respective denominators. This resulting fraction is the product of the two given fractions.

Solve these:



1. $\frac{3}{7}\times\frac{2}{3}$

   Product of numerators $3\times2=6$

   Product of denominators $7\times3=21$

   Write 6 as the numerator and 21 as denominator so we get $\frac{6}{21}$.

   $\therefore \quad \frac{3}{7}\times\frac{2}{3}=\frac{6}{21}$

2. $\frac{4}{5}\times\frac{3}{4} = \frac{4\times3}{5\times4} = \frac{12}{20}$

Now you try these:

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

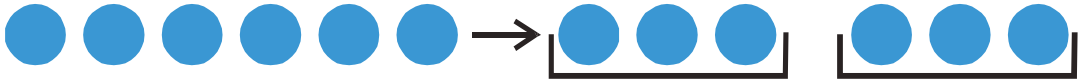
3. $\frac{1}{2}\times\frac{2}{9}$ 4. $\frac{2}{9}\times5$

5. $5\times\frac{2}{9}$ 6. $\frac{10}{11}\times\frac{3}{8}$

Division of fractions-

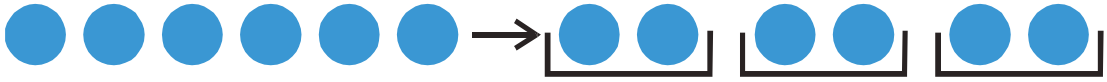
Some questions related to division have been solved below try to understand them:

$6\div3=?$ means we have to divide 6 in group of 3. (or we see how many 3's are there in 6 ?) Let us see-



There are two group of 3 in 6 $\therefore\ 6 \div 3 = 2$

$6 \div 2 = ?$ means how many group of 2 are there in 6 ?



There are three group of 2 in 6 hence $\therefore\ 6 \div 2 = 3$

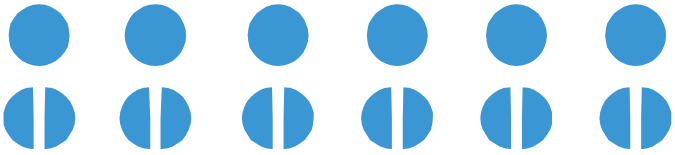
$6 \div 1 = ?$ means how many ones can you take from 6 ?



We have 6 ones $\therefore\ 6 \div 1 = 6$

Now let us see what we mean when we have $6 \div \frac{1}{2} = ?$

$6 \div \frac{1}{2}$ means how many $\frac{1}{2}$ are there is 6 ?



There are 12 pieces, each piece is $\frac{1}{2}$

$\therefore\ 6 \div \frac{1}{2} = 12$

Or in other words one item has 2 halves

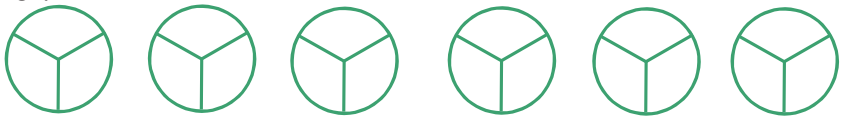
So 6 items have $6 \times 2 = 12$ halves

$\therefore\ 6 \div \frac{1}{2} = 12 \qquad (= 6 \times 2)$

Do we get the same result shown above when the division is a fraction? Let us find out-

$6 \div \frac{1}{3} = ?$

How many $\frac{1}{3}$ are there in 6 ?



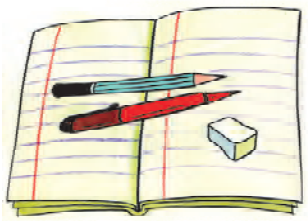
There are 18, $\frac{1}{3}$ in 6

$\therefore \quad 6 \div \frac{1}{3} = 18 \qquad \therefore \quad 6 \times \frac{3}{1} = 18$

$\therefore \quad 6 \div \frac{1}{3} = 6 \times \frac{3}{1} = \frac{6 \times 3}{1} = 18$

So when you want to divide a fraction, write the numerator of divisor as denominator and denominator as numerator. (reciprocal) and multiply with the dividend.

Understand this further-



Example 4 : Solve $9 \div \frac{1}{2}$

Solution : $9 \div \frac{1}{2} = \frac{9 \times 2}{1} = \frac{18}{1}$

Example 5 : Solve $\frac{2}{3} \div \frac{3}{5}$

Solution : $\frac{2}{3} \div \frac{3}{5} = \frac{2}{3} \times \frac{5}{3}$ [By interchanging the numerator and denominator of divisor and further multiplying it through dividend.]

$= \frac{2 \times 5}{3 \times 3}$

$= \frac{10}{9}$

Hence $\frac{2}{3} \div \frac{3}{5} = \frac{10}{9}$

Now solve the questions given below :

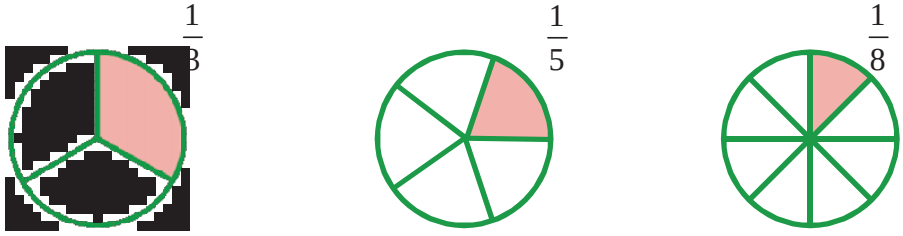
1. $\frac{4}{6} \div 2$
2. $6 \div \frac{1}{2}$
3. $8 \div \frac{3}{4}$
4. $\frac{3}{4} \div 6$
5. $\frac{2}{5} \div \frac{3}{9}$
6. $5 \div \frac{4}{5}$

Statement sums

1. Raju plucked two papayas. One of them weighed $\frac{1}{4}$ kg. and the other weighed $\frac{1}{2}$ kg, so what is their total weight?
2. Ritesh drank $\frac{1}{3}$ litre of milk daily and Seema drank $\frac{1}{4}$ litre of milk. So how many litres of milk did they consume?
3. Ajay daily jogs $\frac{2}{5}$ km. and Sheelu jogs $\frac{1}{3}$ km. How many km. more than Ajay does Sheelu jog?
4. If a rectangular tile has $\frac{3}{5}$ metre as the length and $\frac{1}{2}$ metre as its breadth, What is its area? (Area of a rectangle = length × breadth)
5. Sarita had $\frac{8}{10}$ kg. of sweet. She gave $\frac{1}{2}$ of this to Radha. How many kg. of sweet is left for ?

Comparing fractions-

Look at these pictures given below:



These three circles are of the same size.

First circle has been divided into 3 equal parts.

Each part = $\frac{1}{3}$

Second circle has been divided into 5 equal parts

Each part = $\frac{1}{5}$

Third circle has been divided into 8 equal parts = $\frac{1}{8}$

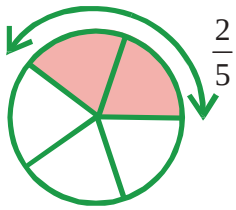
The total parts of the first circle is less.

So the size of the parts of this circle are bigger than the other two.

Or $\frac{1}{3} > \frac{1}{8}$ similarly $\frac{1}{5} > \frac{1}{8}$

If the numerator of the fractions is same then the fraction with a smaller denominator is bigger, and the fraction with a bigger denominator is smaller.

Which of the fractions $\frac{2}{5}$ or $\frac{3}{5}$ is bigger?

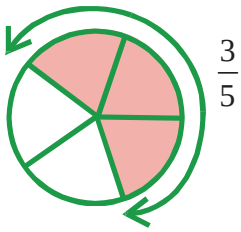


$\frac{2}{5}$ means 2 parts of the 5 equal parts

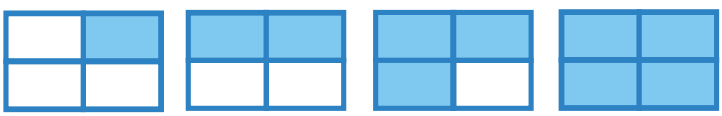
$\frac{3}{5}$ Means 3 parts of the 5 equal parts

So obviously 3 parts are more than 2

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



Now write the fraction for the following:



Arrange the fractions is an increasing order.

.....

Are the numerators of these fractions the same?

.....

Are the denominator of these fractions the same?

.....

When the denominators are same, the fractions with bigger numerators are bigger or smaller?

.....

When the denominators are same, the fractions with smaller numerators are bigger or smaller?

.....

If the denominators of the fractions are same, the ones with bigger numerators is big.

Fill the blanks with <, > :-

1. $\frac{3}{7}$ ---------- $\frac{6}{7}$
2. $\frac{3}{5}$ ---------- $\frac{3}{9}$
3. $\frac{4}{5}$ ---------- $\frac{2}{5}$
4. $\frac{20}{29}$ ---------- $\frac{2}{29}$
5. $\frac{5}{13}$ ---------- $\frac{5}{8}$
6. $\frac{4}{9}$ ---------- $\frac{4}{15}$
7. $\frac{11}{17}$ ---------- $\frac{12}{17}$
8. $\frac{3}{8}$ ---------- $\frac{5}{8}$

Write the following fractions is an ascending (increasing) order -

1. $\frac{1}{4}, \frac{3}{4}, \frac{2}{4}, \frac{4}{4}$

.....

2. $\frac{3}{5}, \frac{1}{5}, \frac{2}{5}, \frac{4}{5}$

.....

3. $\frac{5}{11}, \frac{7}{11}, \frac{4}{11}, \frac{8}{11}$

.....

4. $\frac{3}{8}, \frac{3}{5}, \frac{3}{16}, \frac{3}{14}$ .....

5. $\frac{8}{9}, \frac{5}{9}, \frac{7}{9}, \frac{4}{9}$ .....

6. $\frac{1}{2}, \frac{1}{10}, \frac{1}{8}, \frac{1}{9}$ .....

Write the following fractions in the descending (decreasing) order:

1. $\frac{7}{10}, \frac{5}{10}, \frac{1}{10}, \frac{9}{10}$ .....

2. $\frac{2}{7}, \frac{2}{25}, \frac{2}{13}, \frac{2}{17}$ .....

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

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

5. $\frac{6}{9}, \frac{6}{14}, \frac{6}{13}, \frac{6}{7}$ .....

6. $\frac{3}{14}, \frac{3}{19}, \frac{3}{25}, \frac{3}{16}$ .....

To be able to compare two fractions, we need to have either equal numerators or equal denominators. If we get two fractions which have different numerators and denominators what would we do?

Let us see whether $\frac{2}{3}$ is bigger or smaller than $\frac{4}{5}$

Since both the numerators and denominators are different we shall try to find equivalent fractions of both and see whether we can get one with same denominators.

Equivalent fractions of $\frac{2}{3}$ are $\frac{4}{6}, \frac{6}{9}, \frac{8}{12}, \frac{10}{15}, \frac{12}{18}, ------$

Equivalent fractions of $\frac{4}{5}$ are $\frac{8}{10}, \frac{12}{15}, \frac{16}{20}, \frac{20}{25}, \frac{24}{30}, -----$

The equivalent fractions of $\frac{2}{3}$ and $\frac{4}{5}$ with same denominators are $\frac{10}{15}$ and $\frac{12}{15}$ respectively.

$\because \quad 12 > 10$

$\therefore \quad \frac{12}{15} > \frac{10}{15}$

$\because \quad \frac{4}{5} > \frac{2}{3}$

$\therefore \quad \frac{12}{15} = \frac{4}{5}$ and $\frac{10}{15} = \frac{2}{3}$



Encircle the smaller fraction:

1. $\frac{1}{2}$ and $\frac{2}{3}$ 2. $\frac{3}{4}$ and $\frac{1}{3}$

3. $\frac{5}{6}$ and $\frac{7}{8}$ 4. $\frac{1}{4}$ and $\frac{6}{7}$

5. $\frac{4}{5}$ and $\frac{5}{6}$

To write the fractions with different denominators in an ascending (increasing) or (descending) decreasing order.

Write the following fractions in ascending and descending order-

$\frac{2}{3}, \frac{3}{4}, \frac{1}{3}$ and $\frac{5}{6}$

The denominators are different. Hence write the equivalent fractions of all the given fractions.

Equivalent fractions of $\frac{2}{3}$ = $\frac{4}{6}, \frac{6}{9}, \frac{8}{12}, \frac{10}{15}, \frac{12}{18}, \frac{14}{21}$.....

Equivalent fractions of $\frac{3}{4}$ = $\frac{6}{8}, \frac{9}{12}, \frac{12}{16}, \frac{15}{20}, \frac{18}{24}$,.....

Equivalent fractions of $\frac{1}{3}$ = $\frac{2}{6}, \frac{3}{9}, \frac{4}{12}, \frac{5}{15}, \frac{6}{18}$,.....

Equivalent fractions of $\frac{5}{6}$ = $\frac{10}{12}, \frac{15}{18}, \frac{20}{24}, \frac{25}{30}$.....

The equivalent fraction with same denominator = 12

Therefore, the equivalent fractions of $\frac{2}{3}, \frac{3}{4}, \frac{1}{3}$ and $\frac{5}{6}$ are $\frac{8}{12}, \frac{9}{12}, \frac{4}{12}, \frac{10}{12}$. If we arrange the numerators in an ascending order we would have-

$\because \quad 4 < 8 < 9 < 10$

$\therefore \quad \frac{4}{12} < \frac{8}{12} < \frac{9}{12} < \frac{10}{12}$

or $\quad \frac{1}{3} < \frac{2}{3} < \frac{3}{4} < \frac{5}{6}$



And if we write them in the descending order we would have-

$\because \quad 10 < 9 < 8 < 4$

$\therefore \quad \frac{10}{12} > \frac{9}{12} > \frac{8}{12} > \frac{4}{12}$

$\therefore \quad \frac{5}{6} > \frac{3}{4} > \frac{2}{3} > \frac{1}{3}$

Now write the given fractions in an ascending and descending order:

1. $\frac{1}{2}, \frac{3}{4}, \frac{3}{8}, \frac{1}{4}$ ---------- 2. $\frac{5}{6}, \frac{1}{3}, \frac{3}{4}, \frac{3}{8}$ ----------

3. $\frac{2}{9}, \frac{1}{2}, \frac{2}{3}, \frac{4}{6}$ ---------- 4. $\frac{2}{5}, \frac{3}{6}, \frac{1}{3}, \frac{3}{10}$ ----------

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

Types of fraction- Encircle the fractions whose numerator is less than the denominator:

1. $\frac{1}{2}, \frac{5}{6}, \frac{7}{2}, \frac{4}{9}, \frac{10}{3}, \frac{8}{5}, \frac{10}{10}, \frac{3}{4}, \frac{4}{3}$ 2. $\frac{9}{4}, \frac{5}{7}, \frac{2}{5}, \frac{11}{8}, \frac{7}{4}, \frac{6}{15}, \frac{13}{6}$

Write down the fractions you have encircled.

.....

.....

These are called proper fractions.

What is the speciality of these fractions?

.....

.....

.....

The fractions which have numerators which are smaller then their denominators are called proper fractions or the denominator of a proper fraction are bigger than their numerators.

The fractions which were left out in the above lists are called improper fractions.

What is the speciality of improper fractions?

.....

.....

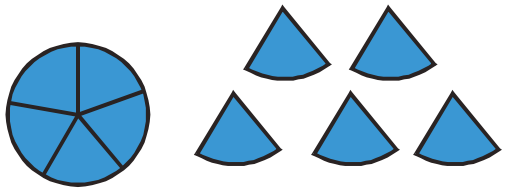
Those fractions whose numerators are bigger than their denominators are called improper fractions or the denominators of improper fractions are smaller than their numerators.

Now let us think about the improper fraction $\frac{7}{5}$.

5 is the denominator and 7 is the numerator of $\frac{7}{5}$.

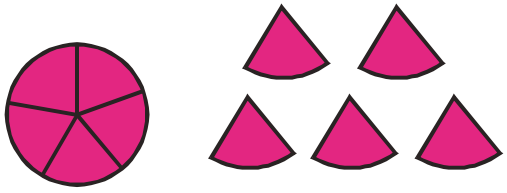
It means one whole is divided in 5 equal parts, similar 7 parts are the $\frac{7}{5}$ of that whole. Here it is important to know that we had only 5 parts then how we will get 7 parts?

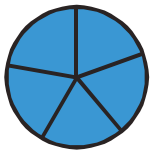
Let us understand this :-

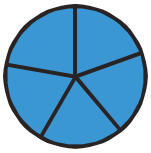


One whole is divided into 5 equal parts. Out of these each parts is $\frac{1}{5}$ part of the whole.

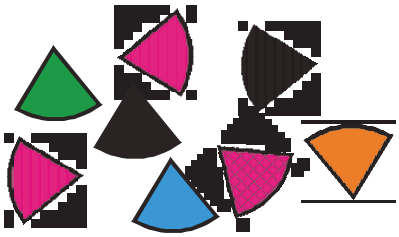
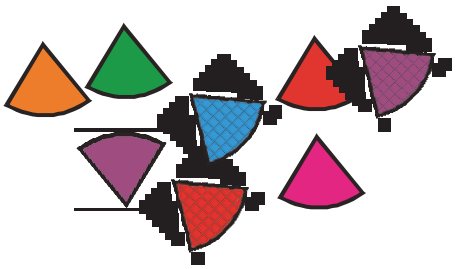
If the similar parts have been taken from another whole, that part will also be $\frac{1}{5}$ part of the first whole.

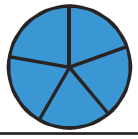


One part  is $\frac{1}{5}$ of the whole 

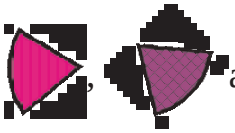
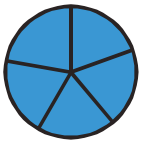
Another part  is $\frac{1}{5}$ of the whole 

Now imagine that we have collected several parts from different wholes.

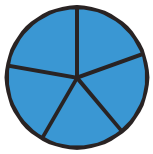



Out of these each part is $\frac{1}{5}$ of the whole 

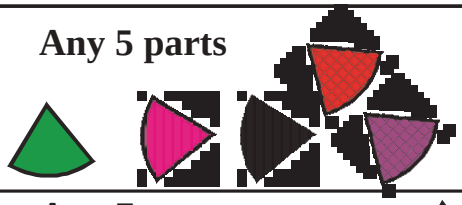
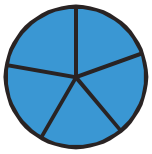
Any two parts

 are $\frac{2}{5}$ of the whole 

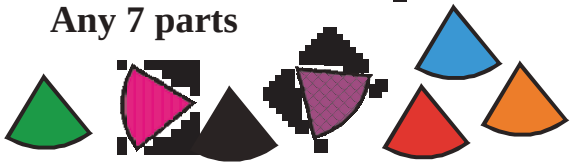
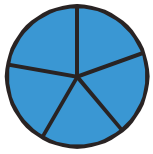
Any three parts

 are $\frac{3}{5}$ of the whole 

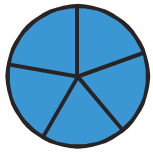
Any 5 parts

 are $\frac{5}{5}$ of the whole 

Any 7 parts

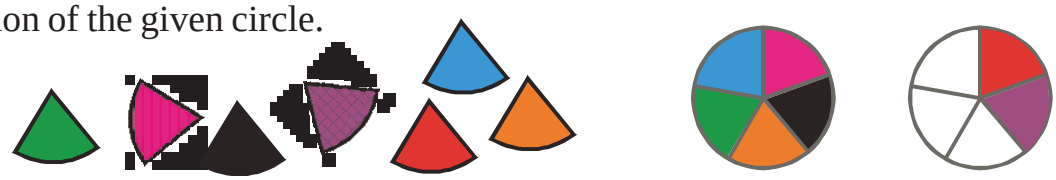
 are $\frac{7}{5}$ of the whole 

Similarly any 10 parts

 are $\frac{10}{5}$ of the whole 

In the same way we can go further,

Think again about $\frac{7}{5}$ and arrange all that seven parts on the unit circular portion of the given circle.



You can see, that $\frac{7}{5}$ is equal to a complete whole and to $\frac{2}{5}$.

Therefore, $\frac{7}{5} = 1+\frac{2}{5}$ or $\frac{7}{5}=\frac{5+2}{5}=\frac{5}{5}+\frac{2}{5}=1+\frac{2}{5}=1\frac{2}{5}$

We can read $1\frac{2}{5}$ as one whole two by five.

Similarly

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

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

Similarly

$\frac{7}{2}=\frac{2+2+2+1}{2}=\frac{2}{2}+\frac{2}{2}+\frac{2}{2}+\frac{1}{2}$

or $\frac{7}{2}=1+1+1+\frac{1}{2}=3+\frac{1}{2}$ or $3\frac{1}{2}$

So you saw how improper fraction $\frac{7}{5},\frac{5}{3}$ and $\frac{7}{2}$ can be written as $1\frac{2}{5},1\frac{2}{3}$ and $3\frac{1}{2}$ respectively.

Out of these one is whole number and one is proper fraction. Such numbers are called mixed fractions.

When we write an improper fraction as a combination of whole numbers and proper fractions. We call these as mixed fraction.

We have seen how to write an improper fraction as a mixed fraction. If we were given a mixed fraction, how could this be written as an improper fraction?

Let us understand this with an example:

Example : 5 Write the improper fraction of the mixed fraction $1\frac{3}{5}$

Solution : $1\frac{3}{5} = 1+\frac{3}{5}$

Since the proper fraction here $\frac{3}{5}$ has 5 as denominator we write 1 as $\frac{5}{5}$

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

$$= \frac{5+3}{5} = \frac{8}{5}$$

$$\therefore\ 1\frac{3}{5} = \frac{8}{5}$$

Example : 6 Write the improper fraction of the mixed fraction $3\frac{4}{9}$.

Solution : $3\frac{4}{9} = 3+\frac{4}{9}$

Here the proper fraction has 9 as the denominator, so we will write the equivalent fraction of $\frac{3}{1}$ which has 9 as denominator.

$$\therefore \frac{3}{1} = \frac{3\times 9}{1\times 9} = \frac{27}{9}$$

$$\therefore\ 3\frac{4}{9} = \frac{27+4}{9}$$

$$= \frac{31}{9}$$

$$\therefore\ 3\frac{4}{9} = \frac{31}{9}$$

Write the mixed fraction of the given improper fractions:

1. $\frac{10}{7}$ 2. $\frac{10}{7}$

3. $\frac{13}{6}$ 4. $\frac{8}{5}$

5. $\frac{9}{4}$ 6. $\frac{7}{3}$

Represent the given mixed fractions pictorially:



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

Change the given mixed fractions to improper fractions-

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



CHAPTER- 8

Decimals

Write the place value of 1 in the given number.

12375 .....

21227 .....

20127 .....

22521 .....

What did you observe?

As the position of 1 moves to the right, the place value becomes a tenth part of the previous.

For example. The place value of 1 in the thousands place - 1000

The place value of 1 in the hundred place - 100

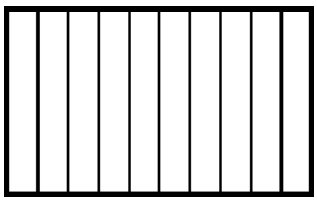
100is tenth part of 1000 Similarly the place value of 1 in the tens place is 10 which is the tenth part of 100 and the 1 in the units place has a place value 1 which is the tenth part of 10.

Now think what would be the place value of 1 to the right of the ones place?

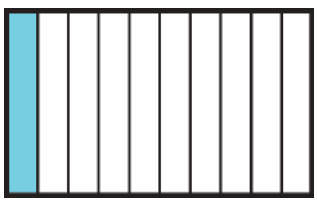
It would definitely be a tenth part of 1

You know that if.

One unit is represented as a box



One tenth of this would be the shaded portion as shown



We also know that this is represented as $\frac{1}{10}$.

So if we could write a 1 to the right of ones place, it would represent $\frac{1}{10}$ th part.

Let us see what would happened when we write 1 to the right side of unit.

Thousand	Hundred	Tens	Ones	10th part
1	1	1	1	1

(One thousand one hundred eleven and one tenth)

Would we be able to write such place value chart every time, when we write a number?

It would be difficult, would't it?

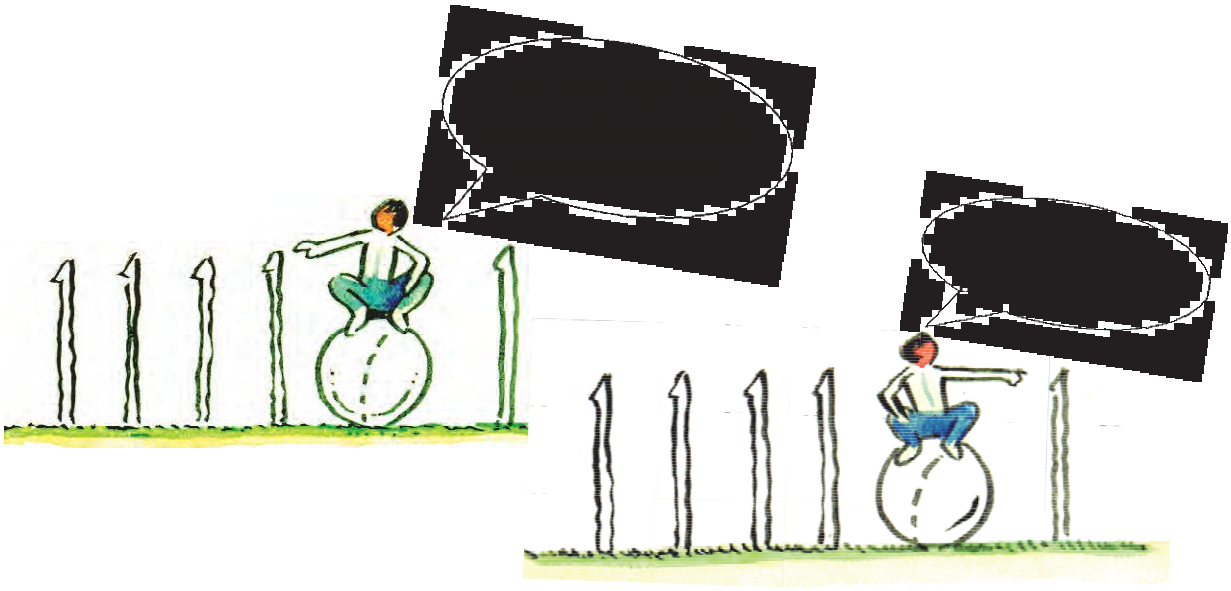
Let us write the number without the place value chart we will write. 11111

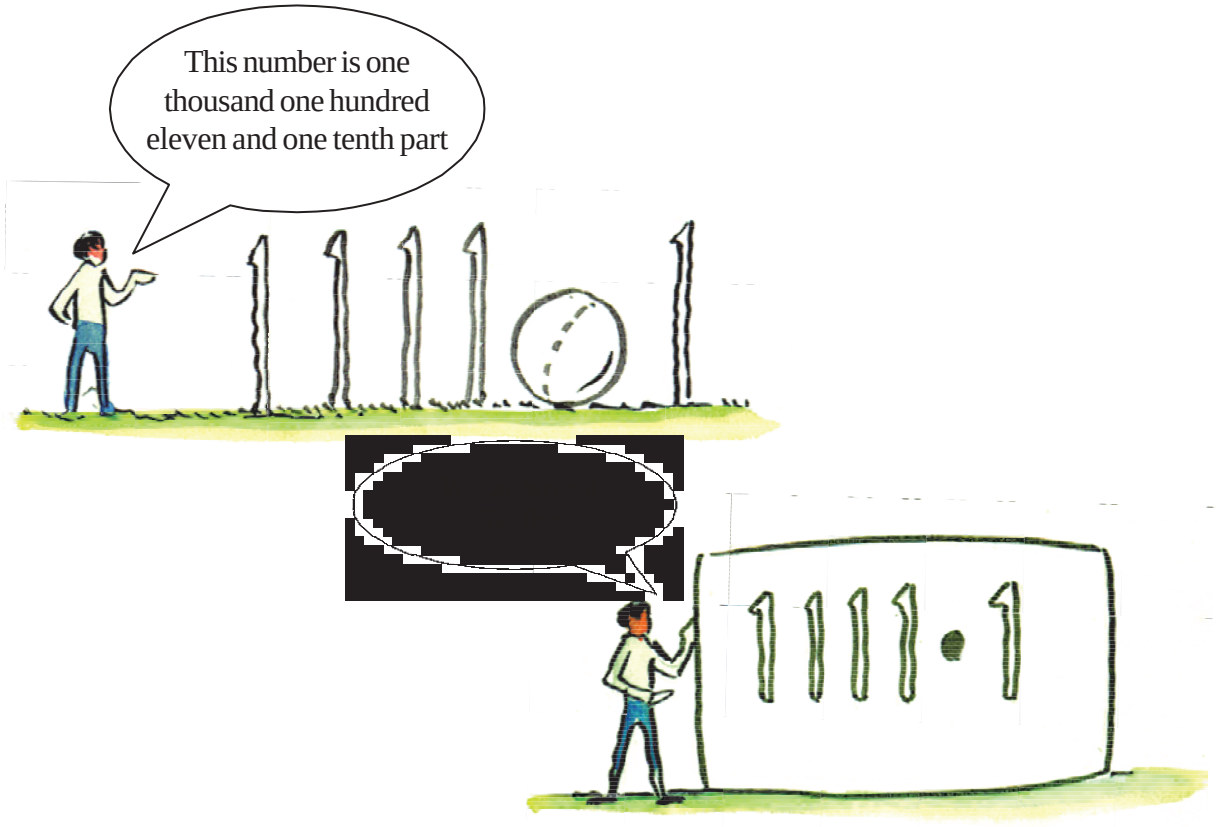
Now if we were to read this number what would we say?

Eleven thousand one hundred eleven, isn't it?

This is what would happen as every person knows that the digit to the extreme right represents ones digit.

Come, let us take the help of some one who would help anyone reading a number realise which is the ones digit? See what this great person is saying.





You can see that by putting a dot between the ones digit and the tenth part, we realise that to the left of this lies the ones, tens, hundreds.... position and to the other side lies the tenth part.

It is advisable to note here that the part which is to the left of the dot representing ones, tens, hundreds... position is actually a whole number and the tenth part is a part of a whole.

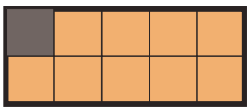
This shows that the dot seperates the whole number from the part of a whole.

This dot is known as the decimal point.

You have also seen that the '1' which lies to the right of the decimal point is a tenth part of one



One unit



Shaded part . .1

Which is equal to $\frac{1}{10}$

.1 is read as 'point one'

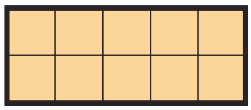
In the picture shown above one whole unit has been divided into 10 equal parts, out of which one is shaded and the remaining 9 are not.

Can you say what number each of these equal parts represent?

You are right, each of these represents .1 (point one) Now let us think of something new.

.2 would represent how many part of a whole unit?

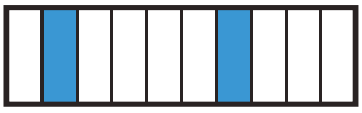
Consult your friends and shade .2 in the given unit.

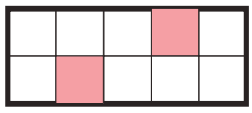


You are right,

.2 represents 2 tenth parts of a unit.

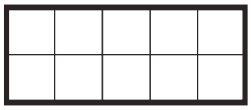
The pictures given below all represent .2.



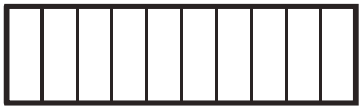




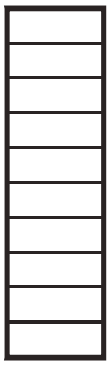
The units given below are all divided into ten equal parts shade each of them for the decimal part given below.



.1



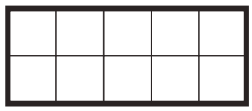
.2



.2



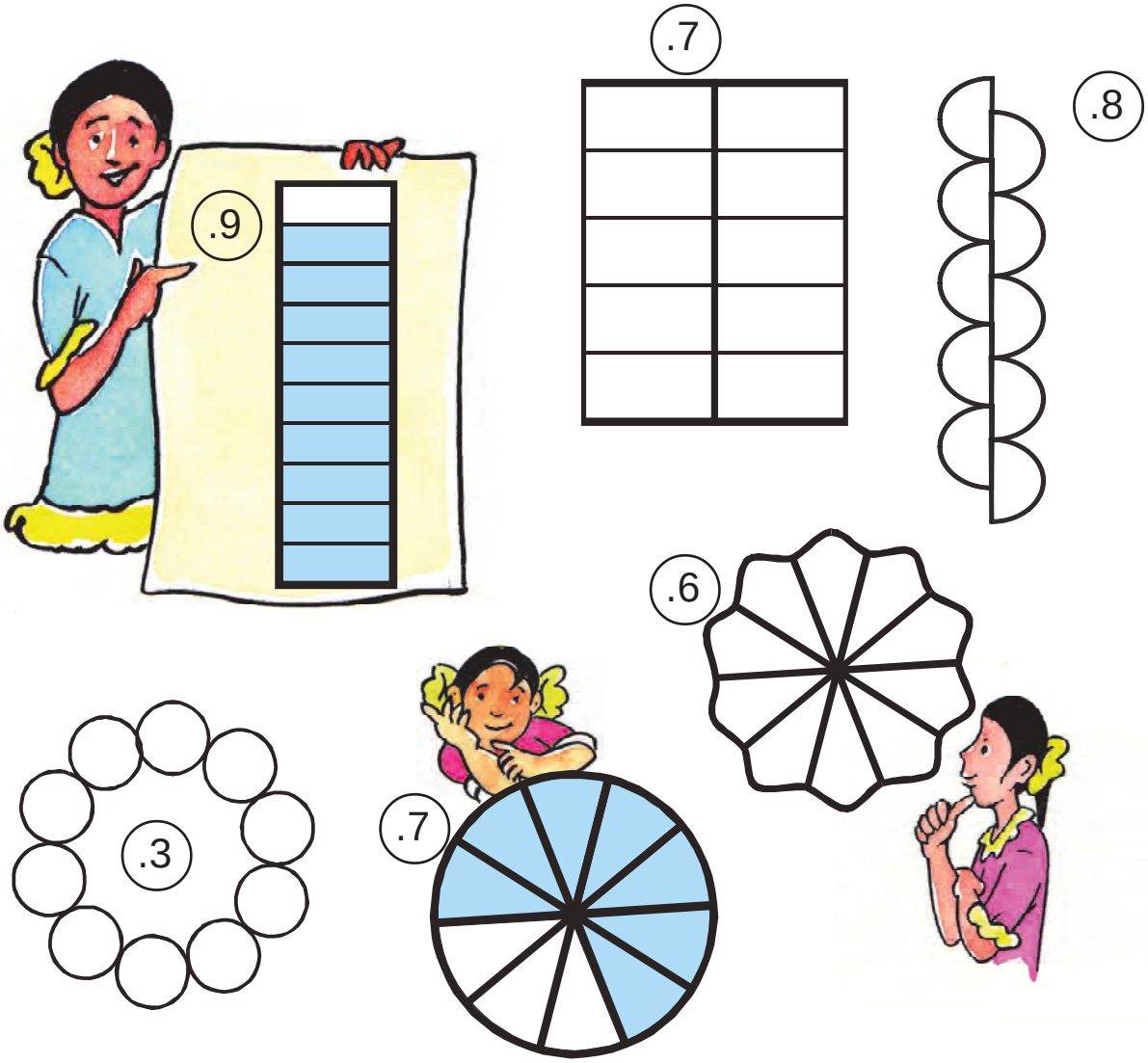
.1



.3

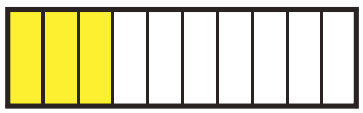
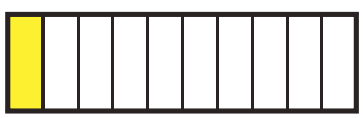
Can you similarly represent .4, .5,... etc?

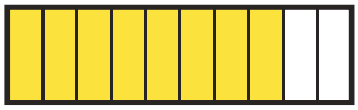
Some of the units given below have been shaded for the decimal part metioned there. You shade the ones which have not been shaded for the mentioned decimal.



Here you have written the decimal representation using the decimal point for the mentioned number. You also know how to write these parts as a fraction.

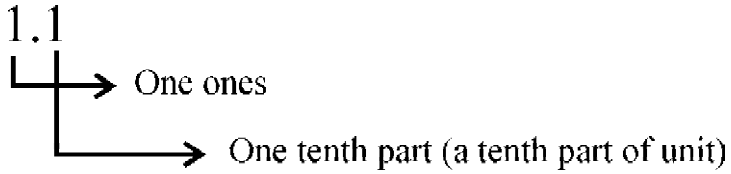
Given below are some units whose parts are shaded, let us write the number in the form of decimal as well as a fraction:

Parts of a unit	Fraction	Decimal	What part of one
	$\frac{3}{10}$	.3	Three tenth parts
	$\frac{1}{10}$	.1	One tenth part

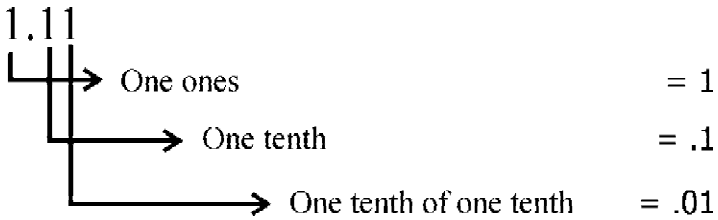
	$\frac{8}{10}$	.8	Eight tenth parts
	.....	.4	.....
	$\frac{7}{10}$	.....	.....
	.....	.....	.....
	.....	.....	Ten tenth parts

What after the tenth parts?

Observe the place value of the digits of the number 1.1.



If there were another 1 to the right of this tenth part, what would its place value be?



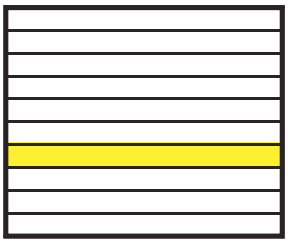
Tenth part of one tenth means hundredth part of a unit.

Smaller parts of a unit.

Look at this pictures.



One unit



Tenth part

First picture shows a unit

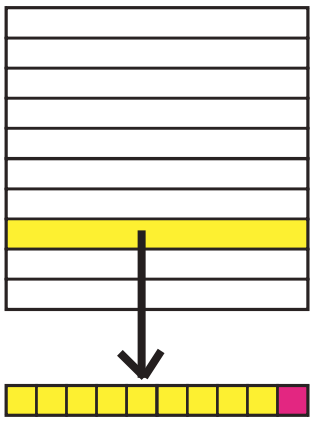
This unit has been divided into ten equal parts in the second picture. Each part as you know represents one tenth part.

In fraction we write this as $\frac{1}{10}$ and in decimal as .1

Now, can we make smaller parts of $\frac{1}{10}$ or .1

If you can, then how would we write these.

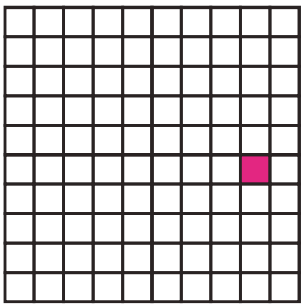
Look at this picture



This picture shows a complete unit. The coloured portion represents one tenth of the unit or tenth part of one.

This can be represented by $\frac{1}{10}$ or .1.

If we divide $\frac{1}{10}$ into ten equal part then the smallest part will be represented by .01 .



In the form of fraction $\frac{1}{10}$ of $\frac{1}{10}$ or $\frac{1}{10} \times \frac{1}{10}$ or $\frac{1}{100}$.

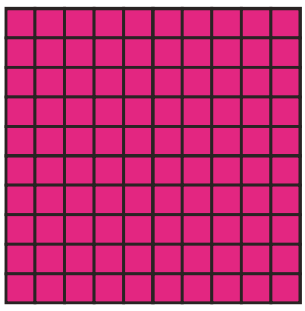
Therefore part of one tenth = .01

$= \frac{1}{100}$ = hundredth part of unit (hundredth of unit)

10  boxes =  (like a stripe)

$\frac{1}{100} \times 10 = \frac{1}{10}$



10 equal strips =  one unit

$\frac{1}{10} \times 10 = 1$

See more numbers .

Each small square represents .01 or $\frac{1}{100}$

Let us see the value of the shaded parts

.01 = One hundredth part = $\frac{1}{100}$

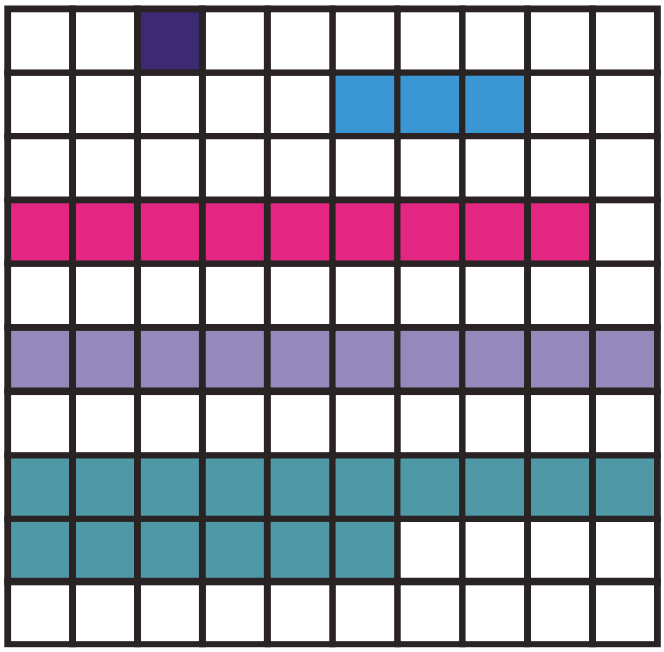
.03 = Three hundredth parts = $\frac{3}{100}$

.09 = Nine hundredth parts = $\frac{9}{100}$

.10 = Ten hundredth parts = $\frac{10}{100}$

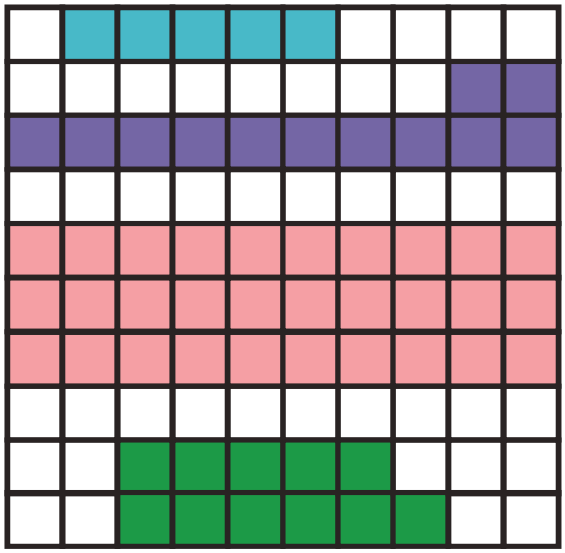
or one tenth part = $\frac{1}{10}$

.16 = sixteen hundredth parts = $\frac{16}{100}$



Or one tenth part and si× hundredth part.

Now you write the value for the following coloured squares.



.05 = Five hundreadth parts = ...

..... = Twelve hundreath parts = ...

.30 = ... = ...

or = Three tenth parts = ...

..... = ... = $\frac{11}{100}$

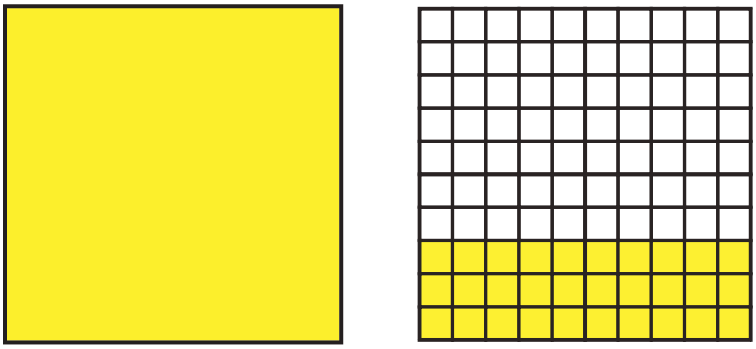
Complete the following table given below .

Decimal Numbers	Way of reading	Place value	Fraction from
.5	point five	5 tenth	$\frac{5}{10}$
.05	point zero five	.....	.....
.7	.....	.....	.....
.09	.....	.....	.....
.34	.....	3 tenth 4 hundredth	.....
.99	point nine.nine	.....	.....
.56	.....	.....	.....

Decimal numbers greater than one .

The e×ample we have seen till now represents some part of 1. That's why these numbers are less than 1. Now let us see what is the meaning of numbers greater than 1, and how do we write it?

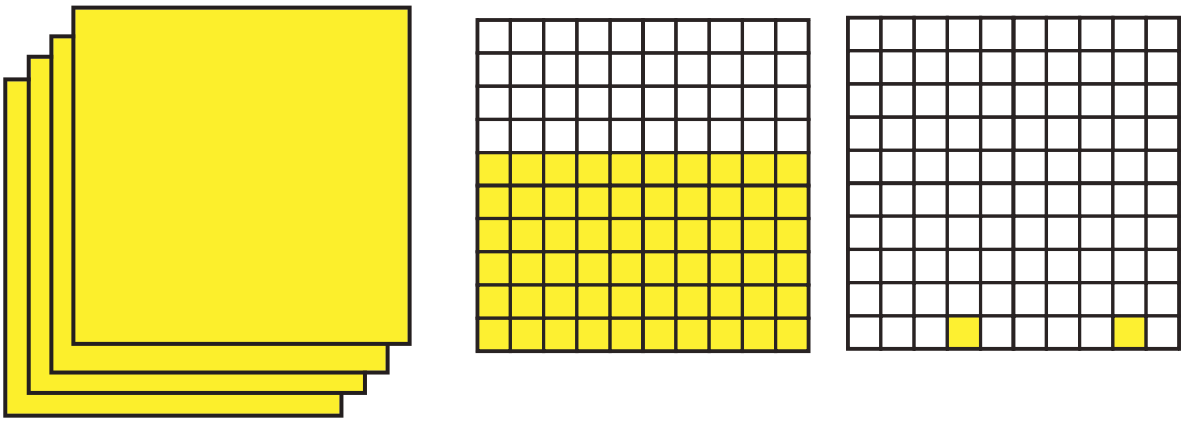
If small squares are there with a complete unit then how we will write it?



1 unit + three tenth parts

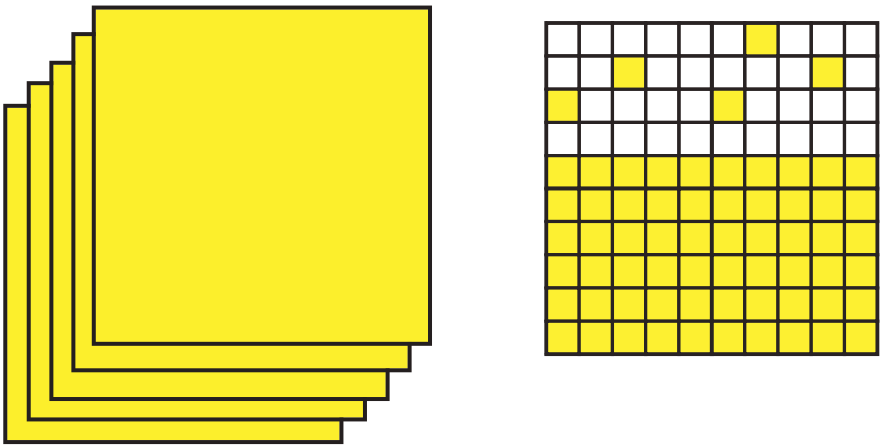
1 + .3

Adding these, we write it as 1.3.



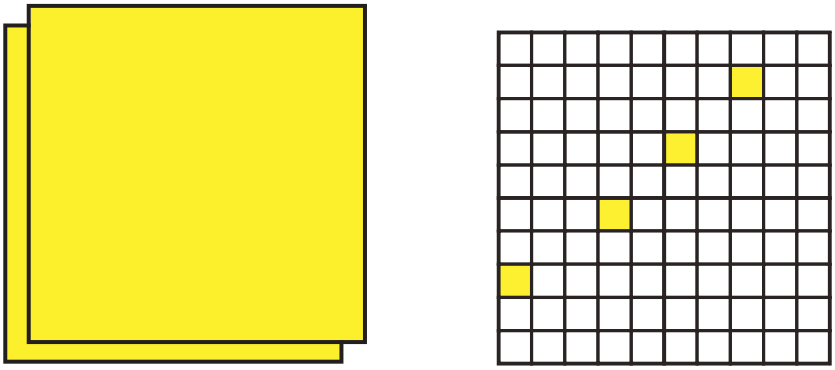
4 Units + 6 tenth parts + 2 hundredth parts

4 + .6 + .02 = 4.62



5 Units + 65 hundredth parts

5 + .65 = 5.65



2 Units + 4 hundredth parts

2 + .04 = 2.04

Different ways of writing a number .

If you are asked to write twenty three, then you will write 23. Have you ever thought it can also be represented in a different way?

Let us talk about this .

As you know that 23 is a two digit number, in which there are 3 units and 2 tens. If you are asked that how many hundreds are in 23? Then you will say that there is no hundred in it or zero hundred. If we write .

023 (zero hundreds, 2 tens and 3 units)

Yet in represents 23. Similarly, 0023 (zero thousands, zero hundreds, two tens and three units) then also it is equal to 23. Now think if we write 230 in place of 23? You may think that it is "two hundred thirty", because now zero is in units place, three is in tens and two is in hundreds place.

You are right, we can't write 230 in place of 23. Now think can we write it as 23.0?

There are 3 units, 2 tens and 0 tenths. It means it is equal to 23. Therefore, 23 can be written as 23.0. Similarly, it can also be written as 23.00 or 23.000.

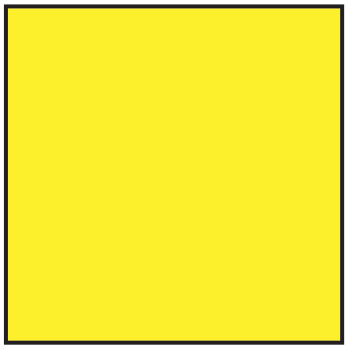
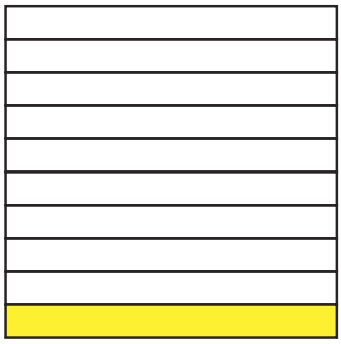
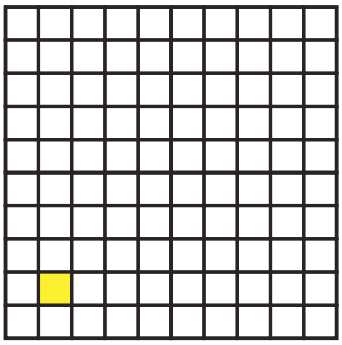
Some numbers are given below in different ways, look at them carefully.

Numbers	Numbers in different ways
2	02, 2.0, 2.00, 02.00 .....
12.5	12.5, 15.50, 12.500 .....
.7	0.7, .70, .700, 0.70 .....
.35	0.35, 00.35, 0.350, 0.3500 .....
.01	0.01, 0.010, 0.100 .....

Here we have seen how we can write zero before or after any number. We can do so when it is necessary. Further you will get some e×amples of it.

Comparison of decimal numbers .

Write down the numbers represented by coloured portions, below the given figures .

....

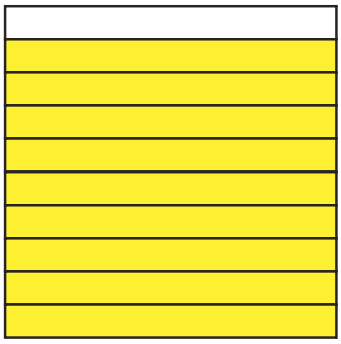
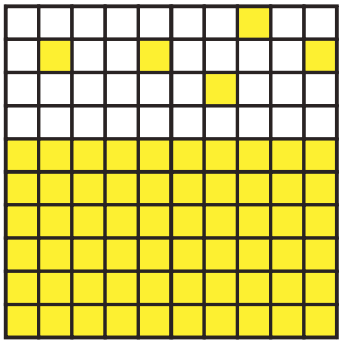
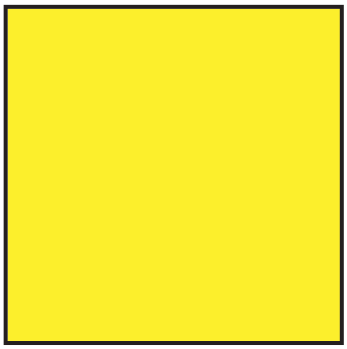
Out of these figures the first figure represents the whole unit, second represents the tenth part and the third represents the hundredth part of unit. Now we can write it in descending order as .

1 > 0.1 >0.01

And in ascending order as .

0.01< 0.1< 1

Now look at the following figures and write the numbers represented by them.

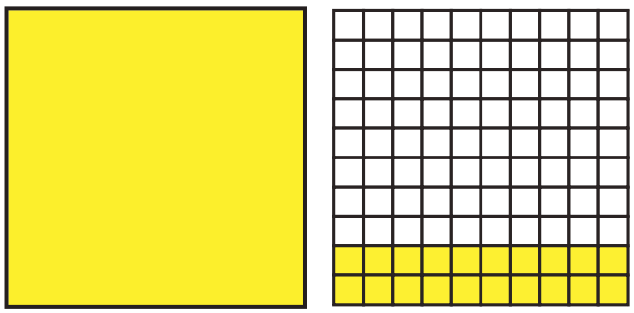
....

Write these numbers in ascending order . .....

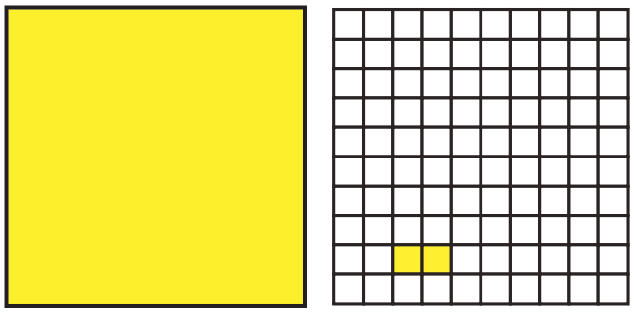
Write these numbers in descending order . .....

Comparison of the number greater than one .

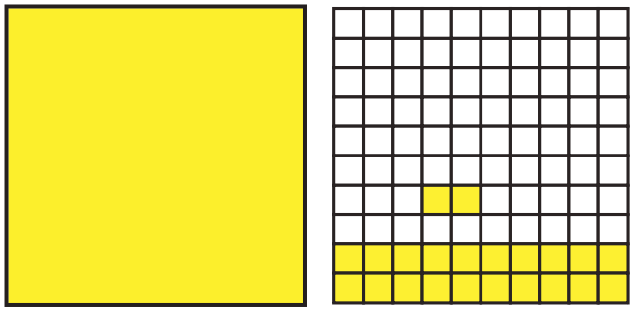
Write the numbers represented by the given figures and arrange them in ascending and descending order .



1.2 (or 1.20)



.....



.....

Numbers in ascending order - .....

Numbers in descending order - .....



Exercise

Arrange in ascending order .

1. .2, .22, .02 .....
2. .03, .32, .03 .....
3. 1.3, .30, .03 .....
4. 2.5, 3.01, 2.99 .....

5. .04, .44, .14 .....

Addition of decimals

Example : Anjana has participated in the marathon race on the sports day celebration in her school. She practices running 10.58 Kms. in the morning and 9.30 Kms. in the evening daily. How much does she run daily?

Solutions : 10.58 + 9.30 = ?

The addition of decimal numbers is same as the addition of whole numbers.

In 10.58, there are two digits after decimal. 5 is in tenth and 8 is in hundredth place. In 9.30, there is only a single digit after decimal that is 3 in tenth place and 0 in hundredth place.

$$\begin{array}{r} 10.\ 58 \\ +\ 9.\ 30 \\ \hline \\ \hline \end{array}$$

10.58 + 9.30 will be written in such a way that hundredth comes below hundredth, tenth comes below tenth and unit comes below unit.

The addition of decimal numbers is same as the addition of whole numbers.

$$\begin{array}{r} 10.\ 58 \\ +\ 9.\ 30 \\ \hline 19.\ 88 \end{array}$$

Answer : Anjana runs 19.88 km daily.



Exercise

Add.

1. $\begin{array}{r} 23.11 \\ +\ 3.24 \\ \hline \end{array}$

2. $\begin{array}{r} 41.25 \\ +\ 12.35 \\ \hline \end{array}$

3. $\begin{array}{r} 0.1 \\ +\ 0.12 \\ \hline \end{array}$

4. $\begin{array}{r} 17.01 \\ +\ 11.19 \\ \hline \end{array}$

5. $\begin{array}{r} 6.78 \\ +\ 5.43 \\ \hline \end{array}$

Solve .

1.	15.37 + 12.8	= ?	2.	11.02 + 8.21	= ?
3.	77.6 + 75.12	= ?	4.	34.0 + 43.45	= ?
5.	0.45 + 0.65	= ?	6.	0.56 + 0.27	= ?

Subtraction of decimals -

Example 1. In a shot put throw competition, Ramesh threw the shot upto a distance of 3.25 meters and Umesh threw it upto 2.13 meters. What is the difference in their distance?

Solution . 3.25 – 2.13 = ?

Both of these numbers have tenth and hundredth digit.

$$\begin{array}{rr} & 3.25 \\ - & 2.13 \\ \hline & \\ \hline \end{array}$$

Note that, units, tenth and hundredth digit of one number is written just below the other number respectively.

Subtraction of decimal numbers is similar to the subtraction of whole numbers.

$$\begin{array}{rr} & 3.25 \\ - & 2.13 \\ \hline & 1.12 \\ \hline \end{array}$$

Answer . Ramesh threw the shot put 1.12 km. ahead of Umesh.

Example 2. Subtract 154.26 from 273.04.

Solution .

$$\begin{array}{r} 273.04 \\ -\ 154.26 \\ \hline 118.78 \\ \hline \end{array}$$

Follow the subtraction by borrow method as we did earlier.

Solve .

1. $\begin{array}{r} 12.34 \\ +\ 17.23 \\ \hline \\ \hline \end{array}$

2. $\begin{array}{r} 76.5 \\ +\ 45.6 \\ \hline \\ \hline \end{array}$

3. $\begin{array}{r} 345.74 \\ +\ 23.63 \\ \hline \\ \hline \end{array}$

4. $\begin{array}{r} 788.45 \\ -\ 499.45 \\ \hline \\ \hline \end{array}$

5. $\begin{array}{r} 62.123 \\ -\ 51.00 \\ \hline \\ \hline \end{array}$

6. $\begin{array}{r} 216.06 \\ -\ 132.23 \\ \hline \\ \hline \end{array}$

Multiplication of decimals .

Now let us see how can we multiply decimal numbers? Let us consider an example.

Example . Multiply 45.63 × 5

$$\begin{array}{r} 45.63 \\ \times\ 5 \\ \hline 5 \\ \hline \end{array}$$

First multiply 3 hunderdth by 5.

3 × 5 = 15 hundredth

= 1 tenth and 5 hundredth

So, we will write 5 in hundredth place, 1 tenth is carry over. We will keep it separately as in the next step we will get more tenth digit.

$$\begin{array}{r} 45.63 \\ \times\ 5 \\ \hline 15 \\ \hline \end{array}$$

Now multiply 5 with 6 tenth.

6 × 5 = 30 tenth

After adding 1 tenth of the earlier carry over

30 + 1 = 31 tenth

= 3 unit and 1 tenth

45.63
× 5
.15

We will write 1 in tenth place in the product and keep 3 units (carry) separately because in next step we will get more units.

"Since now we will get units in the product, hence place a decimal point in the product."

45.63
× 5
8.15

Now multiply 5 units with 5 :- 5 × 5 = 25 units .

Adding 3 units of the carry over, we get

25 + 3 = 28 Units

= 2 tens and 8 units

Write 8 in place in the product and keep 2 tens (carry) separately.

45.63
× 5
28.15

Now multiply tens with 5

4 × 5 = 20 tens

After adding carry over we get

20 + 2 = 22 tens

= 2 hundreds and 2 tens

We will write 2 in tens place in product.

45.63
× 5
228.15

Since we have multiplied all digits of 45.63, hence write 3 in hundreds place in product

∴ 45.63 × 5 = 228.15 (Answer)

Exercise

1.	12.45 × 7	2.	52.74 × 3	3.	32.25 × 8
4.	49.70 × 12	5.	27.66 × 6	6.	24.08 × 13
7.	0.83 × 11	8.	3.5 × 17	9.	0.75 × 14

Look at the following example -

1. $1.234 \times 10 = 12.340$
2. $1.234 \times 100 = 123.400$
3. $1.234 \times 1000 = 1234.000$

Now fill in the blanks -

1. $1.246 \times 10 =$ _____
2. $1.246 \times 100 =$ _____
3. $1.246 \times 1000 =$ _____
4. $6.789 \times 10 =$ _____
5. $6.789 \times 100 =$ _____
6. $6.789 \times 1000 =$ _____

Did you see any pattern here?

"When we multiply by 10, the decimal point moves one digit to the right."

"When we multiply by 100, the decimal point moves two digit to the right."

"When we multiply by 1000, the decimal point moves three digit to the right."

Complete the table -

	× 10
0.2	.....
0.02	.....
0.002	.....

	× 100
0.5	.....
0.05	.....
0.005	.....

	× 1000
0.6	.....
0.06	.....
0.006	.....

Division of decimals -

Example . If 8 gas cylinders contain 116.8 liters of gas, how much gas is there in each cylinder?

Solution . The quantity of gas in 8 cylinders = $116.8 \div 8$

$8\overline{)116.8}$

Since, hundreds place is less than the divisor therefore the number in we convert one hundred to tens place

1 hundred = 10 tens

1 8)116.8 -8 3	Since 1 is in tens place already $\therefore$ 10 + 1 = 11 tens We divide 11 tens by 8 and get 1 as a quotient. 11 – 8 = 3 tens are left.

14 8)116.8 -8 36 -32 4	3 tens = 3 × 10 = 30 units Write down units below. 30 + 6 = 36 units Divide 36 units by 8. We get 4 as a quotient. 36 – 32 = 4 units are left.

14.6 8)116.8 -8 36 -32 48 -48 0	Now change 4 units into tenths. 4 unit = 4 × 10 = 40 tenths 40 + 8 = 48 tenths **We get tenths in quotien also. Therefore, we write decimal in quotient.** We get 6 as quotient 48 – 48 = 0 Therefore quotient = 14.6, Remainder = 0

We have seen that if there are tenths, hundredths etc. in any number, the process of division is as same as the division of whole numbers. Keeping it in mind that put a decimal point in quotient before dividing the tenths.

Exercise

1. $4.2 \div 3$	2. $42.7 \div 7$	3. $62.5 \div 5$
4. $28.5 \div 3$	5. $48.0 \div 5$	6. $36.12 \div 6$
7. $81.18 \div 9$	8. $120.0 \div 10$	9. $54.8 \div 4$

Solve the following question. Did you get any pattern?

1. $123.4 \div 10$	2. $678.9 \div 10$	3. $124.6 \div 10$
4. $123.4 \div 100$	5. $678.9 \div 100$	6. $124.6 \div 100$

You have seen -

"On dividing by 10, the decimal point moves 1 decimal place to the left."

"On dividing by 100, the decimal point moves 2 decimal place to the left."

Now think and tell when any number is divided by 1000, where will you place the decimal point.

.....

.....

.....

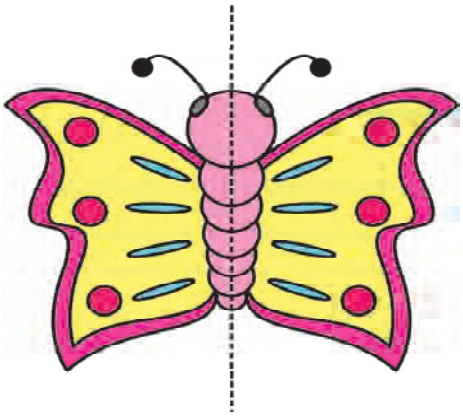
Statement sums

1. Rakesh bought a sack of wheat for Rs. 525.25 and a sack of rice for Rs. 425.75. So how much did Rakesh spend in buying grains?
2. Aparna bought 5.25 metre of cloth and Raju bought 2.25 metre of cloth. So how much cloth is bought by them?
3. How much should be added to 4.5 to get 12.3?
4. What should be subtracted from 15.41 to get 4.22?
5. The cost of one pen is Rs. 4.50, what would be the cost of 7 pens?
6. Rupali gets a scholarship of Rs. 22.50 per month. How much will she get in 10 months?
7. One work is finished by 4 labourers. If the total amount paid for the work is Rs. 250.00. How much would each labourer get?
8. 15 kg of sugar is filled equally in 4 boxes. How much sugar is there in each box?

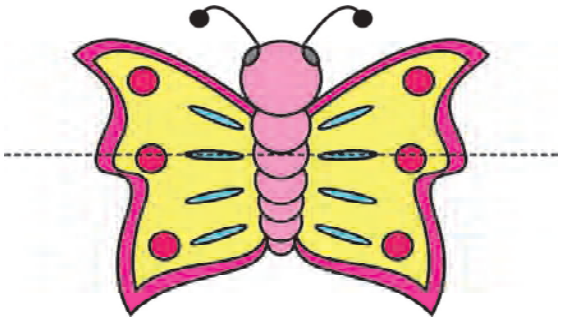
CHAPTER - 9

Symmetry

You have already read about symmetry in the last class.



In this figure the dotted line is the axis of symmetry because both the figures overlap each other on folding through this line. If a mirror of the figure shown is

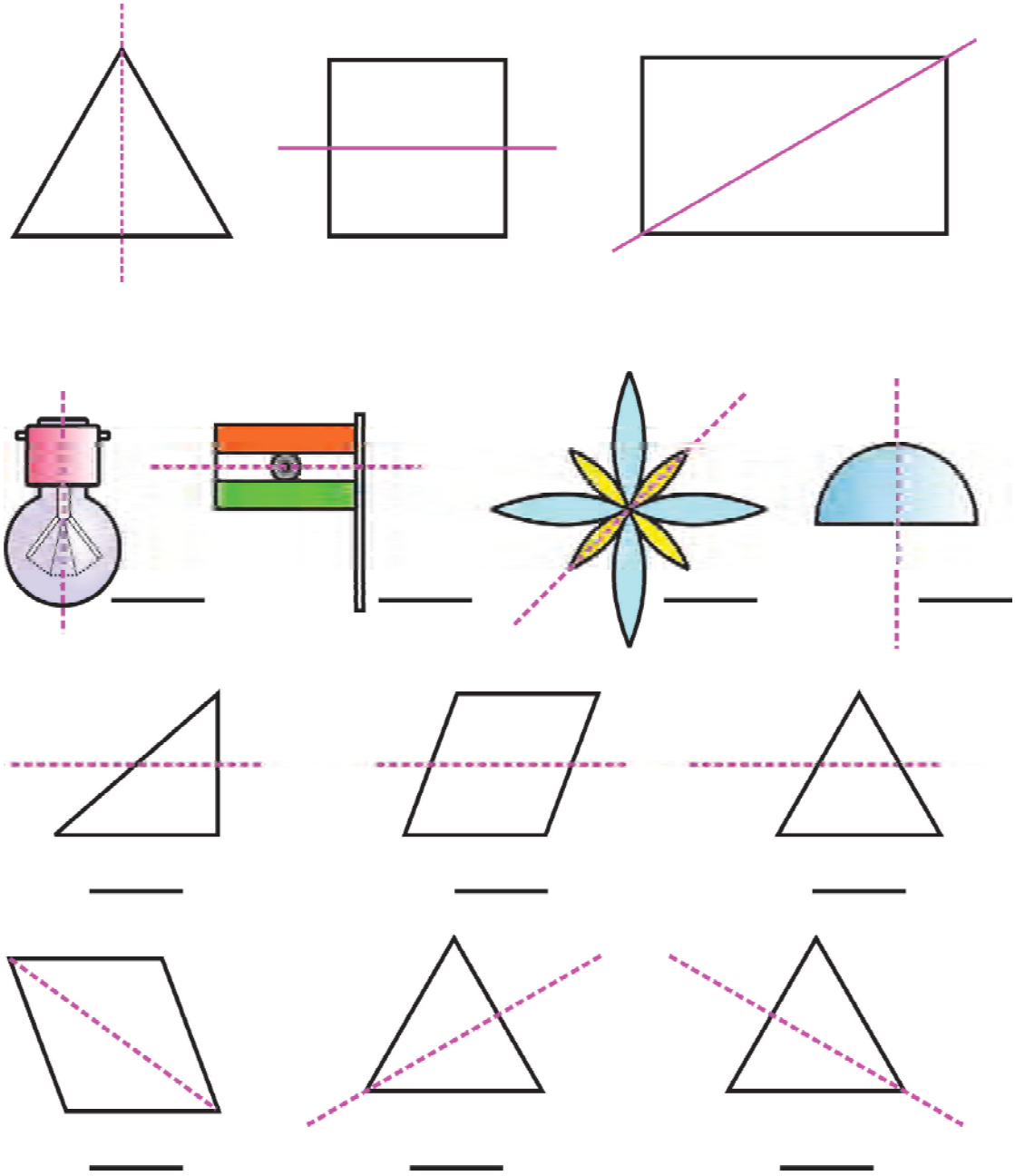


placed on this line then the image in the mirror will be same as the hidden part of the figure. So the figure relative to this symmetrical axis is symmetrical .

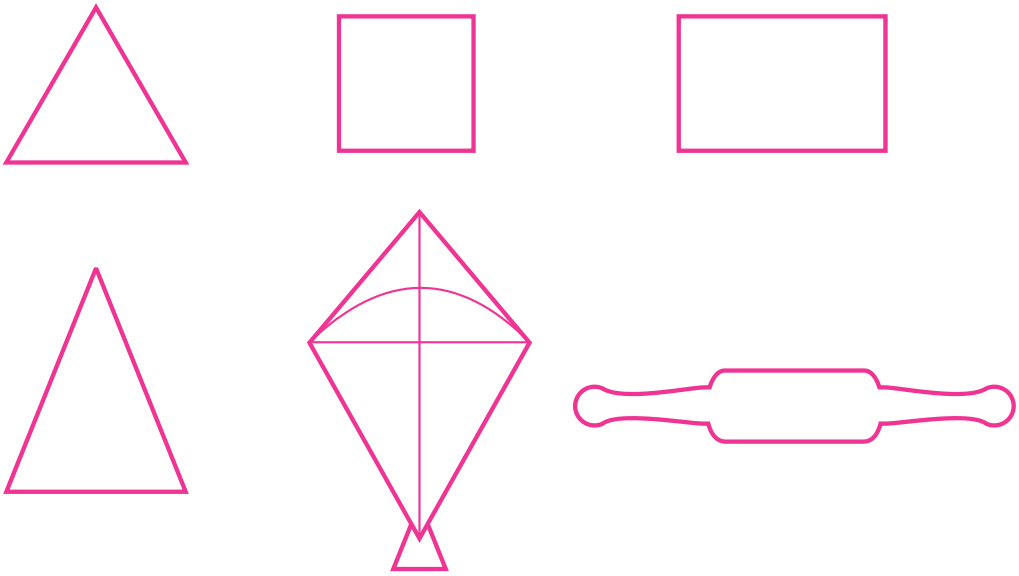
Now, look at the other dotted line of the figure. Do both the part of the figure overlap each other completely on folding through the line. You see that they donot overlap each other completers. Along with that if a mirror is placed on this line then the image in the mirror is not similar to the hidden part of the figure. So this is not the line of symmetry and the figure is not symmetrical througth this axis line. Now you draw different liner on this figure and see whether this figure is symmetrical about any of these liner.

Exercise

1. Out of the figures given below which ones are symmetrical about the given line? Tick (✓) on the symmetrical figures.



2. Draw all possible symmetrical axis for the folloving figures.



Isosceles triangle -

Now complete the table given below -

Name of figures	Total Number of symmetrical axis in the figure
Equilateral triangle	
Square	
Rectangle	
Isoceles triangle	
Kite	
Roller	

Let's Do and learn.

(If we) Rotate the given figure from its place in such a way that the top most red patel comes down and the lower most green patel goes up, then it is called half rotation of the figure.

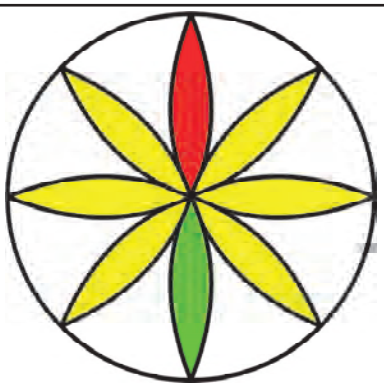


fig. 1 (Before half rotation)

After half rotation the figure will look like this-

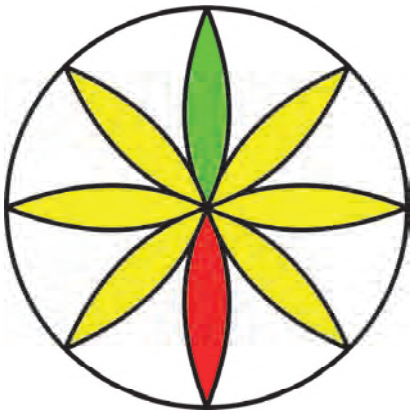


fig. 2 (After half rotation)

Does this figure look the same before and after half rotation?

You have seen that this figure.does not look the same in both the situations. So after half rotation this figure is not rotational symmetry figure.

Now look at these figure -

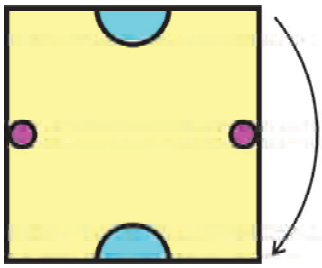


fig. 1 (Before half rotation)

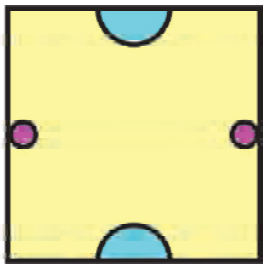


fig. 2 (After half rotation)

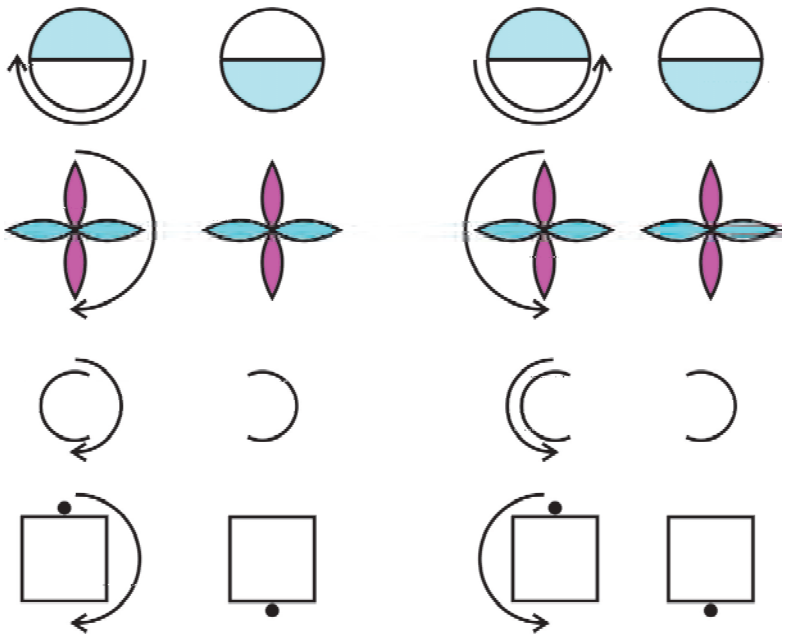
You see that the figure (2) look the same after and before half rotation from its place. So after half rotation this figure is rotational symmetric.

The proprty of figures to look like the same after rotation form its place is called rotational symmetry -

Ways of rotation -

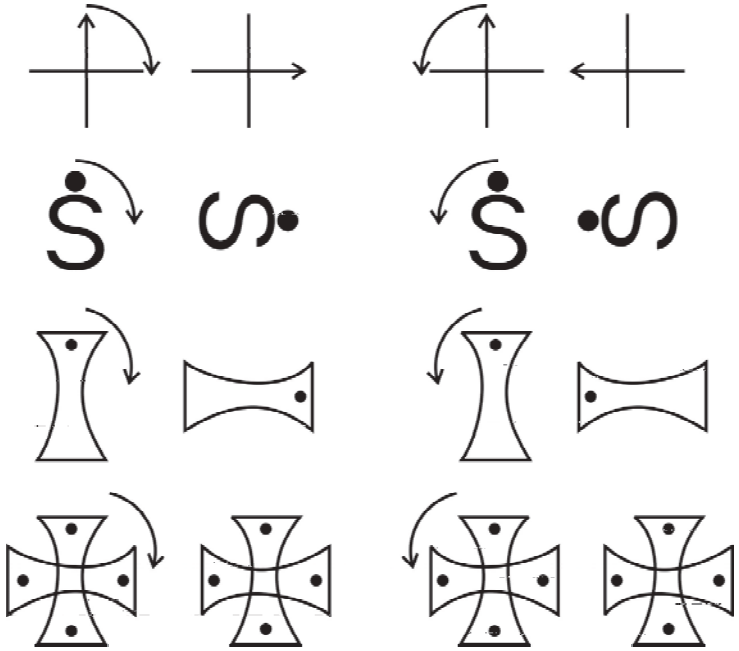
Half rotation at its place (Half rotation)

The first method **The other method**



Quarter rotation at its place (Quarter rotation)

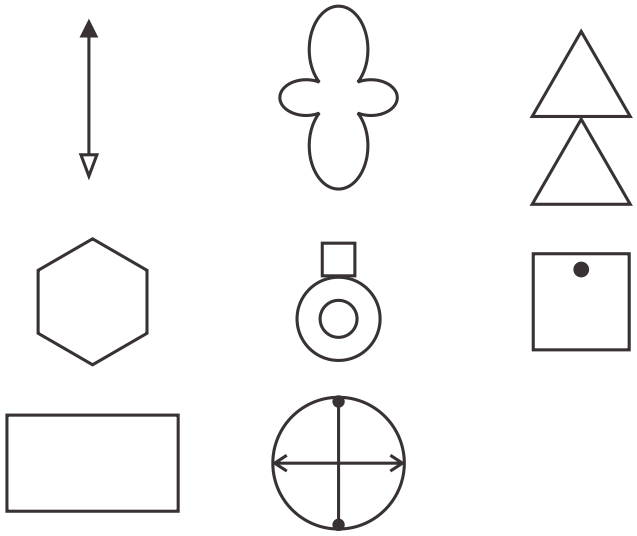
The first method **The other method**



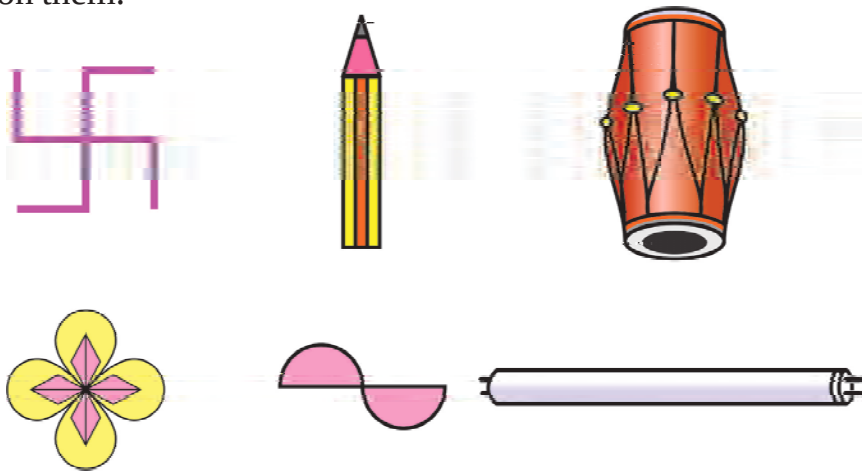
You have seen that rotation can be in two ways clockwise and anti-clockwise.

Excecise

1. Which of the following figures look the same after helf rotation from its place? Tick (✓) on them.



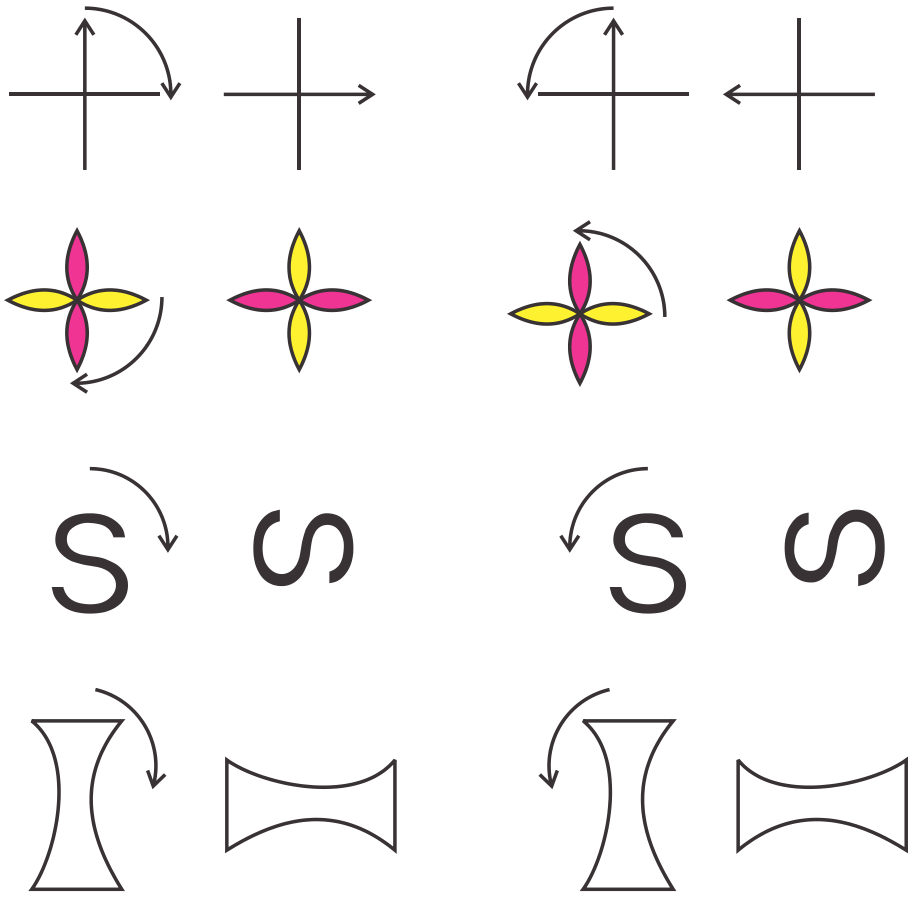
2. Which of the following figures are rotational symmetric after helf rotation ? Tick(✓) on them.



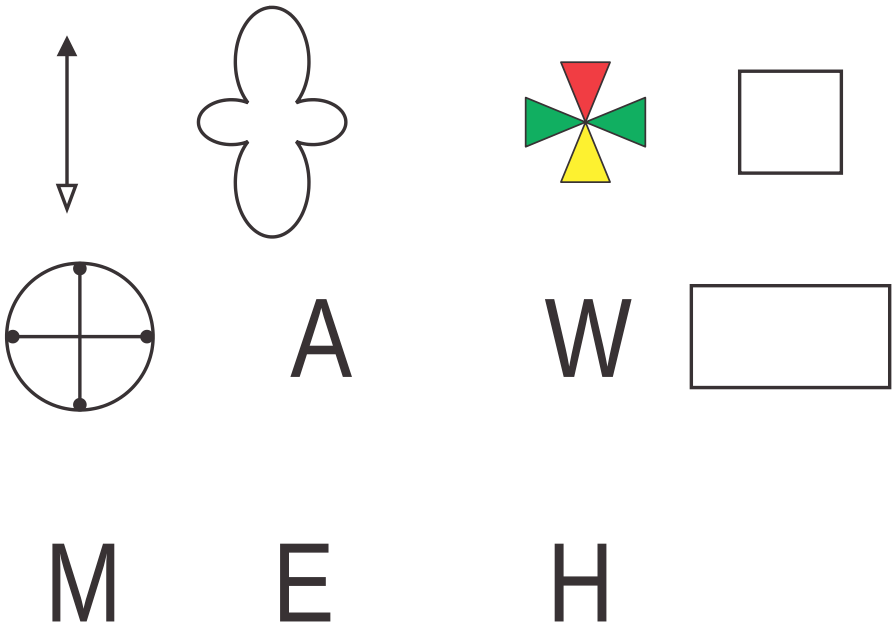
3. Which of the following letters are rotational symmetric after half rotation? Tick(✓) on them.

E H J

Quarter rotation -



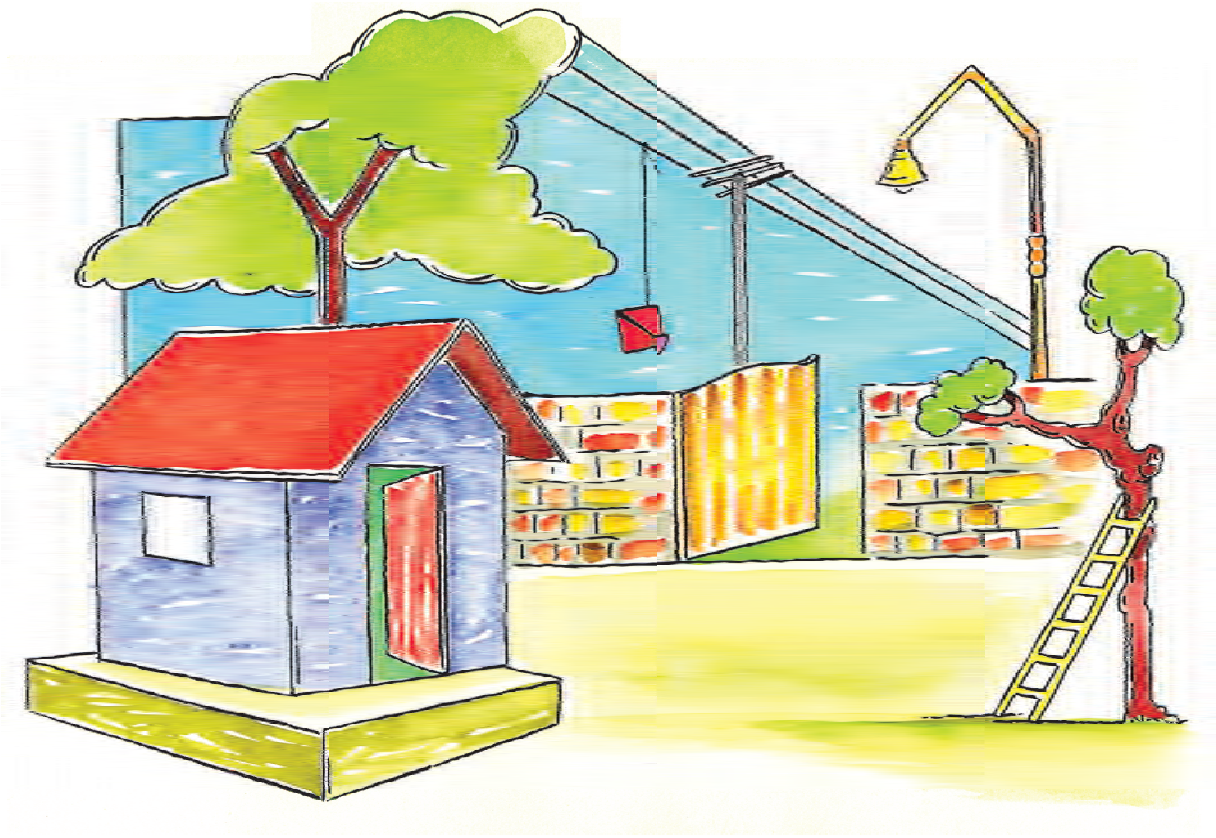
How will the following figers look after quarter rotation ? Draw them.



CHAPTER- 10

Angles

You are given a picture below with some hidden angles. Find as many angles as you can and mark them. (Ask your friends to do the same exercise). Find out who has succeded in finding the maximum angles, and where are these angles?



Where are the angles made?

1. The joint of the roof tops on the hut.

2. _____

3. _____

The pictures given below show some items changing their positions. Are there some angles being made there?









Where are these angles made?

1. The lower position of the door with the door jamb is making an angle.
2. _____
3. _____

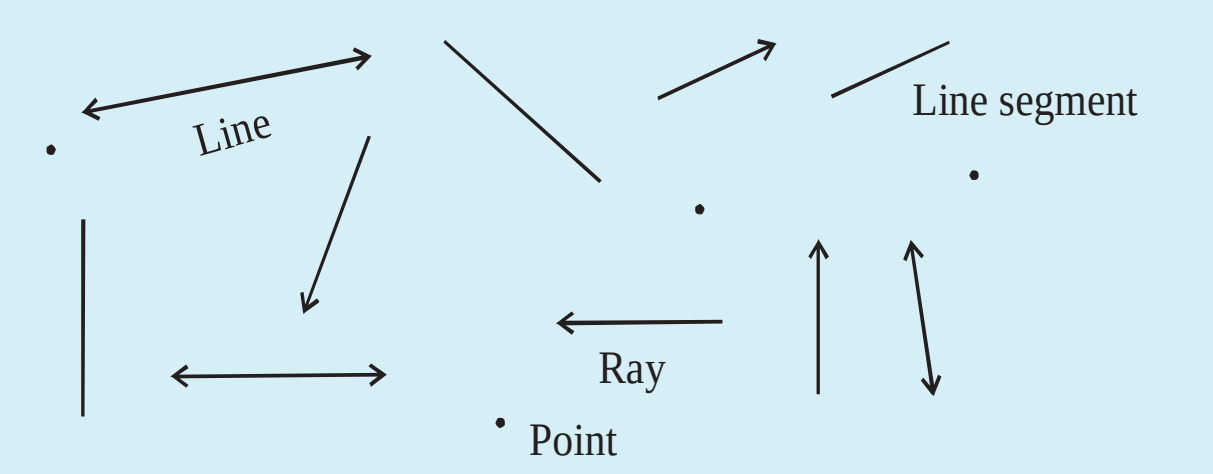
Is there any difference in the way the angles are being made in the given picture?

The picture on the previous page had angles where two lines interact each other or meet at some point. Whereas in the pictures shown above, the angles are being made because of the movement of some part or due to the change of direction.

Angles tell us how much a part of an object has turned or changed direction. We can say that angle is the measure on the basis of its turn.

Identify and Write-

Some figures are given below, try to identify them and write their names-

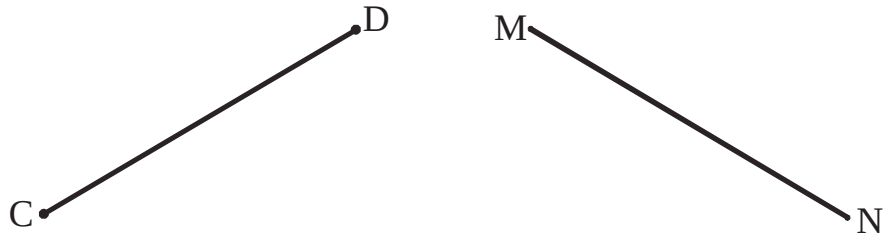


Another way of referring to the same:

The points are given some identification using letters of alphabets:

- We read A as “Point A”.
- We read C as “Point C”.

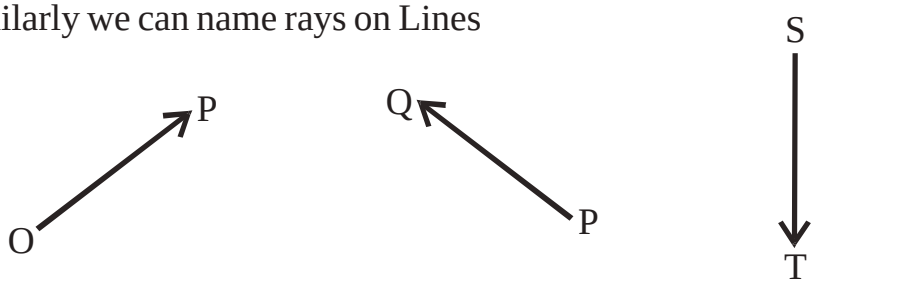
Similarly a line segment is named by giving some identification to the end points.



These line segments are read as Line segment CD or Line Segment MN

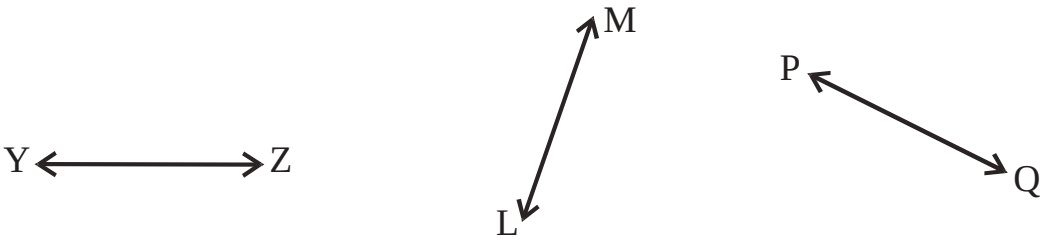
We can read to the same line segments as DC or NM.

Similarly we can name rays on Lines



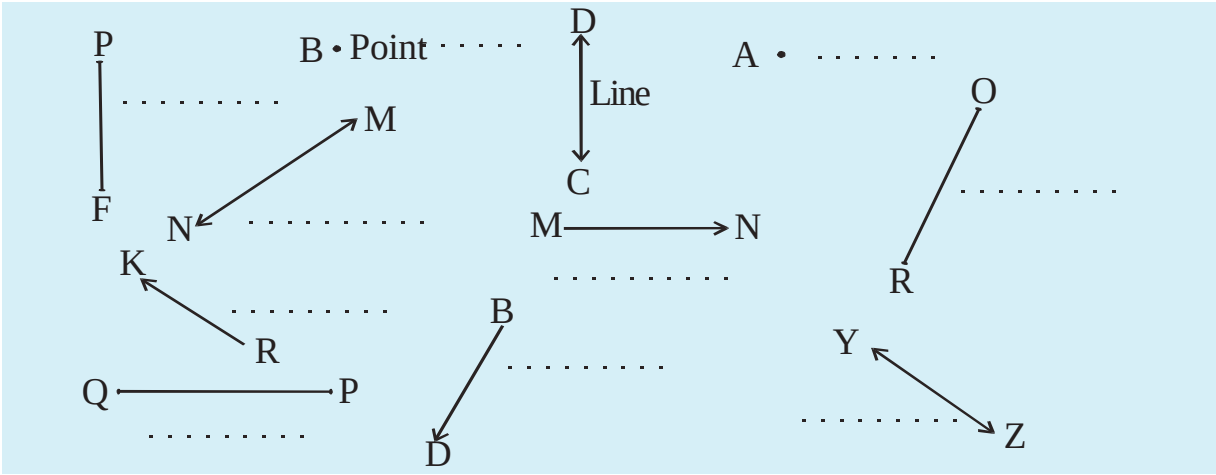
Ray OP Ray PQ Ray ST

While writing a ray we have to write the originating point first -

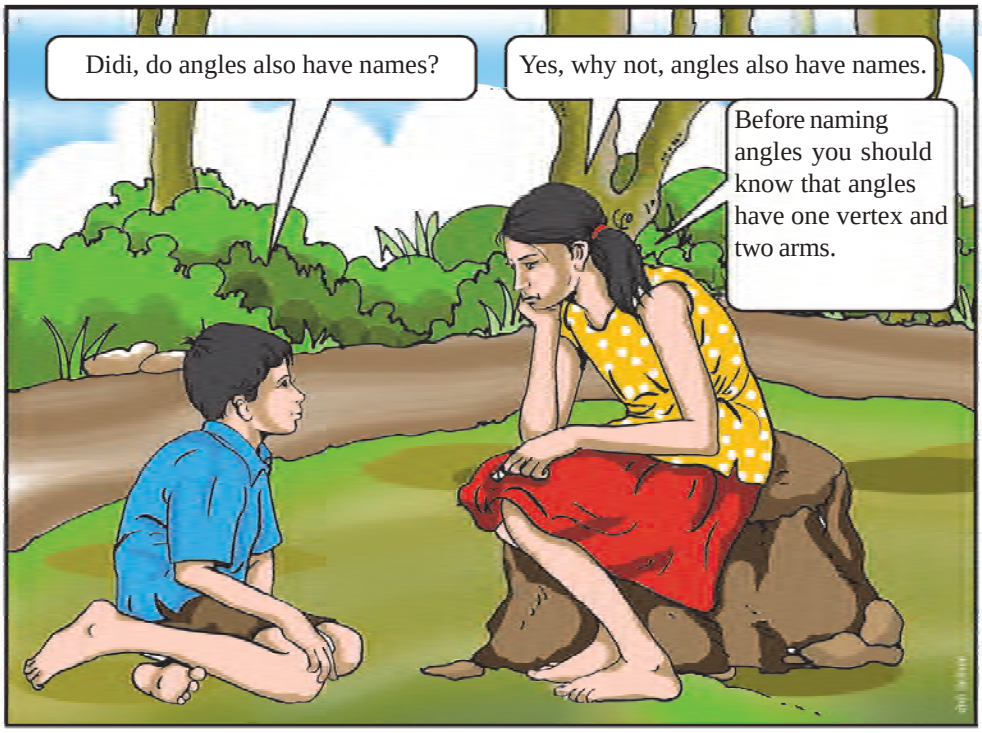


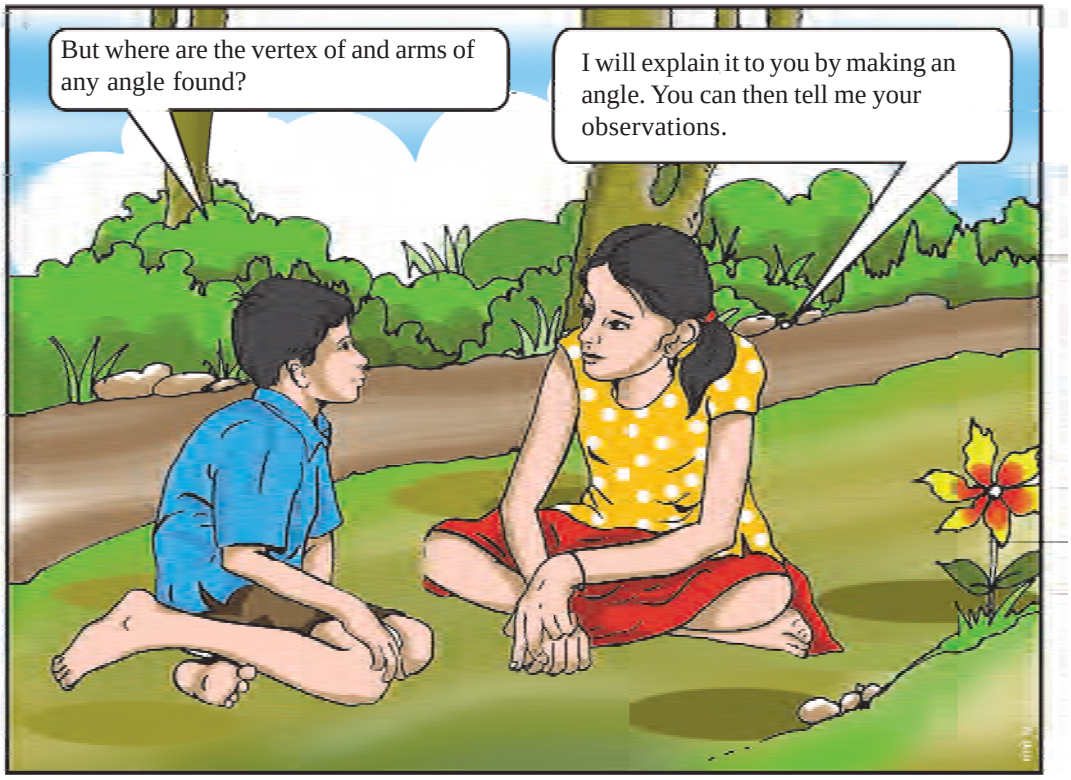
While in a line segment however we can change the order of the points. For example in Line YZ and Line ZY both refer to the same Line.

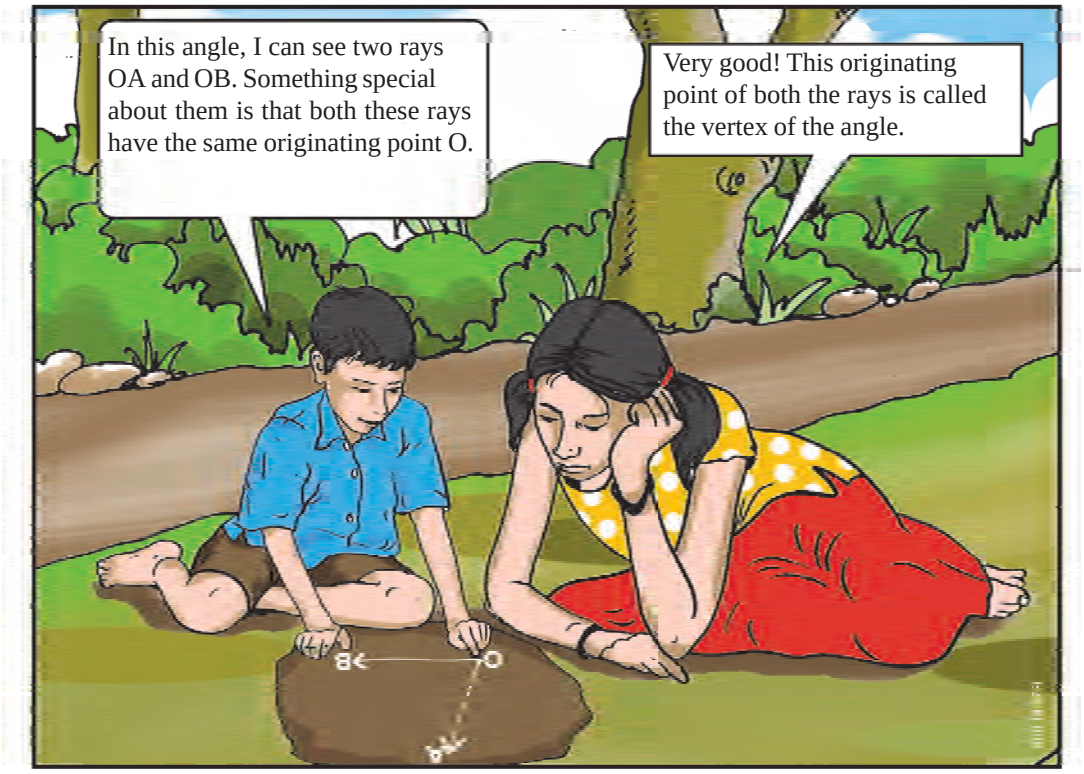
Fill in the blanks -

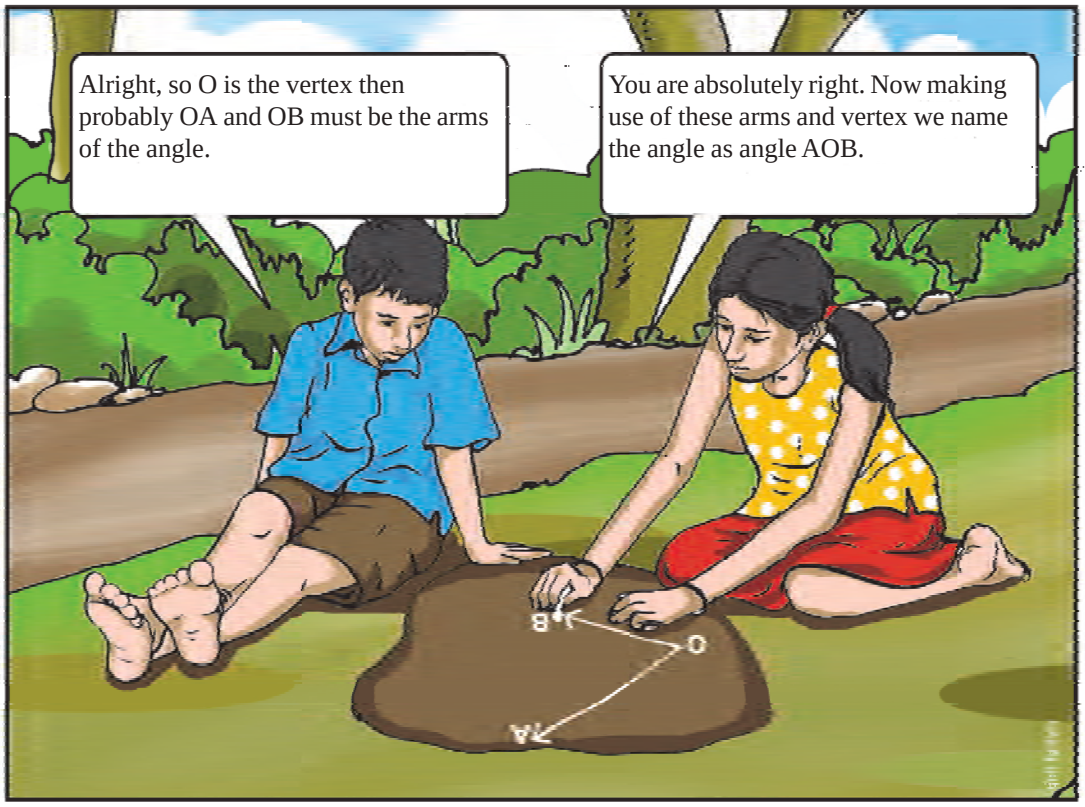


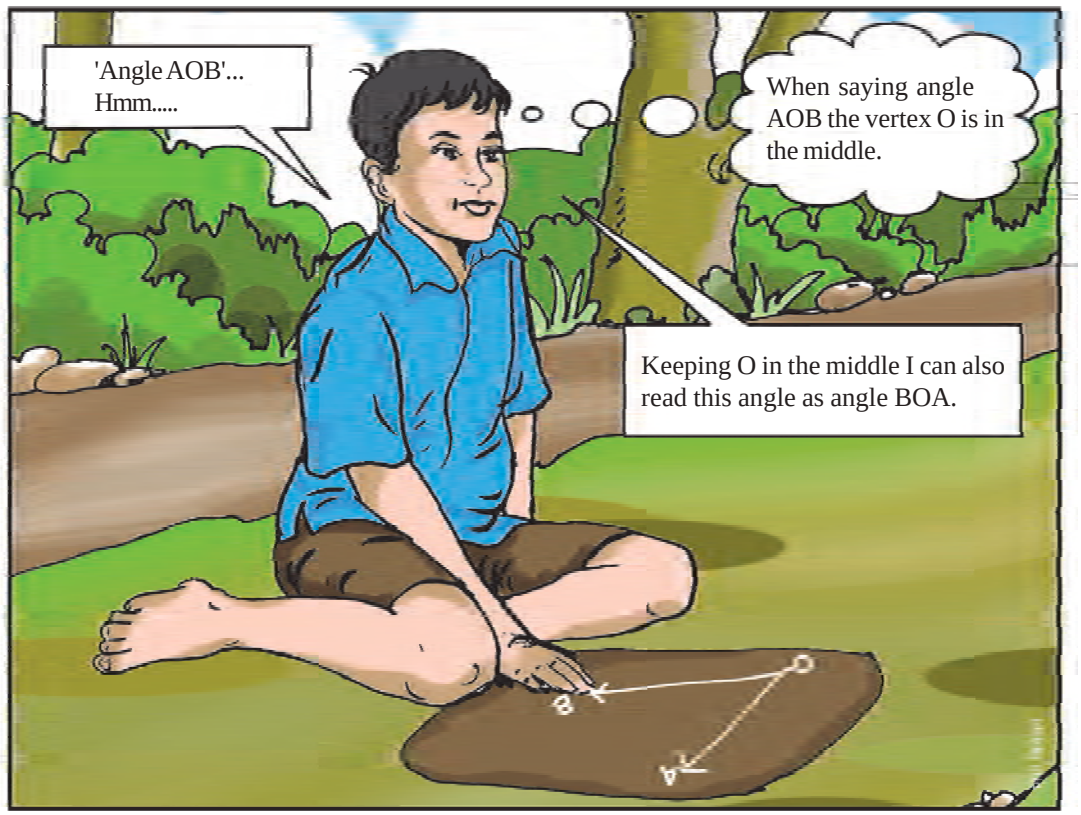
Do angles have names?




But where are the vertex of and arms of any angle found?
I will explain it to you by making an angle. You can then tell me your observations.

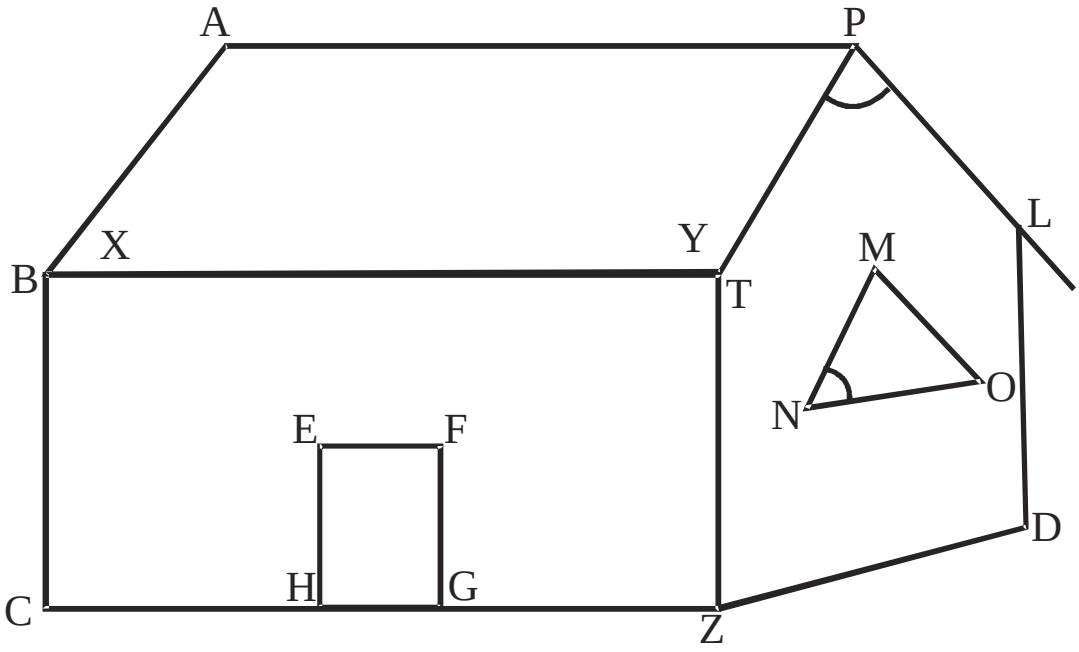

In this angle, I can see two rays OA and OB. Something special about them is that both these rays have the same originating point O.
Very good! This originating point of both the rays is called the vertex of the angle.
B
O
A


Alright, so O is the vertex then probably OA and OB must be the arms of the angle.
You are absolutely right. Now making use of these arms and vertex we name the angle as angle AOB.
B
O
A


'Angle AOB'... Hmm.....
When saying angle AOB the vertex O is in the middle.
Keeping O in the middle I can also read this angle as angle BOA.
B
O
A



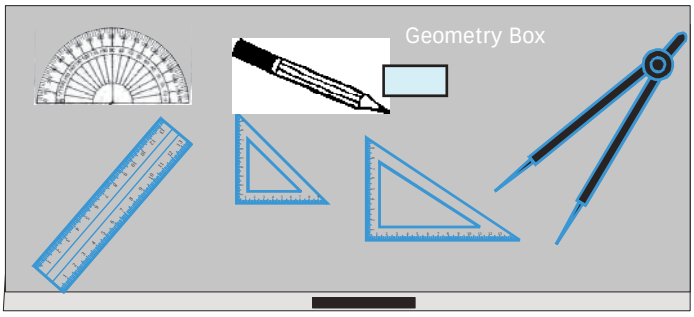
Identify the angles in the picture shown below and write their names in the table given below.



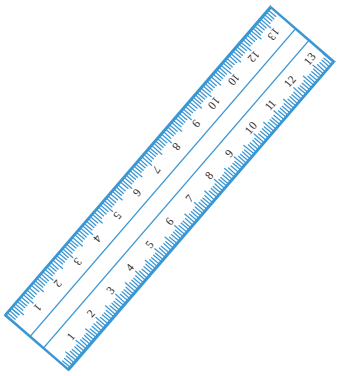
S.No.	Angle	Vertex	Sides or arms
1.	∠XYZ	Y	YX, YZ
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			

What does this box contain?

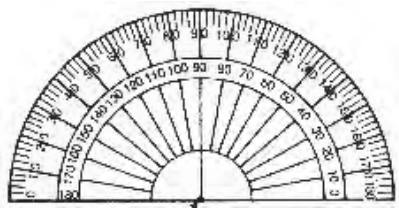
Children, you generally have a compass box or a geometry box. You may have used some of the items from this box. Come let us learn some more things about these items.

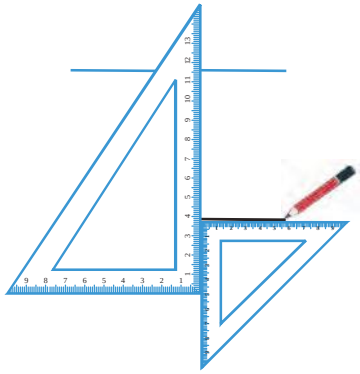


You call this object as the scale or ruler. This is used to draw a line segment or to measure its length.



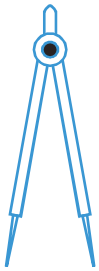
This is known as a protractor. This is used to measure an angle or to draw an angle of a given measure. The marking on this is from zero to one hundred and eighty. Each part is of one degree. The marking are made from both ends. The line joining both the zeros is known as the baseline. The mid point of this line is known as the centre. While making or measuring an angle, this base line and centre are very helpful.



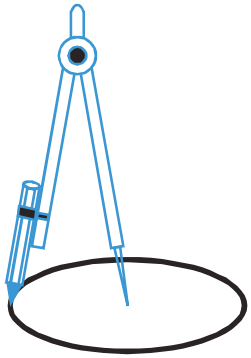


These are known as setsquares. These are used to make angles of special measure such as- 30°, 45°, 60°, 75°, 90° etc. We can also make use of these to draw a pair of lines which never meet, like the lines in your copy.

You might have seen a similar instrument with a mason who builds a house. Find out how they make use of it.



This is a divider. It is used along with a scale to measure a line segment accurataly.



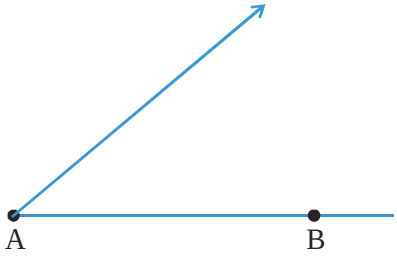
There is another instrument just like the divider in which we can fit a pencil in one of its leg. This is known as compass. It is used to draw a circle.

Besides these a compass box may have a pencil, eraser and a sharpner also.

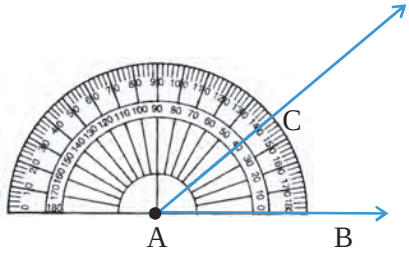
How to measure an angle -

Measuring an angle means to measure the inclination between the two sides or to measure how much part of any thing is rotated. To measure the angle, consider one side of the angle as the base.

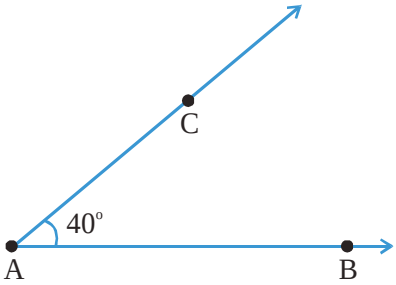
Now place the protractor on the angle in such a way that base line of the angle completely covers the base line of the protractor.



Move the protractor along the base line so that the mid point of the base line of the protractor coincides with the vertex of the angle.



You will see that the base line of the angle is at zero of the protractor. Now move upwards from this point until you find the line which coincides with the other side of the angle. Read the measure given at this point to know the measure of the angle.

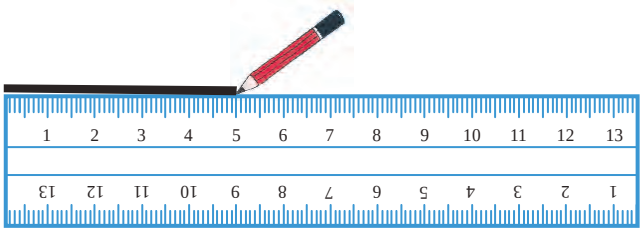


Now let us draw an angle

You know that by fixing a vertex and drawing two rays from this point will give you an angle. But can we draw an angle of a given measure.

You will need a protractor to do this. Let us try to draw an angle of measure 70° using a protractor.

Draw line segment using a scale.

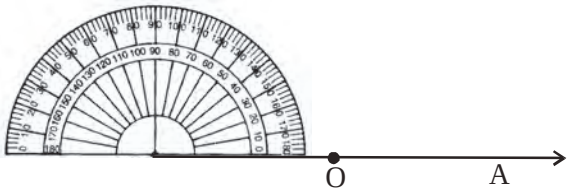


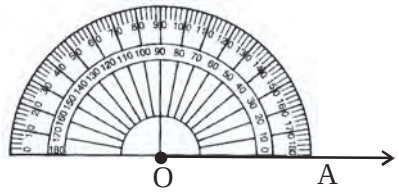
Draw a ray OA.



Place the protractor on OA in such a way that OA completely covered by the base line of the protractor.

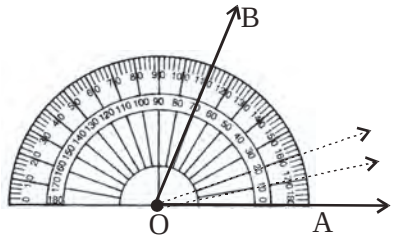
Along the base line of the protractor with this base ray OA.





Move the protractor until the mid point and the base line coincides with the vertex O. Take care that the base line of protractor still coincides with ray OA.

Ray OA will pass through 0° (0 degree) on the protractor. Now move upwards reading 10°, 20°..... until you find 70°. Mark this point with a pencil. Naming it B. Now remove the protractor.



Draw a ray from O, passing through B.

Thus an angle BOA has been drawn whose measure is 70°.

$\angle$ BOA = 70°

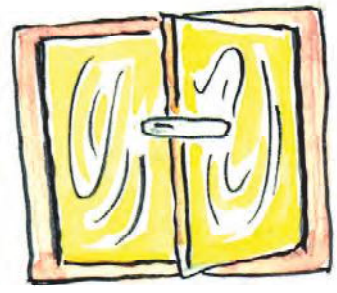
or $\angle$ AOB = 70°

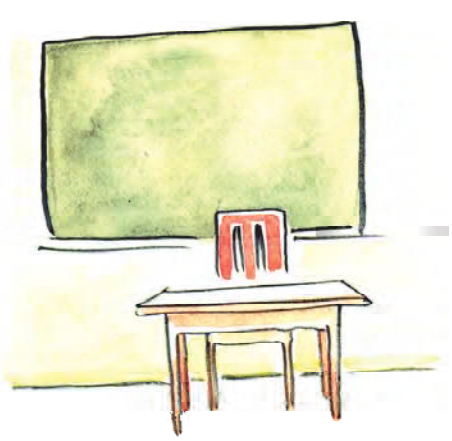
Now draw angles of the measure given below:

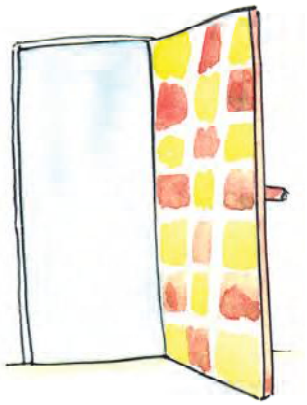
40°, 90°, 130°, 35°, 72°, 168°, 180°, 10°, 0°, 30°, 45°

Look around you. You will see angles of different measures. Observe the angles being made at the joints of the doors, windows, blackboards, books etc.









Are there any angles equal to the ones you drew earlier.

Is there any angle drawn by you which appears to be equal to the angle given above?

What is the measure of that angle?

_____

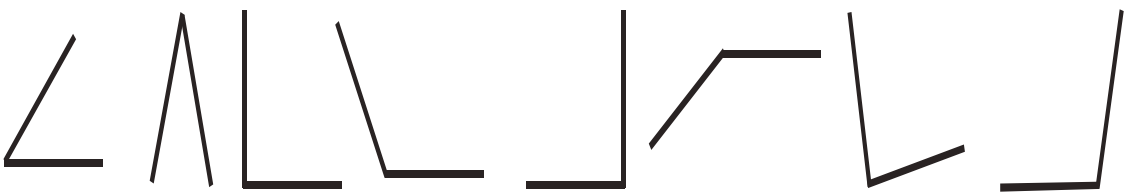
Let us measure the angle being made at the corner of your book. Keep the corner of your book in your copy and trace it out. Measure the angle you have made. Let your friends do the same activity. Take the measures of all these angles and find the average measure.

Is it around 90°?

An angle of measure 90° is known as a right angle.

The angles whose measures are less than 90° is known as **Acute angle** and angles whose measures are more than 90° but less than 180° are known as **obtuse angles.**

Measure the angles drawn below and say what type they are : acute, obtuse or right angle.



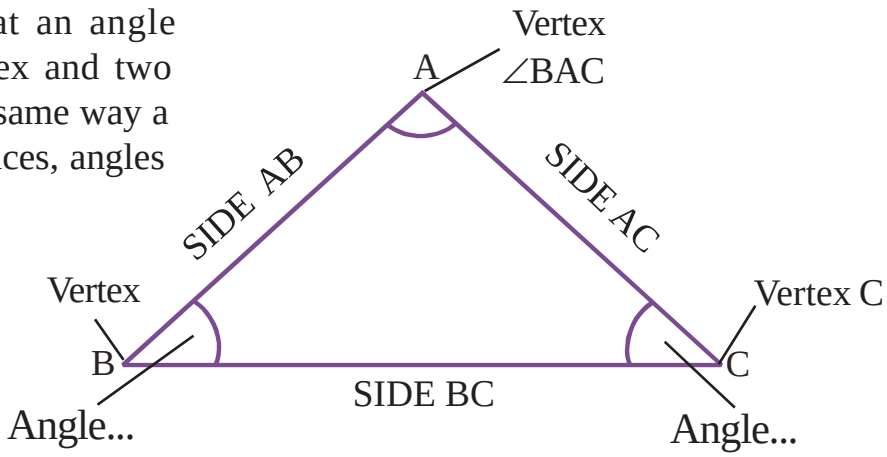
CHAPTER- 11

Geometrical Figures

Know more about triangles

You know that an angle consists of one vertex and two arms or sides. In the same way a triangle also has vertices, angles and vertex sides.

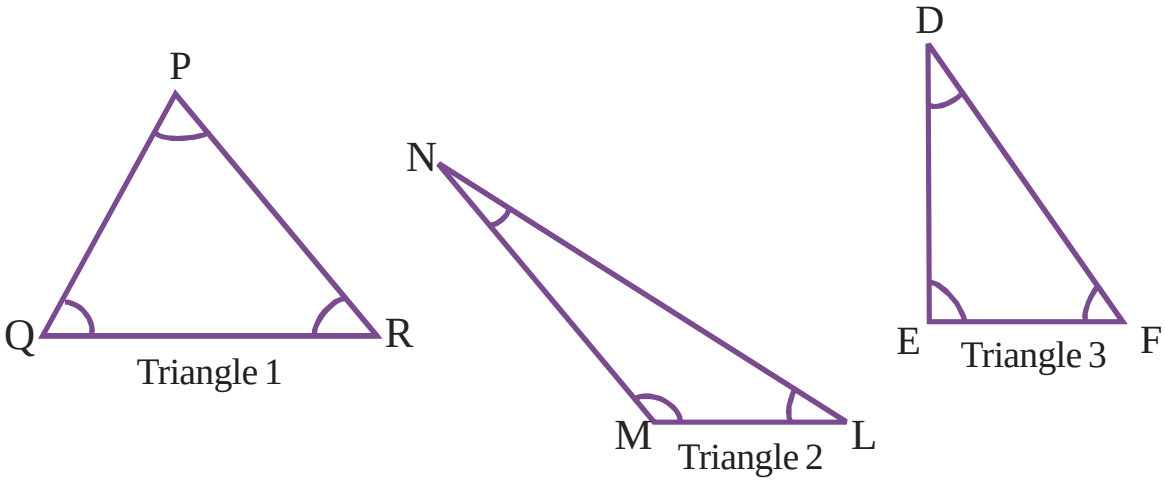
A triangle as the name suggests has three vertices, three angles and three sides.



Identify these in triangles ABC and write them.

Triangle ABC can be written as triangle CAB, triangle BCA ...etc.

Now look at the triangles shown below and identify their vertices, sides and angles and fill the given table :

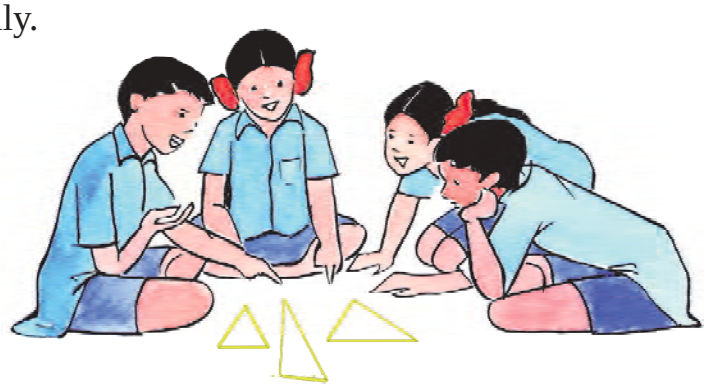


Triangle No.	Name of Triangle	Vertices	Sides	Angles
1	ΔPQR	P,Q,R	PQ, QR, PR	∠PQR, ∠QPR, ∠PRQ

Types of triangle -

Collect some twenty to thirty twigs or sticks of a broom with the help of you friends. Now make different triangles using these.

Look at the triangles carefully.



Are all the triangles the same?

• If not what is the difference between them? Talk with your friends.

• Have you got some triangles, which have two sides of equal length?

• Have you got some triangles, which have three sides of equal length?

• If you do not have any such triangle in which two sides are of equal measure or all three sides of equal measure, then make such triangles.

Now you have the following three types of triangles.

One which has all three sides of different length.

One which has two sides of equal length, and

One which has all three sides of equal length.

Can these triangles have different names?

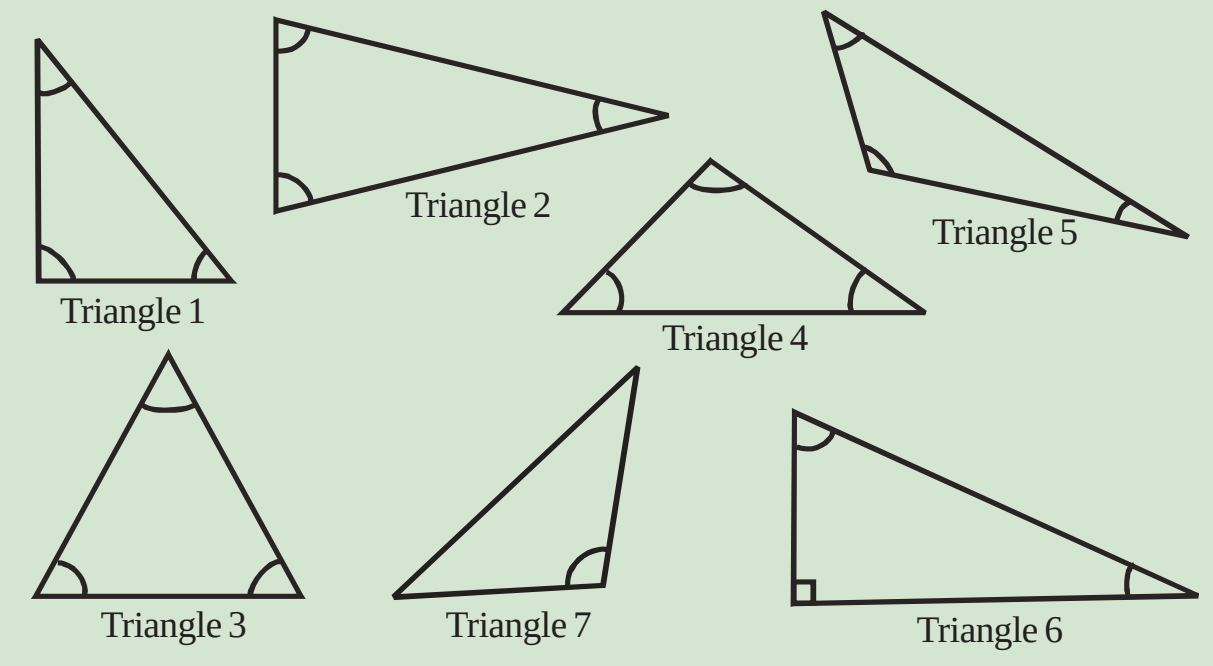
The names, decided according to the length of sides are:

Triangles which have all sides of equal length are called equilateral triangle.

Triangle with two sides of equal length are called isosceles triangles.

Triangles with all three sides of different and unequal length are called scalene triangles. “Are the triangles named, on the basis of angles?”

From the angles given below identify the acute angles, right angles and obtuse angles. Write the types you identify in each of the triangle in the table given below.



Triangle	Number of obtuse angle	Number of right angles	Number of acute angle
In triangle 1	.....	.....	.....
In triangle 2	.....	.....	.....
In triangle 3	.....	.....	.....
In triangle 4	.....	.....	.....
In triangle 5	.....	.....	.....
In triangle 6	.....	.....	.....
In triangle 7	.....	.....	.....

Now answer these questions: -

- How many angles are there in each triangle? .....
- Maximum how many right angles can there be in a triangle? .....
- Maximum how many obtuse angles can there be in a triangle? .....
- Maximum how many acute angles can there be in a triangle? .....
- What is the minimum number of acute angles in a triangle? .....

You have seen that in any triangle-

The minimum number of acute angles are two and the third angle can either be a right angle or obtuse angle or acute angle.

The triangle, in which all three angles are acute, is known as an acute angled triangle.

A triangle in which one of the angles is a right angle, is known as a right angled triangle

A triangle, in which one of the angle is an obtuse angle, is known as a obtuse angled triangle.

Rectangle and square

A quadrilateral PQRS in given below, Measure the angles and sides of this quadrilateral and fill the blanks given below:



Side QP	=	..... cm.	∠QRP	=	.....
Side QR	=	..... cm.	∠RSP	=	.....
Side RS	=	..... cm.	∠SPQ	=	.....
Side PS	=	..... cm.	∠PQR	=	.....

What did you notice about the measures of the sides of the quadrilateral?

.....

.....

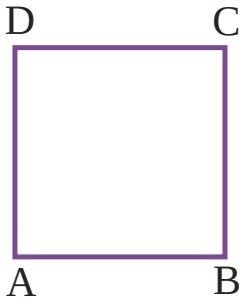
Is there something special about the measures of angles?

.....

.....

A quadrilateral in which the opposite sides are equal in length and all four angles are right angles is known as a rectangle.

Now measure the sides and angles of the figure given below and fill the blanks:-



AB = ... ∠DAB = ...

BC = ... ∠ABC = ...

CD = ... ∠BCD = ...

DA = ... ∠CDA = ...

What observations can you make about the sides of this quadrilateral?

.....

What can you say about its angles?

.....

Is there something common between the two quadrilaterals?

.....

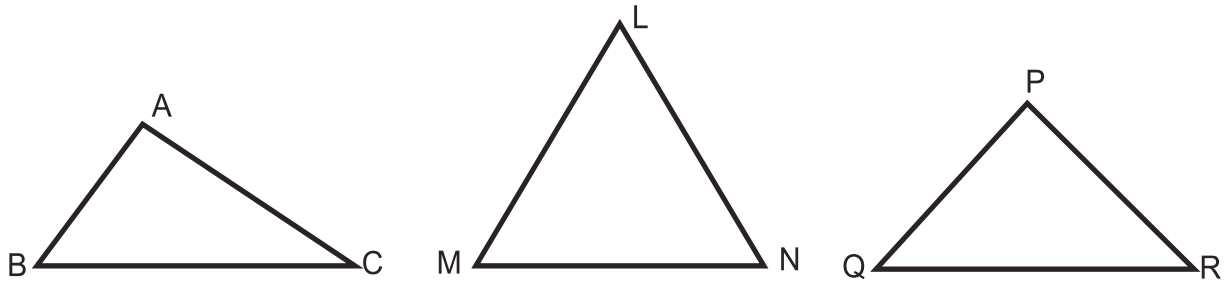
Is there any difference between the two quadrilaterals?

.....

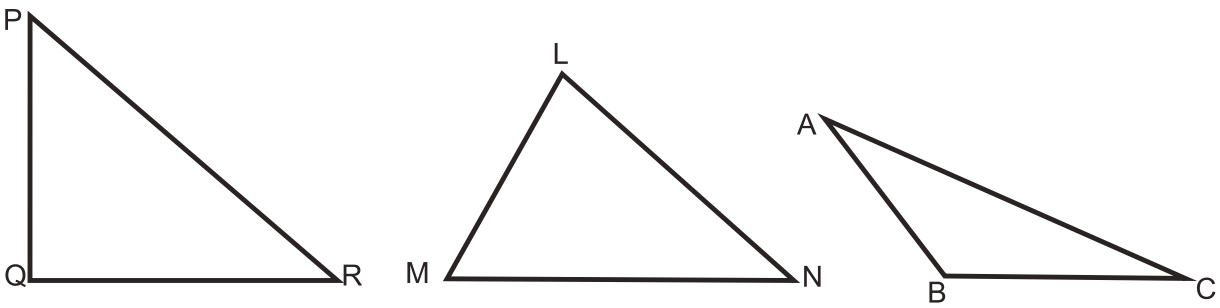
A rectangle in which all sides are equal in length is known as a square.

Exercise

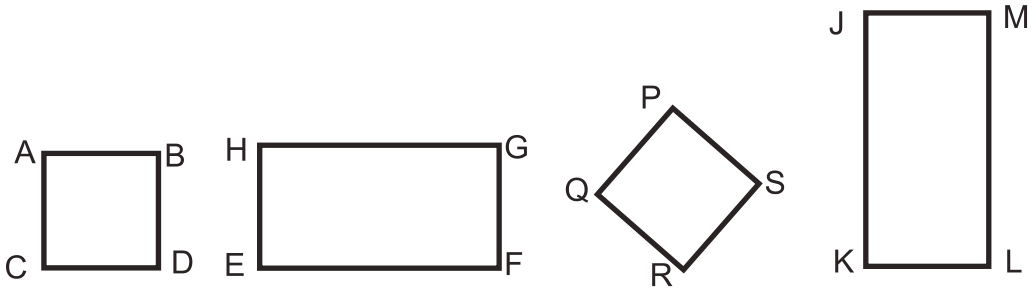
1. Identify the triangle by measuring their sides.



2. Identify the triangle by measuring their angles.

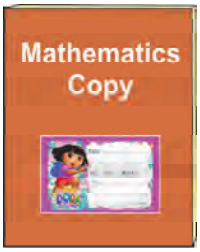


3. Below given are some quadrilaterals. Measuring the sides of these quadrilaterals indentify the squares and rectangles.





Book



Copy



Maths Box



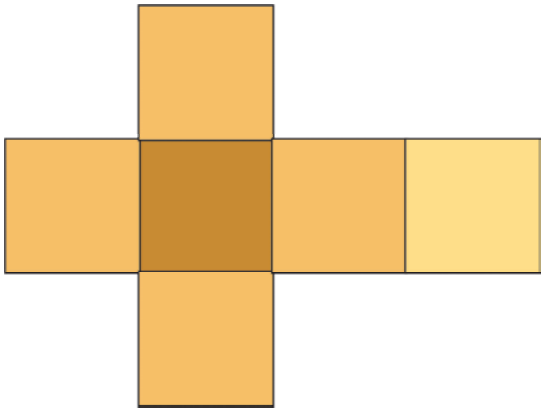
Chalk Box



Bricks

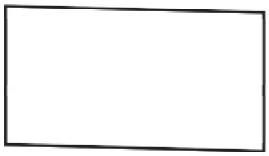
Look at these things carefully. You can see that the surface of each of these is rectangular in shape. Any object with 6 such surface is called a cuboid.

Let us cut an empty chalk box and lay down all its surfaces which will look like the figure shown below. This is called a net of the chalk box.

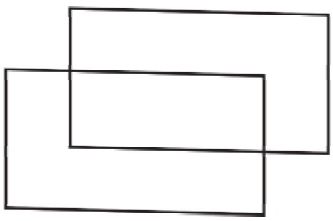


Net of the chalk box.

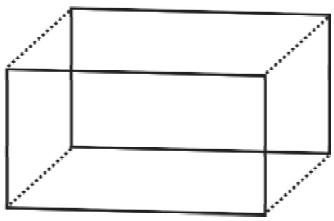
Let us make a figure of cuboid.



step (1)



step (2)



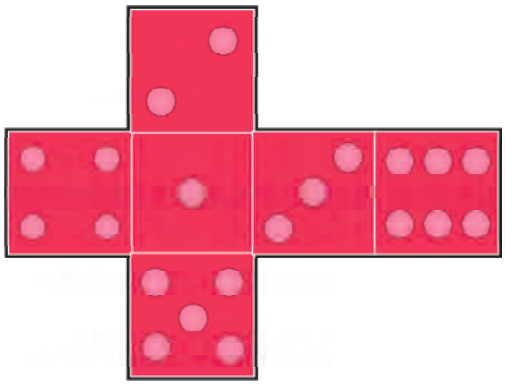
cuboid

step (3)

Cube -



Have you seen a dice? All of its surfaces are square in shape. The shapes of such objects are similar to a cube.



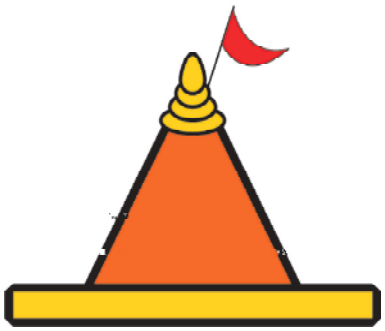
Look at the figures below -



Ice cream cone

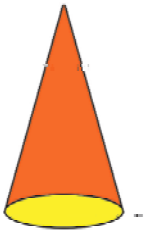


Birthday cap

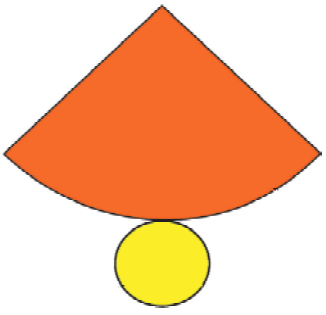


Top of a temple

All these things are of cone shape. On cutting and opening a hollow cone with a lid will look like this which is its net.



cone



Net of a cone

Cylinder - Look at the figures below -



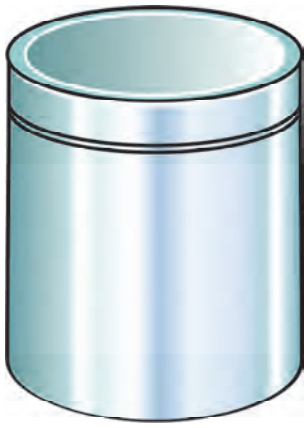
Battery



Glass

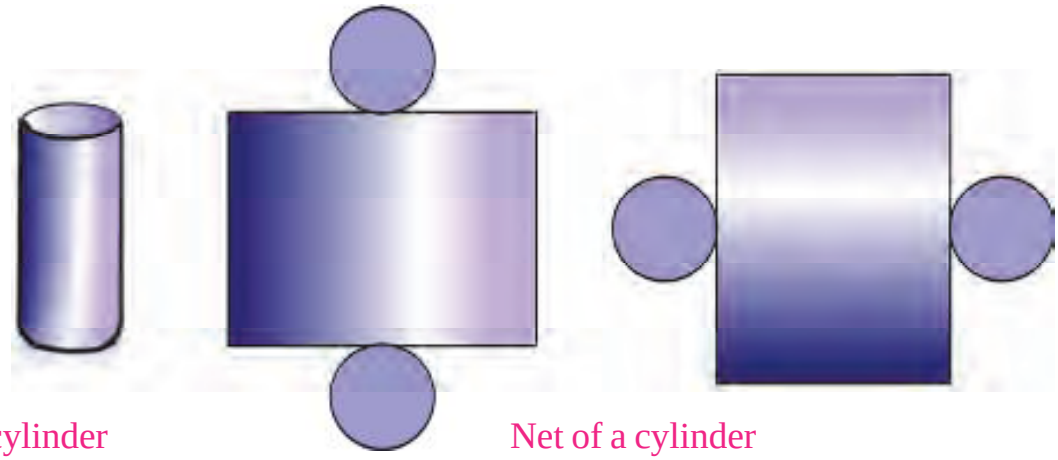


Cup



Can of Ghee

All these things are cylinderical in shape on cutting the cylinder and laying it flat entirely it will look like the figure given below which is the net of a cylinder.



cylinder

Net of a cylinder

CHAPTER- 12

Length

Take a meter scale and measure the items mentioned in the table below and fill the table:

Item	Length	Breadth
Book		
Table		
Door		
Room		

In order to find the length and breadth which units did you use:

Length of a book - Centimeter/Metre/Both

Door - Cntimeter/Metre/Both

Length and breadth of the room - Centimeter/Metre/Both

Now if you had to write the length in only meter or centimeter what would you do?

You would probably say that you would convert the centimeters to meters or Metre to centimetres.

Let us see how to do such conversions-

One example -

5 Metre = ... Centimetres?

5 Metre = 1 Metre + 1 Metre + 1 Metre + 1 Metre + 1 Metre

= 100 cm. + 100 cm. + 100 cm. + 100 cm. + 100 cm.

(∵ 1 Metre = 100 cm.)

$= 100 \times 5$ cm.

or $= 5 \times 100$ cm.

$= 500$ cm.

So to change metre to centimetre we have to multiply by 100.

300 cm. = ... metre?

= 100 cm. + 100 cm. + 100 cm.

= 1 metre + 1 metre + 1 metre

= 3 metre

or 300 ÷ 100 metre



Or do it like this -

$\because$ 100 cm. equal to 1 metre

$\therefore$ 1 cm. equal to $\frac{1}{100}$ metre

$\therefore$ 300 cm equal to $\frac{1}{100} \times 300$ metre

= 3 metre

To change centimetre to metre we have to divide by 100

In the lengths you have measured above, you used the unit meter and centimeters. If you want to find the distance of your school from your house or the distance of one village to another village, than what would be the unit of measure?

In such cases you would probably use 'Kilometre' as a measuring unit.

The distance of 1000 metre is equal to 1 Kilometre.

How will you convert these units to each other?

Take an example -

Example 1 : Convert 5 Kilometre to metres.

Solution : Let us use the unitary method.

$\because$ 1 kilometre is equal to 1000 metres,

$\therefore$ 5 kilometres equal to = 5×1000

= 5000 metres.

Example 2 : How many kilometers are equal to 4000 metre?

Solution : 1000 metre equal to 1 kilometre

1 meter equal to $\frac{1}{1000}$ kilometre

$\therefore$ 4000 metre equal to $\frac{1}{1000} \times 4000$ kilometre

= 4 kilometre

Change the units :

1.	700	centimetres	=	.....	metre
2.	1200	centimetres	=	.....	metre
3.	7	kilometres	=	.....	metres
4.	2000	metres	=	.....	kilometres
5.	40	metres	=	.....	centimetres
6.	9000	metres	=	.....	kilometres



Now answer these -

(a) Can you write 170 centimetres in metres?

(b) Can you explain 1200 metres in kilometres?

Let us find the solutions -

(a) $\because$ 100 centimetres equal to 1 metre

$\therefore$ 1 centimetre equal to = $\frac{1}{100}$ metre

$\therefore$ 170 centimetres equal to = $\frac{1}{100} \times 170$

= 1.70metre



In the same way we can also convert 1200 metres into kilometres.

Change the units-

1. 310 cm. to metre
2. 988 cm. to metre
3. 1760 metres to kilometre
4. 2010 metres to kilometre
5. 1007 cm. to metermetre



Understand these-

Example 3 : 5.6 metres = ... cm.?

Solution : ∵ 1 metre equals 100 cm.

∴ 5.6 metres = 5.6×100 cm.

= 560 cm

Example 4 : 3.207 kilometres = ...metre?

Solution : ∵ 1 kilometre equal to 1000 meter

∴ 3.207 kilometres = 3.207×1000 metre

= 3207 metre



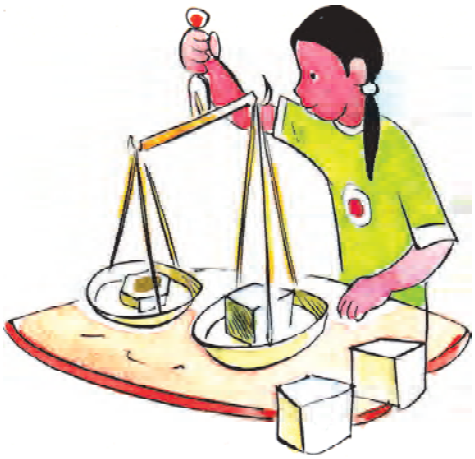
Exercise

Solve these -

1. 3.2 metre is equal to how many centimetre?
2. 5.63metre equal to how many centimetre?
3. Convert 9.02 metres to centimetre.
4. Explain 3.407 kilometres in metre.
5. 0.035 kilometer equal to how many metre?
6. How many centimetre are there in 2 kilometre?

CHAPTER- 13

Weight



You know that -

1000 grams = 1 kilogram

500 grams = $\frac{1}{2}$ kilogram (half of a kilogram)

250 grams = $\frac{1}{4}$ kilogram (quarter of a kilogram)

Fill in the blanks :

2000 grams = ... kilograms

3700 grams = ... kilograms .....gram

4000 grams = ... kilograms

4500 grams = ... kilograms ..... gram

8000 grams = ... kilograms

Now convert 800 grams into kilogram.

Let us think over this-



$\because$ 1000 gram = 1 kilogram

$\therefore$ 1 gram = $\frac{1}{1000}$ kilogram = 0.001 kilogram

$\therefore$ 800 gram = $\frac{800}{1000}$ kilogram = 0.800 kilogram

Hence 800 gram = 0.800 kilogram

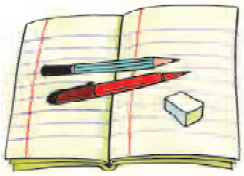
5 gram $= \frac{5}{1000}$ kg. $= 0.005$ kg.

50 gram $= \frac{50}{1000}$ kg. $= 0.05$ kg.

500 gram $= \frac{500}{1000}$ kg. $= 0.5$ kg.

735 gram $= \frac{735}{1000}$ kg. $= 0.735$ kg.

Fill in the blanks-



1. 750 gram = 0.750 kg.
2. 135 gram = ... kg.
3. 40 gram = ... kg.
4. 25 gram = ... kg.
5. 9 gram = ... kg.
6. 3 gram = ... kg.

Now let us see how we can convert a weight given in kilograms and grams to kilogram.

Example : 12 kg. 25 grams is how much kilograms?

Solution : To change 12 kg. 25 grams to kilogram, we need to change 25 grams in kg.

12 kg. 25 grams = 12 kg. + 25 gm.

$= 12 \text{ kg.} + \frac{25}{1000}$ kg.

$= 12$ kg. $+ 0.025$ kg.

$= 12.025$ kg.

Hence 12 kg. 25 gm = 12.025 kg.



Exercise

Change the given weights to grams :

1. 5 kilograms
2. 9 kilograms
3. 15 kilograms 600 grams
4. 11 kilograms 50 grams
5. 28 kilograms 5 grams

Change the following weights to kilograms :

6. 7850 grams
7. 1050 grams
8. 10 kilograms 225 grams
9. 17 kilograms 80 grams
10. 20 kilograms 5 grams

Solve these :

11. Add 3.720 kg. and 1.350 kg.
12. Subtract 7.925 kg. from 14.670 kg.
13. Multiply 18.980 kg. by 10
14. Divide 18.980 kg. by 10



Example 2 : If one box can hold 2.325 kg. of dal, how many kilograms of dal could you store in 5 such boxes.

Solution : 2.325 kg.

$$\times \quad 5$$

$$11.625 \text{ kg}$$

Because 2.325 kg. = 2 kg. 325 gm.

2 kg. 325 gm.

$$\times \qquad 5$$

$$10\text{kg.} \quad 1625\text{gm}$$

Here 10 kg. + 1625 gms

= 10 kg. + 1000 gm. + 625 gm.

= 10 kg. + 1 kg. + 0.625 kg.

= 11.625 kg.

Example 3 : How many sacks each of 15 kg. capacity can be filled if there is 75 kg. of rice?

Solution : If 15 kg. rice is filled in 1 sack

Then 1 kg. of rice is filled in $\frac{1}{15}$th sack

$\therefore$ 75 kg. of rice will need = $\frac{1}{15} \times 75$ sacks

= 5 sacks

Hence 75 kg. of rice can be filled in 5 sacks.

Statement Sums

1. Ramu bought 1 kg. tomatoes, 2 kg. potatoes and 250 gram chillies from the market. So what is the total weight of these vegetables?
2. If Nilu weighs 20.600 kg., Sanjay weighs 22.800 kg. and Kundan weighs 25 kg. What is the weight of all of them together?
3. A shopkeeper bought 100 kg. sugar and carried it to his village. Due to a small hole in the sack, some of the sugar fell on the way. He reached his shop and weighed the sugar and found its weight 90.700 kg.. How much sugar was lost from his sack?
4. Ramesh bought a cabbage and a pumpkin from the market. The cabbage weighed 750 gram and the pumpkin 3.700 kg.. So by how many kgs. is the pumpkin heavier than the cabbage?
5. In the school 100 gram of rice is cooked for a child. So how many kgs. of rice has to be cooked for 75 students?
6. One sweet box contains 0.450 kg. of sweets, how many kgs. of sweet would be there in 10 such boxes ?
7. One shopkeeper has 60 kg. of sugar. He divides this equally into 15 packets. So how many kgs. of sugar is packed in each packet?
8. How many packets of 250 gm. each can be made from 5 kg. of spices.
9. Ramlal had 235 kg. of rice. He sold 75 kg. on the first day, 85 kg. on the second day and 52 kg. on the third day. How many kgs. of rice is still left with him?
10. Manoj bought 6 bags each with 500 gm. of sugar. How many packets of 200 gm. each can you make from this quantity of sugar?

CHAPTER- 14

Capacity

In the previous class you filled up a 1 litre vessel with vessels of different capacity. From this we came to a conclusion.

1000 ml = 1 litre

Similarly 500 ml = $\frac{1}{2}$ litre

250 ml = $\frac{1}{4}$ litre (quarter litre)



Fill in the blanks:

2000 ml = ... litre

5000 ml = ... litre

3600 ml = ... litre ..... ml.

4050 ml = ... litre ..... ml.

Now can you tell how many litres are equal to 700 ml?

Let us think over this question-

$\because$ 1000 ml = 1 litre

$\therefore$ 1 ml = $\frac{1}{1000}$ litre= 0.001 litre

$\therefore$ 700 ml = $\frac{1}{1000} \times 700$ litre = $\frac{700}{1000}$ litre

= 0.700 litre

Similarly

$5\text{ ml} = \frac{5}{1000}\text{ litre} = 0.005\text{ litre}$

$50\text{ ml} = \frac{50}{1000}\text{ litre} = 0.050\text{ litre}$

$500\text{ ml} = \frac{500}{1000}\text{ litre} = 0.500\text{ litre}$



Fill in the blanks :-

1) 375 ml = ... litre
2) 125 ml = ... litre
3) 50 ml = ... litre
4) 20 ml = ... litre
5) 8 ml = ... litre
6) 2 ml = ... litre

Let us see how we can convert the measurement given in litre and ml to litres-

Example 1 : Change 3 litres 200 ml to litres

Solution : To write 3 litres 200 ml in litres we need to write 200 ml in litres

3 litres 200 ml = 3 litres + 200 ml

$= 3\text{ litres} + \frac{200}{1000}\text{ litres}$

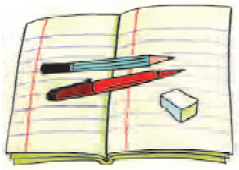
= 3 litres + 0.200 litres

= 3.200 litres

Hence, 3 litre 200 ml = 3.200 litres



Exercise



Change the given to millilitres-

1. 8 litres
2. 7 litres 250 ml
3. 12 litres 500 ml
4. 6 litres 50 ml
5. 9 litres 8 ml
6. 5 litres 750 ml
7. 11 litres 7 ml

Change the given to litres-

8. 5750 ml
9. 12050 ml
10. 6005 ml
11. 15600 ml
12. 900 ml



Solve-

13. Add 5.750 litre and 2.500 litre.
14. Subtract 8.750 litre from 12.250 litre.
15. Multiply 2.250 litre by 4..
16. Divide 8.500 by 5.

Example 2 : If one vessel can hold 2.750 litre of water how much water will 5 such vessels hold?

Solution : Quantity of water in 1 vessel = 2.750 litre

$\therefore$ Quantity of water in 5 vessels = 2.750×5 litre

$$= 2.750$$

$$= \begin{array}{r} \times \quad 5 \\ \hline 13.750 \end{array}$$

= 13.750 litres.

Hence 5 vessels can hold 13.750 litre of water

Example 3 : How many bottles can be filled each of capacity 225 ml with 45 litres of medicine?

Solution : 1 litre = 1000 ml



$\therefore$ 4.5 litre = 4.5×1000 ml

= 4500 ml

As 225 ml can be filled in 1 bottle

$\therefore$ 1 ml can be filled in $\frac{1}{225}$ bottle

$\therefore$ 4500 ml can be filled in $\frac{1}{225} \times 4500$ bottles

$$= \frac{4500}{225} \text{ bottle}$$

= 20 bottles

Hence 4.5 litres of medicine can be filled in 20 bottles each of capacity 225 ml.

Statement Sums

1. A milkman gave 1 litre 500 ml of milk to one customer and 1 litre milk to another customer. How much litres of milk did he give?

2. A kettle has 2 litre of tea. 500 ml tea was consumed so how much tea is left in the kettle?

3. Mohan drinks 250 ml of milk daily. How much milk in litres would be consumed in 4 days?

4. If 1 litre juice was divided equally among 5 people, how many litres would each person get?

5. Rajesh bought 2.250 litres of Soyabean oil, 3 litres of mustard oil and 500 ml of coconut oil from a shop. How many litres of oil did he buy in all?



6. A box has 1.6 litres of milk. How many mugs can be filled with this quantity if the capacity of each mug is 200 ml?

7. One drum can hold 25 litres of water. How many litres of water can be filled in 7 such drums?

8. A shopkeeper has a drum with 15 litres of oil. He sold 3.250 litre, 5 litre and 2.300 litre oil to the three customers So, how much oil is left in the drum?

9. One bucket can hold 27 mugs of water. If the capacity of one mug is 300 ml, what is the capacity of the bucket?

10. A water tanker can hold 6000 litres of water. If it fills tanks of capacity 800 litres and 400 litres respectively in this order, How many of each type of tanks can be filled? (**Hint** - Subtract 800 and 400 from 6000 one after the other.)

CHAPTER- 15

Money

How many paise are there in a rupee?

Think and answer-

How many 50 paise coins will you get instead of 1 rupee?

.....

How many 25 paise coin will you get instead of 1 rupee?

.....

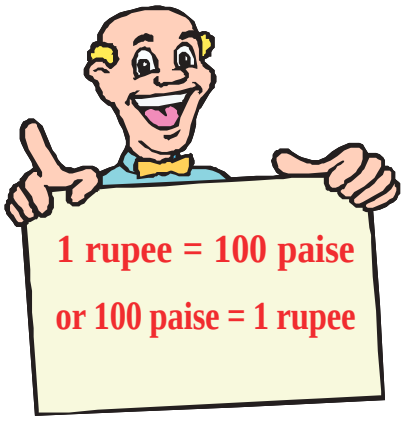
You saw that you got two 50 paise coins instead of 1 rupee

Meaning 50 p. + 50 p. = 100 paise

Instead of 1 rupee you get 4 coins of 25 p. each 25 p + 25 p + 25 p + 25p = 100 p.

Thus each time you got 100 paise.

Now can you say how many coins of 20 paise will you get instead of rupee?



You now know

100 paise = 1 rupee

Let us see the same by converting paise to rupees. How do we write this?

As 100 paise = 1 rupee

1 paise = $\frac{1}{100}$ rupees

= 0.01 rupees

1 paise = 0.01 rupees

$\therefore$ 50 paise = 0.01x50 rupees

= 0.50 rupees

Hence 50 p. = 0.50 rupees

You can do this in another way too :

100 paise = 1 rupee

1 paise = $\frac{1}{100}$ rupee

50 paise = $\frac{1}{100} \times 50$ rupees

= $\frac{50}{100}$ rupees

= 0.50 rupees

Similarly-

5 paise = $\frac{5}{100}$ Rs.

= 0.05 Rs.

and 15 paise = $\frac{15}{100}$ Rs.

= 0.15 Rs.

Now change the given paise to rupees and write the answer :

(1) 25 paise (2) 35 paise (3) 50 paise (4) 45 paise

(5) 55 paise (6) 64 paise (7) 75 paise (8) 80 paise

(9) 85 paise (10) 96 paise

Fill in the blanks :

(1) 3 paise = ... rupees

(2) 8 paise = ... rupees

(3) 10 paise = ... rupees

(4) 15 paise = ... rupees

(5) 37 paise = ... rupees

Can you say how many rupees equals rupees 10 and 75 paise?

Let us understand-

In 10 rupees and 75 paise, there are 10 rupees but we need to convert 75 paise to rupees

Solution : 10 rupees 75 paise = 10 Rs. + 75 p.

$$= 10 \text{ Rs.} + \frac{75}{100} \text{ Rs.}$$

= 10 Rs. + 0.75 Rs.

= Rs. 10.75

Hence, Rs. 10 & 75 p = Rs. 10.75

Now you convert the given rupees and paise to rupees :

(1) 15 rupees 15 paise (2) 22 rupees 20 paise

(3) 36 rupees 45 paise (4) 53 rupees 65 paise

(5) 60 rupees 60 paise

Fill in the blanks :

(1) Rs. 17, and 22 p. = Rs. .....

(2) Rs. 46, and 76 p. = Rs. .....

(3) Rs. 66, and 50 p. = Rs. .....

(4) Rs. 70, and 85 p. = Rs. .....

(5) Rs. 86, and 25 p. = Rs. .....

The accounts of a market

Example 1 : Chitra bought tomatoes for Rs. 9.50 and ladys fingures for Rs. 17.75. So how much money did she spend in total ?

Solution : The cost of tomatoes Rs. 9.50

Lady finger Rs. 17.75

Total cost Rs. 9.50+17.75

That is Rs. 27.25

Hence Chitra spent a total of Rs. 27.25.

Example 2 : Monu went to the market with Rs. 75. She spent Rs. 25 & 50 p. So how much many is left with her?

Solution : Monu had with her Rs. 75

She spent Rs. 25 & 50 p.

or Rs. 25.50

Amount left with her = 75.00 - 25.50 = Rs. 49.50

Hence Monu is left with Rs. 49.50.

Solve these:

1. Mukesh bought a pair of socks worth Rs. 23 & 75 p., a watch worth Rs.175 and a pair of spectales worth Rs. 90 & 50 p. How much money did he spend in total?
2. Akhtari has Rs. 64.50 with him. How much more is needed to make this amount Rs. 141.25?
3. Rashmi bought a chocolate for Rs. 9 biscuits for Rs. 12.50 and sugar for Rs.20.50. How much did she spend in all?
4. Surjit has Rs. 110.25 with him. He bought sweet worth Rs. 17.50. How much money is left with him?
5. Atri had Rs. 327 with him. He bought rice worth Rs. 72.50 wheat worth Rs.50.25 and sugar worth Rs. 50. How much amount is now left with him?

Let us solve some more questions :

Example 3 : Gaja has 35 kg. of seeds with him. How much would he earn on selling these if the cost of 1 kg of seeds in Rs. 5.50.

Solution : Given 1 kg seeds cost Rs. 5.50

We want to know the cost of 35 kg of seeds

1 kg seeds cost = Rs. 5.50

35 kg seeds would cost = 5.50 x 35

= Rs. 192.50

Example 4 : The cost of 3 copies is Rs. 43 & 50 p., so what is the cost of 1 copy?

Solution : Given that 3 copies cost = Rs. 43 & 50 p

We want to find cost of 1 copy = ?

3 copies cost = Rs. 43.50

1 copy costs = 43.50 ÷ 3

= Rs. 14.50

Hence 1 copy will cost Rs. 14.50.

Solve these -

1. Phoolsingh is paid Rs. 63 & 75p. per day as labour charge. So what amount would he get for 7 days?
2. If the cost of 7 kg. of Dal is Rs. 214.90, what is the cost of 1 kg. of Dal?
3. A class of 35 students collected Rs. 87 & 50p. So how much average amount did each student contribute?

4. 1 metre of tape costs Rs. 1 & 75p. so what is the cost of 12 metres of tape?

5. The cost of 10 pens is Rs. 88 & 50p., so what is the cost of 1 pen?

6. The cost of 12 litres of diesel is Rs. 415 & 20 p. so what is the cost of 3 litres of diesel?



CHAPTER- 16

Time



Look at the clock shown in your book. The dial of the clock has been divided into 12 big parts. These big parts have been represented by number i.e. from 1 to 12. Each big part has been further divided into 5 small parts. Now, we have 60 small parts on the dial. To know the time., needles of second, minute and hour have been shown.

The seconds hand takes 1 second to cross a small part of the dial. The minutes hand on the other hand takes 1 minute to cross 1 smaller part.

The seconds hand crosses a small part in one second, and to have complete round of the clock, it crosses sixty small parts and takes 60 seconds for it.

The minutes hands takes 60 seconds to cross one small part, on the basis of this we can say.

1 minute = 60 seconds
Or 60 seconds = 1 minute

Likewise the minutes hand takes 60 minutes to have a complete round. The hours hand takes 60 minutes to cross one big part and we say that the hour's hand had taken one hour.



Means,

1 hour = 60 minutes
Or 60 minutes = 1 hour

You might have seen that the hours hand takes two rounds in a day. That means one day has twenty four hours.

That is a day has 24 hours

24 hours = 1 day
Or 1 day = 24 hours

Now change minutes to seconds-

How do we change 5 minutes to seconds?

Nita did it like this-

5 minutes = 1 minute + 1 minute + 1 minute + 1 minute + 1 minute

= 60 seconds + 60 seconds + 60 seconds + 60 seconds + 60 seconds

= 300 seconds.



$\therefore$ 5 minutes = 300 second

We can do this another way

As 1 minute equals 60 seconds

$\therefore$ 5 minute equal 60x5 seconds

= 300 seconds

Hence 5 minute = 300 seconds

How can we change 180 minute to hours?

We can do this by the following method:

As 60 minutes equal 1 hour

Therefore 1 minute equals $\frac{1}{60}$ hour

and 180 minutes equal $\frac{1}{60} \times 180$ hours

= 3 hours

Hence 180 minutes = 3 hours

Change the following-

(1) 8 minutes to seconds.

(2) 240 seconds to minutes.

(3) 6 hours to minutes.

(4) 300 minutes to hours.

Here you saw the relation between seconds, minutes and hours. Similar relation can be established between days, weeks, months and years.

To understand this fill the following table:



S.No.	Name of the month	Number of days
1.	January	31
2.	February	28
3.		
4.		
5.		
6.		
7.		
8.		
9.		
10.		
11.		
12.		

Total number of days .....

Answer these -

How many months are there in a year?

.....

How many days are there in a month?

.....

(From the table you filled above you must have realised that the number of days is not the same in each month. That is why we consider that on an average there are 30 days in a month)

How many days are there in a year?

.....

In leap year February has 29 days. So how many days will there be in a leap year?

.....

(1) How many hours are there in 2 days?

(2) Change 72 hours to days.

(3) Change 4 months to days.

(4) How many months will there be in 90 days?



Fill in the blanks-

(1) 280 seconds = ... minutes ..... seconds.

(2) 150 minutes = ... hours ..... minutes.

(3) 52 hours = ... days ..... hours.

(4) 4 minutes 10 seconds = ... seconds.

(5) 1 hour 17 minutes = ... minutes.

(6) 3 days 10 hours = ... hours.

(7) 2 months 9 days = ... days.

(8) 1 year 10 months = ... months.

Adding time intervals

To add time intervals we add seconds to seconds, mnutes to minutes and hours to hours. But if the addition of seconds is more then 60, then we carry one minute to minutes column and now add the minutes to minutes.

So also if the addition of minutes exceeds 60 minutes, you carry 1 hour to the hours column and add the hours.

To add year, months and days also we use a minute method.

Example 1 : 5 hours 30 minutes

+ 2 hours 20 minutes

7 hours 50 minutes

Example 2 : Add 3 hours 40 minutes and 1 hour 50 minutes

Solution : 3 hours 40 minutes

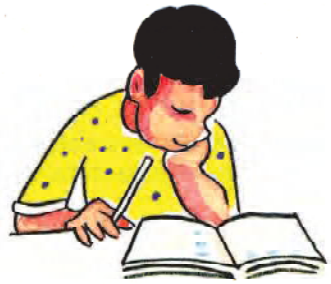
+ 1 hour 50 minutes

4 hours 90 minutes

= 4 hours + 60 minutes + 30 minute

= 4 hour + 1 hour + 30 minutes

= 5 hours 30 minues



Add :

(1) 3 hours 30 minutes and 2 hours 15 minutes.

(2) 5 hours 45 minutes and 4 hours 25 minutes.

(3) 7 hour 44 minutes and 1 hour 31 minutes.

(4) 2 hour 30 minutes 20 seconds and 6 hour 10 minutes 10 second

(5) 6 hour 40 minutes 45 seconds and 2 hour 20 minutes 35 seconds

(6) 8 years 7 months and 2 years 3 months.

(7) 5 years 8 months and 3 years 5 months.

Subtraction of time intervals

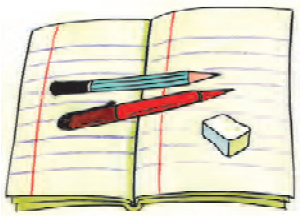
To subtract time intervals we subtract seconds from seconds, minutes from minutes and hours from hours. But if the minutes to be subtracted is more than the minutes in the above row, we borrow 1 hour of 60 minutes from the hours column and add this to the minutes in the above line before subtracting. If there are seconds involved we do follow a similar procedure.

A similar method is used to subtract days, months and year.

Example 3 : Subtract 5 hours 25 minutes from 8 hours 50 minutes

Solution :

8 hours 50 minute
– 5 hours 25 minute
3 hours 25 minutes



Example 4 : Subtract 1 hour 15 minutes from 3 hours 10 minutes

Solution : Here you cannot subtract 15 minutes from 10 minutes so you take 3 hours 10 minutes as 2 hours 70 minutes and then subtract.

3 hours 10 minutes = 2 hours + 1 hour + 10 minutes
= 2 hours + 60 minutes + 10 minutes
= 2 hours + 70 minutes

2 hour 70 minutes
– 1 hour 15 minutes
1 hour 55 minutes



Subtract-

(1) 5 hours 25 minute from 8 hours 40 minutes.

(2) 2 hours 40 minutes from 7 hour 20 minutes.

(3) 3 hours 55 minutes from 12 hour 35 minutes.

(4) 4 hours 20 minutes 25 seconds from 5 hours 25 minutes 15 seconds.

(5) 5 hours 40 minutes 12 seconds from 9 hours 15 minutes 25 seconds.

(6) 2 years 5 months from 4 years 7 months

(7) 3 years 8 months from 7 years 3 months.



Exercise

(1) Manisha spends 4 hours 30 minutes studying in school and 3 hours 30 minutes studying at home. So how much time does she spend studying totally?

(2) A labour works daily for 5 hours 20 minutes in the farm and 2 hours 30 minutes at home. So how much time does he spend working daily?

(3) Mohan finishes a job in 5 hours 40 minutes of the allotted time 8 hours. How much time before does he finish the job?

(4) A cyclist covers a distance of 25 km in 3 hours and 55 minutes and a motor cyclist takes 1 hour 15 minutes to cover the same distance. How much less time did the motorcyclist take than the cyclist?

(5) A labourer worked for 2 weeks in a factory. He worked daily for 6 hours. So how many hours did he work totally?

(6) Waheed stayed for 12 days at his brother in law's place, 15 days at his grand mother's place and 5 days at his friends place, during his holidays. So how many weeks and how many days did he spend with friends and relation?

(7) Pushpa is 1 year and 3 month younger than Amit. Amit 1 year and 10 months younger to Rashmi. So how much younger is Pushpa than Rashmi?

(8) A bus took 2 hours and 25 minutes to reach Saraipalli from Raigarh and 3 hours 10 minutes to reach Raipur from Saraipalli. So how much time did it take to go from Raigarh to Raipur?

(9) Poonam's birth date is 28.01.1996. What will her age be on 30 Sept. 2005?

Calculation of Age -

Poonam's date of birth is 28 Jan. 1996, what was her age on 30 sept. 2005.

Solution:

1. To calculate the age for a particular date, we write first year then month and then date.
2. Then we will write the Date of birth below.
3. Now you subtract Day from Day, month from month and year from year.

	Year	Month	Day
	2005	09	30
−	1996	01	28
	09	08	02

∴ On 30th Sept. 2005 Poonam's age is 9 years, 8 months and 2 days.

Can you find your age? Write in figures and in words -

.....

You also find your age as on 31st December -

	Year	Month	Day
	.....	12	31
−	.....	.....	.....
	.....	.....	.....

Coming year what will be your age as on 1st January.

CHAPTER- 17

Billing

Mohan had to buy a few stationary items. He went to a shop.

Mohan - Sir, how much does 120 pages notebook cost ?

Shopkeeper - ₹ 20/-

Mohan - Please give me 3 notebooks and how much is this pencil for ?

Shopkeeper - ₹ 5/-

Mohan - Please give me two pencils and also a 2 rupee eraser.

(The shopkeeper gave all the items)

Shopkeeper - Do you want anything else?

Mohan - No, thank you. Please give the bill.

Shopkeeper - Why do you need a bill ?

Mohan - My mother asked me to bring the bill.

Shopkeeper - Ok. I will give you the bill.

The shopkeeper gave the bill to Mohan which was as follows -

BILL

Apna Stationary, Kurud

No. 05 **Date** 6/8/17
Name Mohan

S.no.	Items (in)	Rate (in Rs.)	Quantity	Amount
1.	120 pages copy	20	3	60
2.	Pencil	5	2	10
3.	Rubber/Eraser	2	1	2

Signature
Apna stationary, Kurud

Excecise

1. If you need 5 copies, 3 pencils and 1 rubber then make a bill according to the above conversation.

BILL

Apna Stationary, Kurud

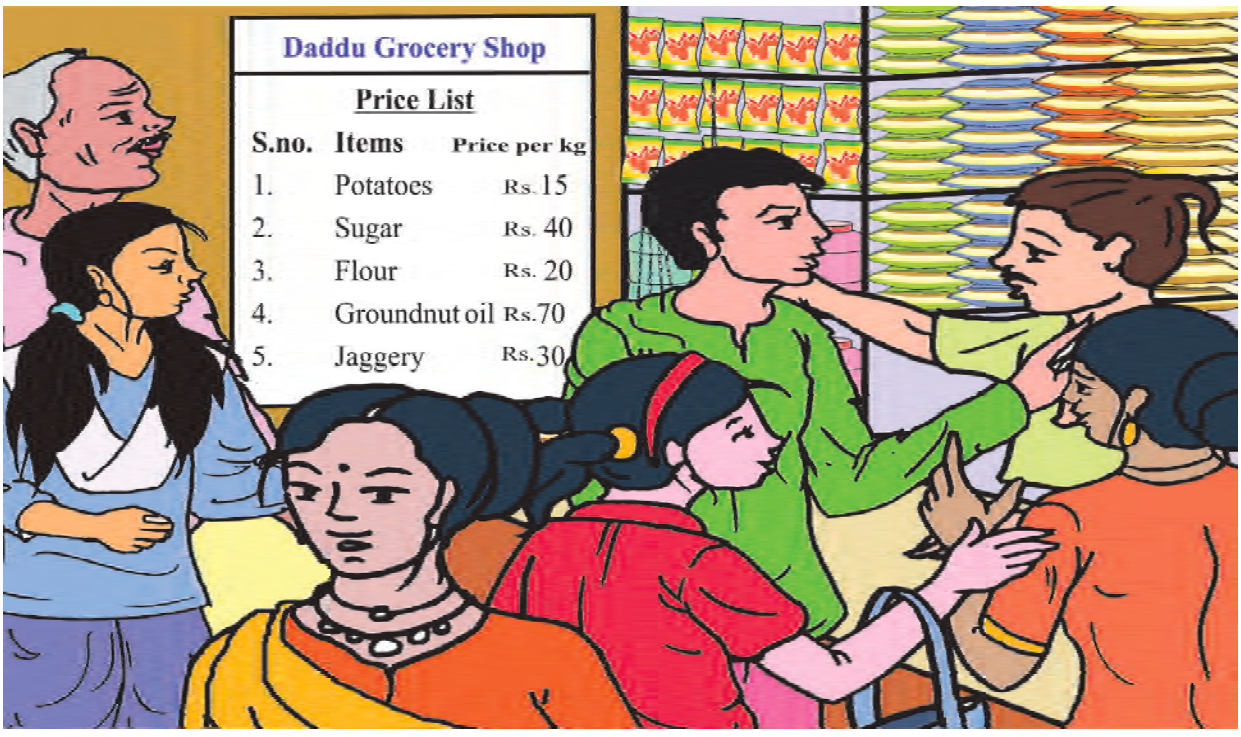
No. ....

Name .....

S.no.	Items	Rate (in Rs.)	Quantity	Amount (in)
			Total	

Signature
Apna stationary, Kurud

2. You went to a grocery shop. There you bought 1 kg sugar, 2 kg potatoes, 1/2 litre groundnut oil and 1 kg flour, make a bill according to the price list in the shop.



3. Whenever you go to shop to buy things always make a bill for the items purchased.

Bill

Om Grocery Shop

No. ....

Name .....

S.no.	Items	Rate (in Rs.)	Quantity	Amount (in)
			Total	

Signature
Om Grocery Shop

CHAPTER- 18

Perimeter

In Deepa's school the preparation for celebrating Republic day were going on. To hang paper streamers, the children fixed four bamboo poles at the four ends of the field and tied a rope to the first bamboo, tying it to the second, third and fourth again tied it back to the first bamboo. Thus a rectangle of the rope was formed.Now Deepa and her friends stuck the paper streamer and flags on this rope.

Deepa said "What is the length of this rope? Let us measure and see."

Meeta got a meter scale from the teacher and started measuring the rope. To do this they started from the first bamboo went to the second, third and fourth bamboo and came back to the first-one. The measurement was 70 meters.

Just then the teacher reached there and asked what they were doing?

Deepa - We wanted to know the length of the rope. We measured it and found it is 70 meters long.

Teacher - How did you find this?

Meeta - We went from the first bamboo, to the second, third, fourth and again to the first and found it was 70 meters long.

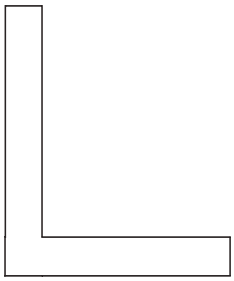
Deepa - This means the rectangle made by the rope has a perimeter of 70 meters.

Teacher - Yes, you are absolutely right.

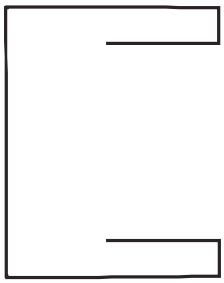
"You know that the measure of the length of the boundary of a figure is called its perimeter."

Closed and open figures

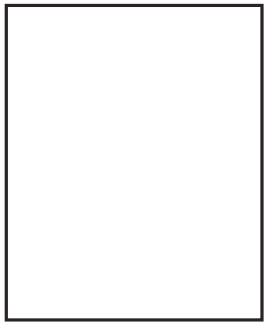
Some figures are drawn below. Place your finger at any one place and start tracing the figure.



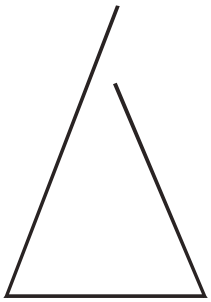
1



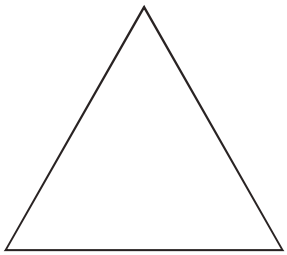
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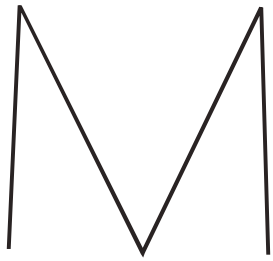
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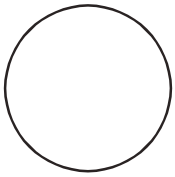
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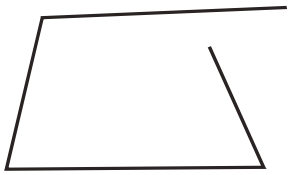
5



6



7



8

Which of these figures are such that you reached the same point where you started?

.....

Which of the figures are such that you did not reach the same point where you started from?

.....

Figure in which you reach the same point where you started from are called closed figures

Figures in which you do not reach the same point you started from are called open figures.

When Deepa and her friends were finding the perimeter of the rectangle formed by the rope, did they reach the same point where they started from?

So what sort of figure is a rectangle? Open or closed?

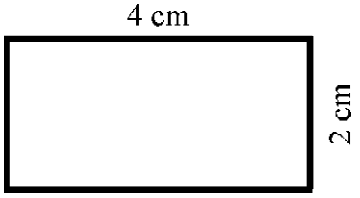
We can find the perimeter of only closed figures.

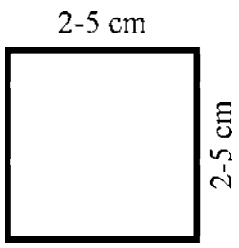
Look at some of the objects around you like the blackboard, books etc carefully write the names of the objects which you find to be closed figures of the in the table below. Find the perimeter of the closed figures.

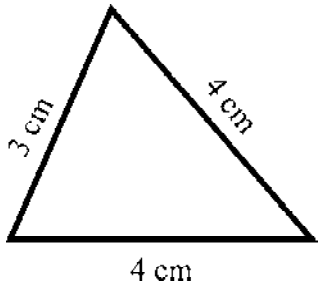
Object	perimeter (cm.)
Blackboard	
Surface of a table	
Book	

To find the perimeter of the blackboard, table or book, you must have measured all the four edges. Similarly to find perimeter of any closed figure we find the length of the edges.

Find the perimeter of given figures-



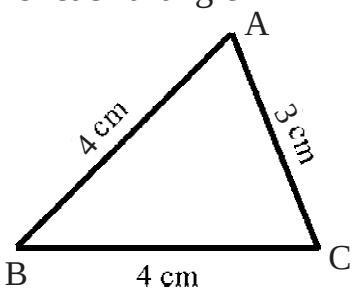




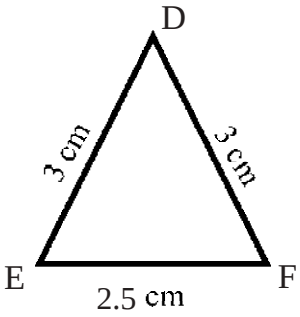
Meaning of perimeter - The total of the length of the sides of any closed figure.

Perimeter of Triangle -

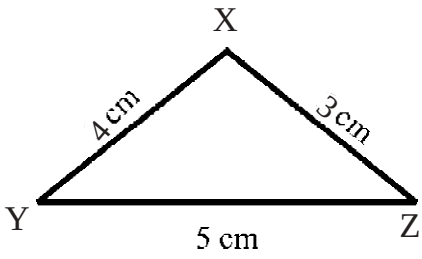
Some triangles are given below with the lengths of each side. Find the perimeter of each triangle-



Perimeter of ABC = ...



Perimeter of DEF = ...



Perimeter of XYZ = ...

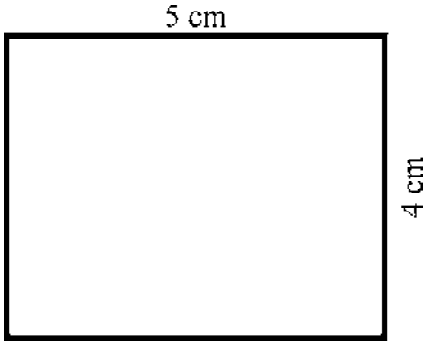
What did you do to find perimeter of these triangles?

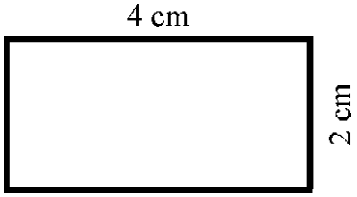
The perimeter of a triangle = length of first side + length of second side + length of third side

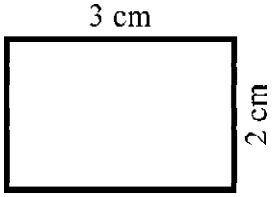
Perimeter of triangle = sum of the length of the three sides of a triangle.

Perimeter of a rectangle

What is the perimeter of the following rectangles-







How did you find the perimeter of these rectangles?

.....

.....

.....

You know that in a rectangle the opposite sides are equal in length. So while finding the perimeter we add twice the length and twice the breadth.

Meaning

Perimeter of a rectangle = length + breadth + length + breadth

= length + length + breadth + breadth

= sum of 2 length + sum of 2 breadths

So perimeter of rectangle = 2 × length + 2 × breadth

Perimeter of squares-

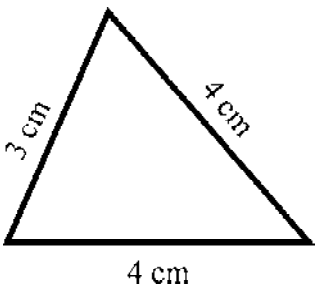
As we know that all four sides of square are equal in length.

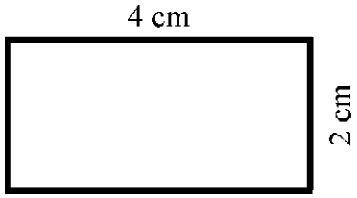
∴ Perimeter of square = side + side + side + side

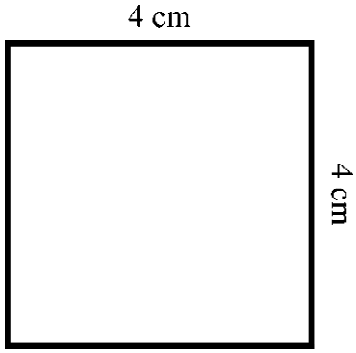
= sum of 4 sides

So, perimeter of square = 4 × side

Now give the perimeter of these figures-







Problems

1. The length of a playground is 200 metre and the breadth is 150 metre . If Raju wants to go around the boundary once, how many metres would he have to run?

2. A square garden has a side of 250 metres. To put a wire fencing around this, what is the length of wire required?

3. What is the length of lace which would be required to be put around a handkerchief, which is a square with a side of 15 cm each?

   If you wanted to make 5 such handkerchiefs what length of lace would you need?

Some more questions-

Write the perimeter of each rectangle-

1. Length = 25 metres, breadth = 20 metres
2. Length = 32 metres, breadth = 18 metres

Give the perimeter of the following triangles-

1. 6 cm, 8 cm, 10 cm
2. 15 cm, 18 cm, 20 cm
3. 12 cm, 12 cm, 12 cm

Find the perimeter of the following squares-

1. Each side = 8 metres
2. Each side = 11metres
3. Each side = 35 metres

CHAPTER- 19

Area

Arrange books on the table in your class such that no book covers the other and all the books are of the same size.

How many books did you need to cover the whole table?

Hence the surface area of table = surface of ..... books.

Now do a similar activity using copies. If you don't find copies of the same size, use only one and measure how many times you needed to cover the whole table.

You can take the help of your teacher in doing this.



You can do this using a slate too.

Now complete the given table-

Surface of table = Surface of ..... books.

Surface of table = Surface of ..... copies.

Surface of table = Surface of ..... Slates.

Sometimes while keeping books on the surface of the table is does not cover the table completely. Some portion of the table, is left uncoverd.

If it happens, can we say that the surface area of the table is equal to the number of books kept on the table? Discuss with your teacher.

The measure of the surface of figure is the area of that figure.

Arrange bangles on the surface of the table in such a way that they touch each other

- How many bangles did you arrange?

- Is there space between the bangles?
- Was there space between the books you had arranged?
- Can you find the area of a surface using bangles?
- To measure the area of the surface, is it necessary to cover the whole surface with same units.

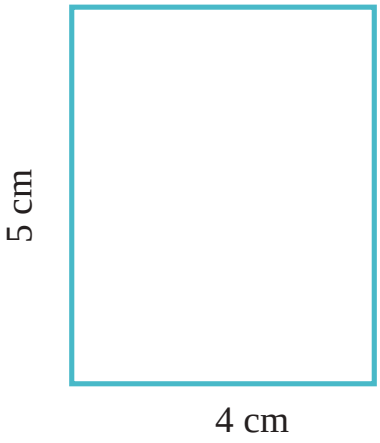
Cut surface of the following figures from a cardboard.

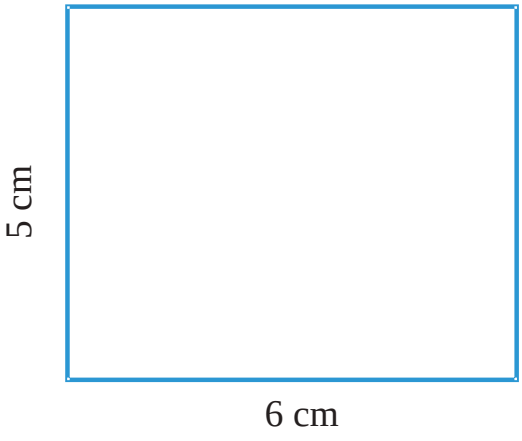


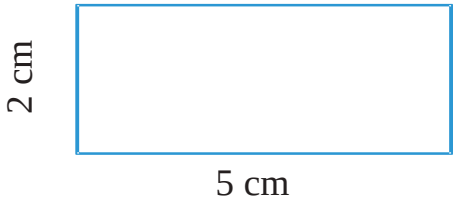


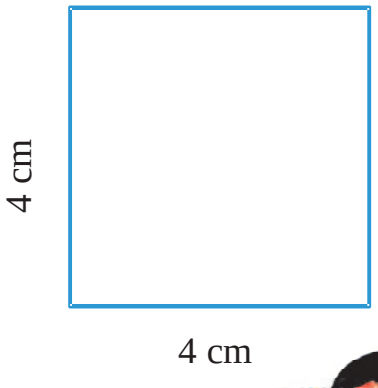


Now use the pieces of 2cm×2cm to cover the surface of the following figures-









Which of the figures are completely covered?

Now arrange the rectangles of 3cm x 1cm on these figures.

Are the figure completely covered?



Now use the pieces of measurement of 1 cm x 1 cm and cover the surfaces.

Have the figures been covered completely now?

You saw that it was only with the pieces of 1 cm x 1 cm that the given figures were completely covered.

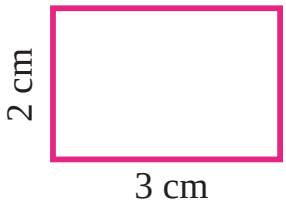
We use unit square to measure the area.

We use 1 cm × 1 cm square to measure the area of small figures.

And to measure the area of bigger figures we can use 1 m × 1 m square or more than this if required.

Area of figure = the number of unit squares which fit in this figure

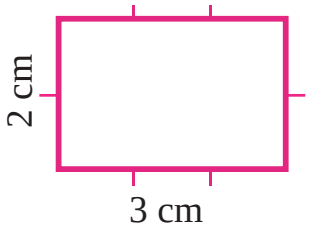
Now let us find out the area of a rectangle-



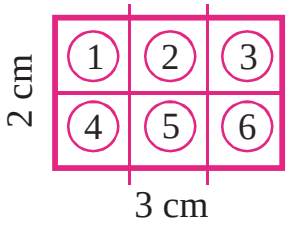
We want to find the area of this rectangle

The length of the rectangle = 3 cm

Breadth of the rectangle = 2 cm



Put marks on the sides at a distance of from 1-1 cm



Join the marks made by using a scale.

The unit squares thus made are 6

Hence area of square = 6 square units

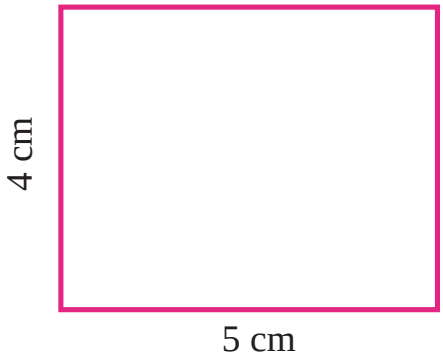
If we multiply the length with the breadth we get 3 x 2 = 6

Can we say that the number of unit squares made in any rectangle is always equal to the product of the breadth and the length?

Let us find out-

You are given a rectangle whose length is 5 cm and breadth is 4 cm. Find the area of this rectangle.

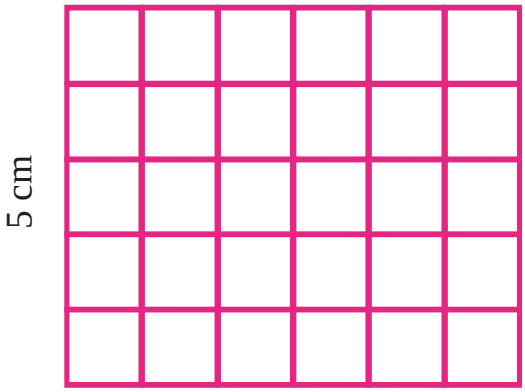
How many unit squares can you make inside this rectangle? .....



The product of the length and breadth is

5 × 4 = 20

Now look at the rectangle given below and answer-



The length of the rectangle = ...

The breadth = ...

Total unit squares made = ...

Hence area of rectangle = ... square cm

And length x Breadth = ...

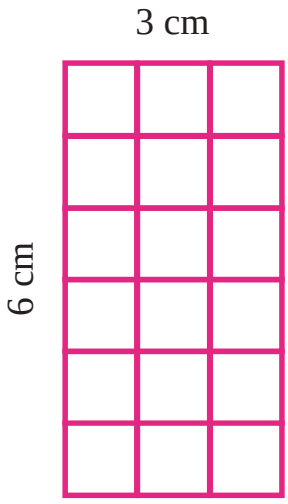
The length of the rectangle = ...

Breadth of the rectangle = ...

Total unit squares made = ...

Hence area of rectangle = ... Sq. cm

And length x breadth = ...



Inside any rectangle you can make unit squares equal to the product of the length and the breadth.

Area of rectangle = length x breadth

Area of a square-

You know that square is a special type of rectangle.

$\therefore$ Area of a square = length x breadth

But the sides of a square are equal in length

$\therefore$ Area of square = length of side x length of side

Example 1 : The length of a book is 25 cm and its breadth is 20 cm. What is the area of the book?

Solution : Book is rectangular in shape

We know that area of rectangle = length x breadth

We are given the length of book = 25 cm

and the breadth of book = 20 cm

So the area of the book = 25 cm x 20 cm

= 500 sq. cm

Example 2 : A square room has a side of 8 m., So what is the area of the floor?

Solution : Room is square in shape

You know that area of square = length x length

We are given that length of side = 8 metre

So area of the floor of the room = 8 x 8 sq. m

= 64 sq. m.

Find the area of the following-

1. Find area of a rectangle whose length is 8 cm and breadth is 4 cm.
2. The length of a rectangle is 25 cm and its breadth is 15 cm. Find its area.

3. If a rectangle is 15 metre long and 6 metre wide, what is its area?

4. The side of a square is 9 metre; find the area of this square.

5. Find the area of a square whose side is 16 cm. long.

6. The Kabbadi field is 14 metre long and 8 metre broad. What will its area be?

7. ___ metre long and 4 metre broad room. Find its area. (You can choose your own length.)

8. A carrom board has a side of 75 cm. Find its area.

9. What will be the area of a square garden whose side is of 55 m.

10. The length of a playground is twice its breadth. If the breadth is 9 metre. Find the area of the field.

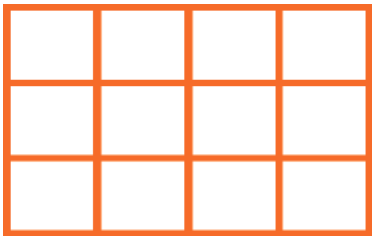
It also happens-

It may happen that we know the area of a rectangle and we also know either the length or breadth, then can we find the other?

Let us try. The rectangle given below has been divided into 12 unit squares, hence its area is 12 square unit.

There are 4 squares in the length and 3 squares in its breadth.

If we divide 12 by 4 we get the result as 3; which is the breadth.



Area ÷ breadth = length

Also Area ÷ length = breadth

Let us solve this-

Example 3 : The area of a rectangular courtyard is 48 square meters and its breadth is 6metres. What is the length?

Solution : The area of a courtyard = 48 sq. m.

Breadth of the courtyard = 6 m.

We want to find the length of the courtyard

We know that area / breadth = length

48 ÷ 6 = length

The length is 8 m.

Now you solve these-

1. The area of the floor of a room is 18 square metre. If the breadth of the room is 3 metre, find the length of the room.
2. A rectangular field is 35metre long. If the area of the field is 700 square metre, find the breadth of the field.
3. A 40 cm broad table has an area of 2800 square cm. What is the length of the table?
4. The area of a theater floor is 81 square meter. Find the breadth, if the length of the floor is 9 metre.

   Can you say what is the shape of theater?

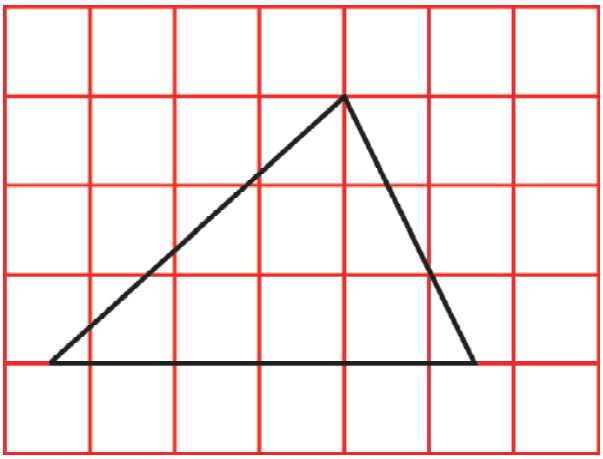
Project work -

1. Find the area of the floor of all the rooms is your school. Which room has the bigger area?
2. Find the area of the floor of any one room in your house.

   What did you do in order to find this? Tell your teacher.

Another method of finding area -

We have divided a rectangle and square into unit squares and found their area. Let us see whether we can do the same for a triangle.



You can see that some unit squares are completely inside the given triangle but some unit squares which are half or less than half are also inside the given triangle.

Fill those squares with green colour which has less than half part inside the triangle.

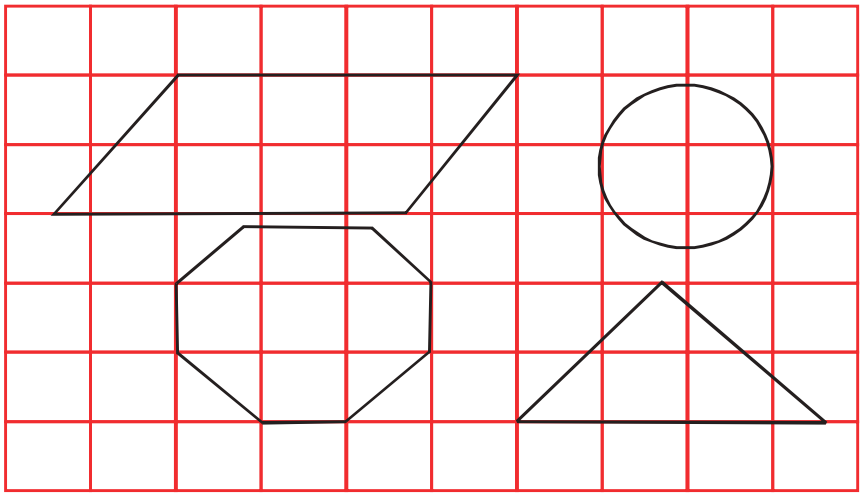
Now colour the remaining squares which are inside the triangle with blue.

Since maximum number of squares are blue, we can say that the area of the triangle is equal to approximately the number of blue squares. .

Area of triangle = ... unit square (approximately)

Or the Area of this triangle = ... unit square (approximately)

Now similarly try to estimate the area of the following figures:



Can you find the area of your palm by this method? Try it.

CHAPTER- 20

Data Handling

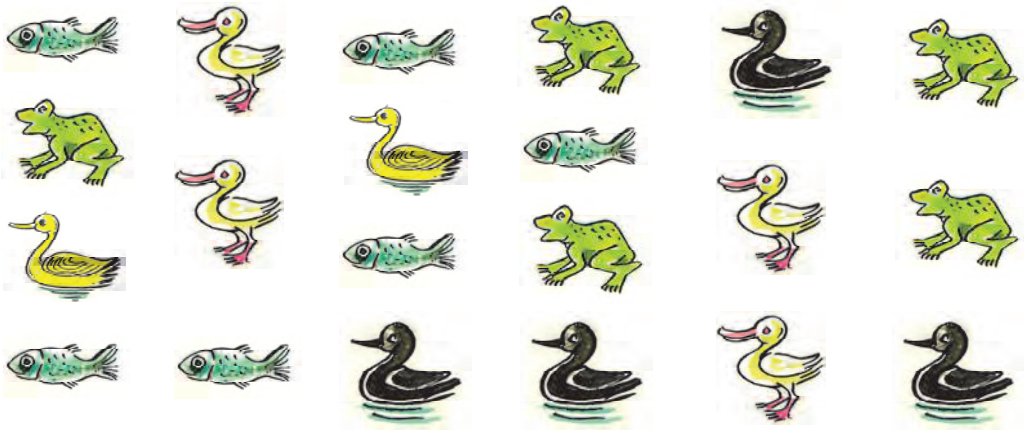


Children, you can see the picture of a lake given above look at it carefully.

Draw a " / " for each animal you observe there in the table given below:

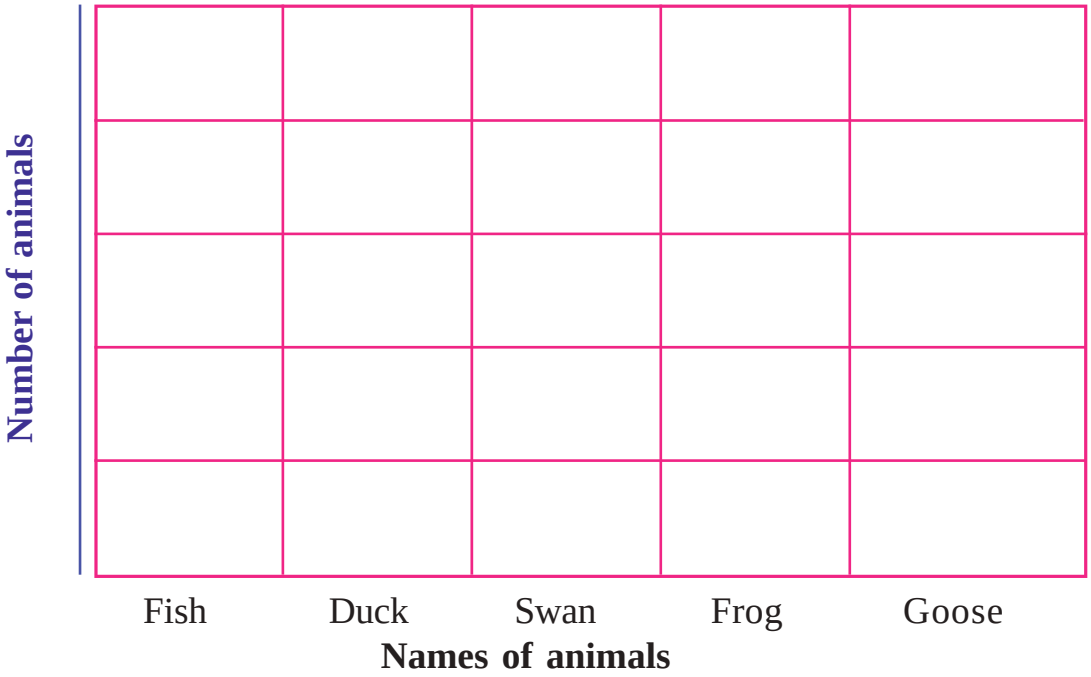
Fish	Duck	Swan	Frog	Goose

Cut the pictures given below and stick the number of each you have counted above in the table given below above the name mentioned:



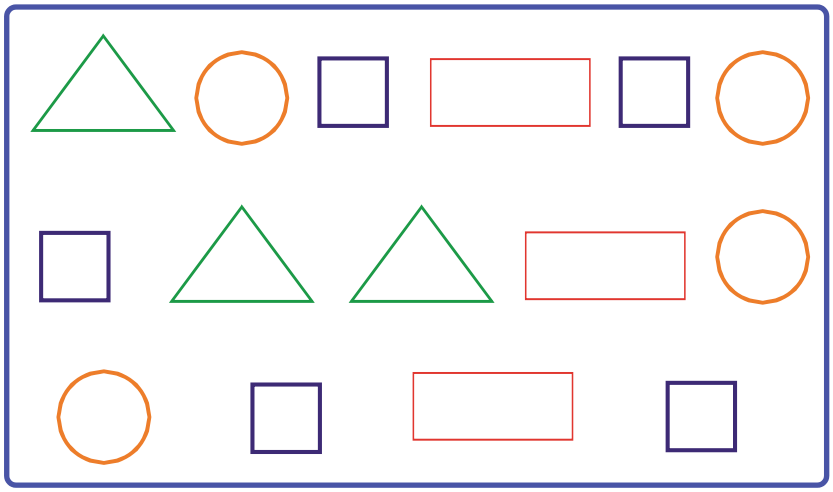
Fish	Duck	Swan	Frog	Goose

You have some blocks made below, write the names of the animals you have seen and colour the number of boxes equal to the number you counted.



Let us make another table

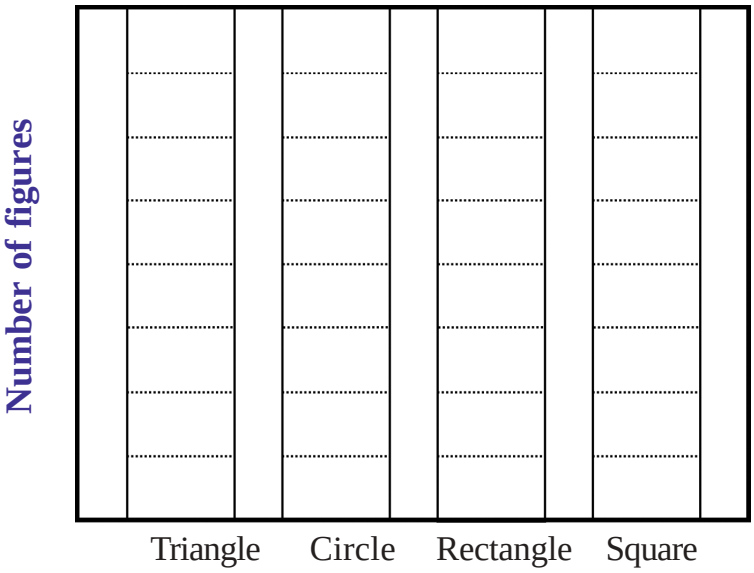
1. Some figures have been drawn on a blackboard.



Look at the pictures and finish this table:

Figure				
Number	_ _ _ _	_ _ _ _	_ _ _ _	_ _ _ _

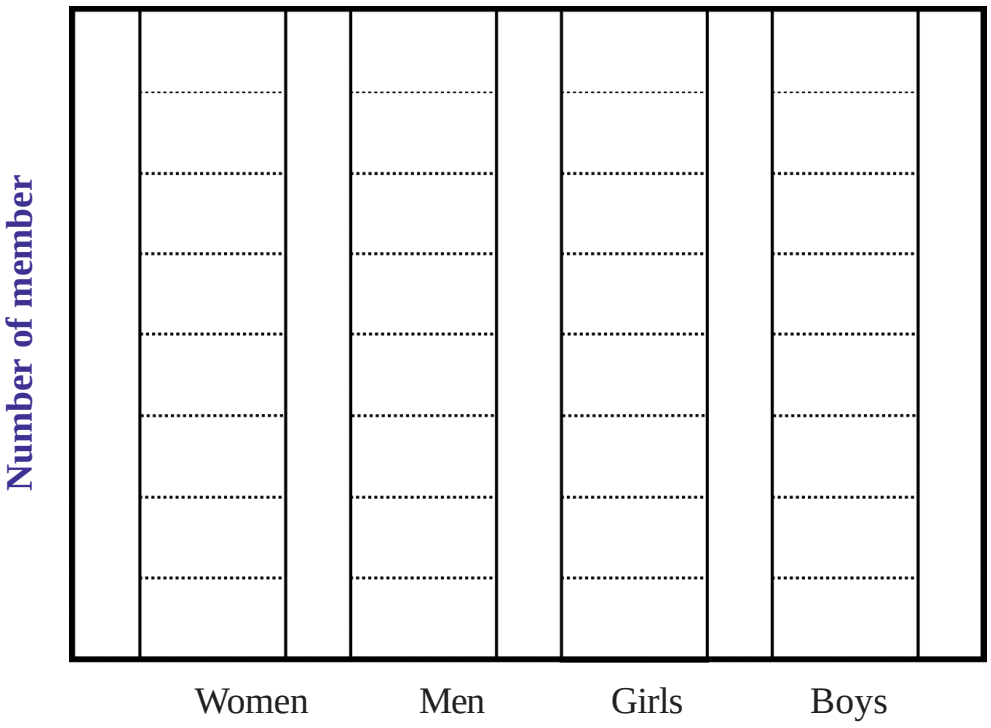
Now colour the number of boxes equal to number of each figure in the following table-



2. A joint family has the following number of members :

Women	Men	Girls	Boys
6	5	4	4

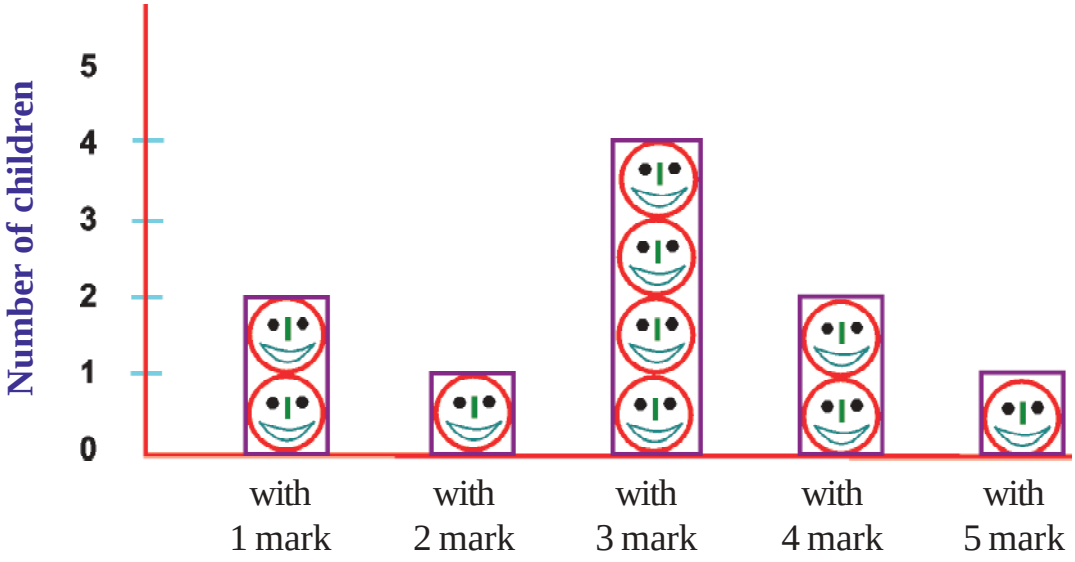
Colour the boxes equal to number of members:



Now answer the following question with the help of coloured portion -

1. How many more women are there than men?
2. How many member are there in all?
3. How many less boys are there than men?
4. How many less girls are there than women?
5. What is the total number of men and women in the family?
6. What is the total number of boys and girls in the family?

A test in maths had a total of 5 marks. Some children got 1 mark, some got 2, some 3, some 4 and also 5. The picture below shows the number of children who got different marks: observe and answer the questions given below.



Now answer these-

1 How many students got 3 marks?

2. What is the lowest score?

3. How many students got the lowest marks?

4. Did any child get 5 marks?

5. How many students got more than 2 marks?

6. How many students are there in all?

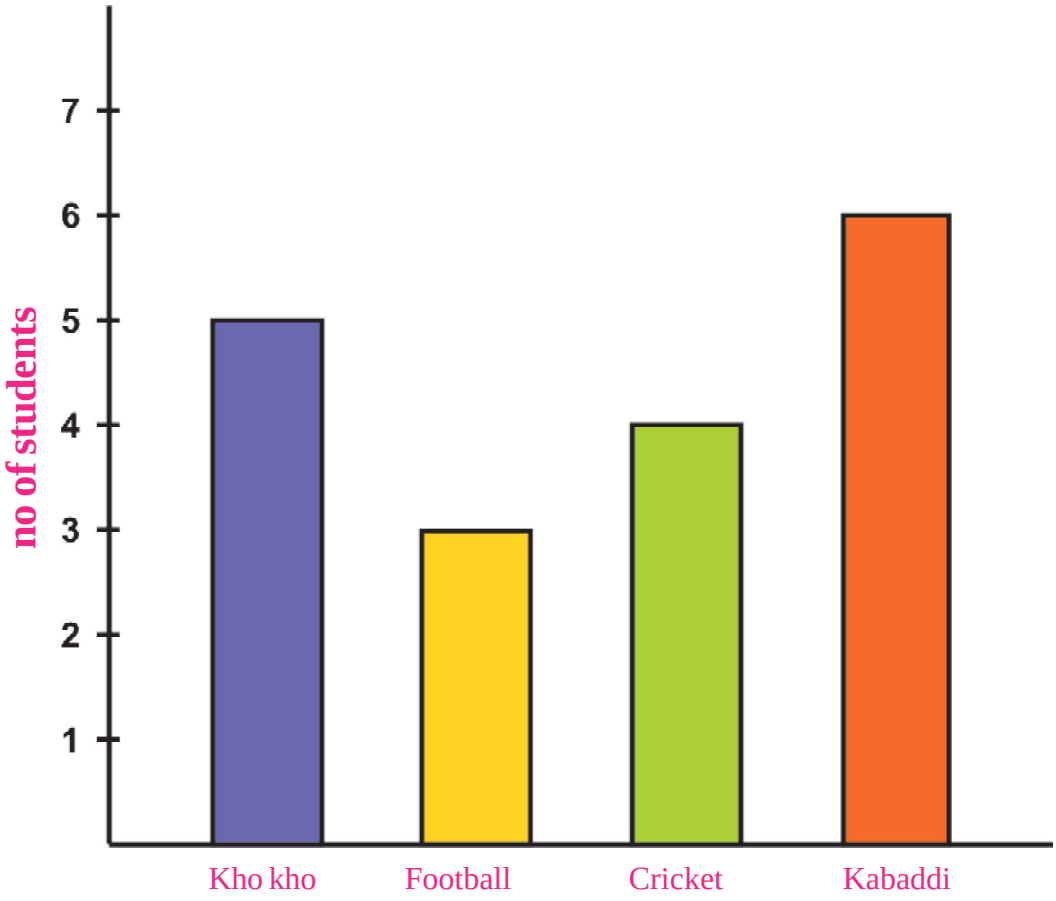
7. How many students got less than 3 marks?

8. How many students got more then 4 marks?

9. How many students got 2 marks?

The number of students of class 5th those like different sports are given in the table below.

Kho Kho	Football	Cricket	Kabaddi
5	3	4	6



The number of students according to their choice are shown through different bars in the given figure. For each student a box of equal length is taken and the width of all the bars is equal.

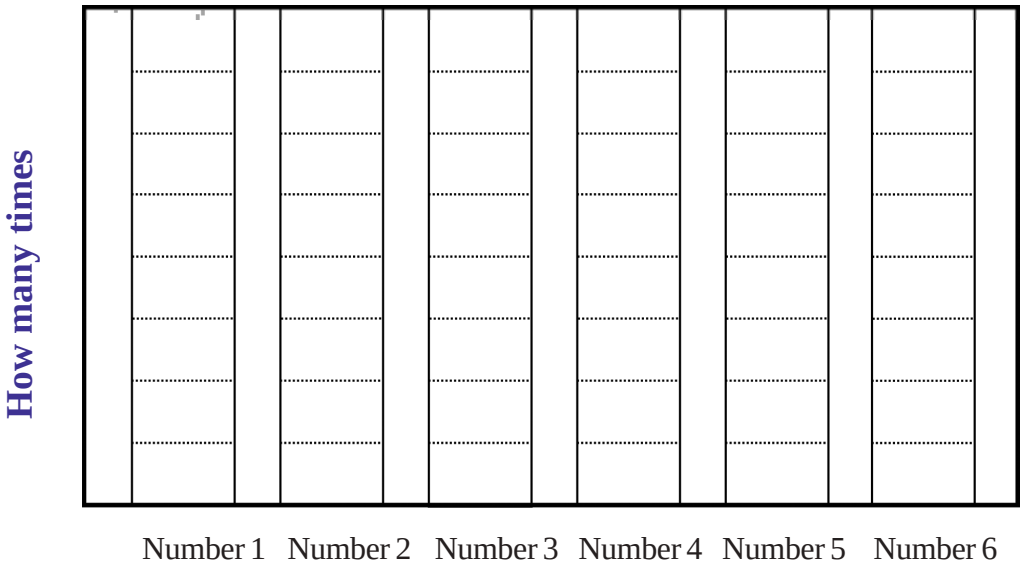
This kind of representation of information is called bar-diagram.

A game of dice

Make a group of your 3 to 4 friends and throw a dice by turns. Whatever number comes, make a tally mark '|' in front of that box. When each student has thrown the dice 4 to 5 times, count the number of signs in each row. For example, let us say that the number 3 came 4 times on the dice then-

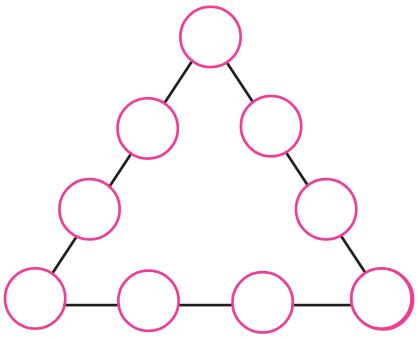
Number of the dice	'|' mark	Total how many
1		
2		
3	'||||'	4
4		
5		
6		

Which number occurs how many times? Fill as many box with colour.



CHAPTER- 21

Pattern and Riddles

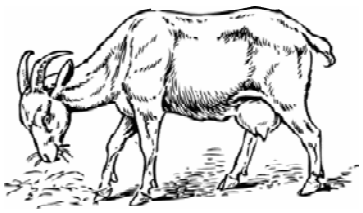


(1) Arrange the numbers 1 to 9 in the given cycle in the given triangle, so that the sum of each side is equal to 20. Number should not be repeated.

(2) 5 pieces of chain were brought to a blacksmith to join. Each piece had 3 rings. Before he started the job, he thought' "How many joints should be opened to make it one". After thinking he concluded that he would have to open 4 rings. Can we join them by opening less than 4 rings?



(3) Some goats and hens are there in a room. The total number of them is 7, and total number of their legs are 20. How many hens and goats are there in that room?





(4) Can we make 30 by using 5 three times -

Let us see -

We have $5 + 5 \times 5 = 30$

First we multiply then we add $5 \times 5 = 25$

$$\begin{array}{r} +\ 5 \\ \hline 30 \\ \hline \end{array}$$

In the same way -

Solve the following questions -

(i) Can we get 30 by using 6 three times?

(ii) Can we get 20 by using 5 three times?

(iii) Can we get 20 by using 4 three times?

(5) An Aeroplane flying from City A to City B, takes 1 hour and 20 minutes, but comes back in 80 minutes, why it is this so?

(6) Find out the missing numbers -

$$\begin{array}{r} 4\ \ 1\ \square \\ \times\ \square\ 1 \\ \hline \square\ \ 1\ \ 5 \\ +\ 8\ \ 3\ \square\ \times \\ \hline \square\square\ \ 1\ \square \\ \hline \end{array}$$

$$\begin{array}{r} \square\ \square\ \ 5 \\ \times\ \ 1\ \ 4 \\ \hline 1\ \ 3\ \square\ \square \\ +\ \square\square\ \ 0\ \ \times \\ \hline 4\ \ 6\ \ 0\ \ 0 \\ \hline \end{array}$$

Let us solve some puzzles-

1. The distance from Raju's house to the tap is 9 steps. He takes 2 steps forward and 1 step backward. How many steps would he take to reach the tap.

2. I am a two digit number and a multiple of 6. On reversing the digit I become a single digit odd number. Who am I?

3. The players have made two teams. The first team says if one of your team member joins us, we both will have equal number of players. The second team says if one of you joins us, we will have twice the number of player of your team. How many players are there in each team?

4. Use 2 three times to get 24.

5, Use 3 four times to get 24.

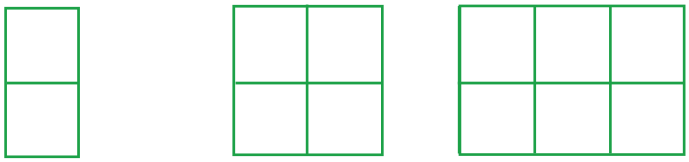
6. The sum of Ram's age and his daugher's age is 31 years. Ram is 30 years older then his daugher. What are their ages?

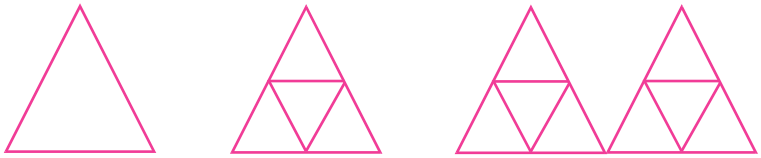
7. A boatsman has to take a fox, a duck and some corn across a river in a boat. But the boat at one time can carry only the boatman and one of the remaining three. How will he get them across taking care that the fox does not eat the duck and the duck does not eat the corn.

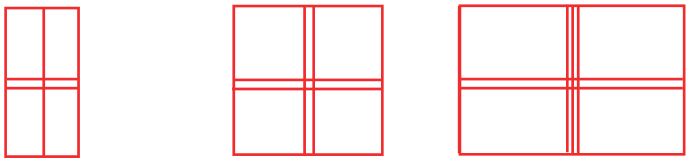
Pattern 1 :

What will come next in the given pattern? Observe, understand and make:

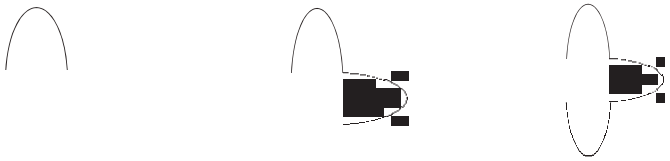
1.  .....

2.  .....

3.  .....

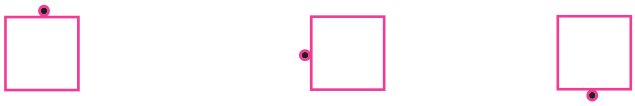
4.  .....

5.  .....

6.  .....

7.  .....

8.  .....

9.  .....

Pattern 2 :

Identify the figure similar to the first from the remaining 3 and make a (✓)

1. 

2. 

3. 

4. 

5. 

Pattern 3 :

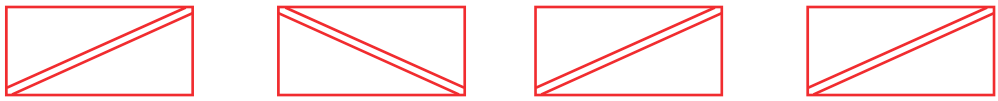
Look at the patterns carefully and identify the one which is different. Mark it with (✓).

1. 

2. 

3. 

4. 

5. 

OUR

Devanagari Numerals

Introduction and Exercises



NUMBERS

Introduction – Devanagari numerals

Yesterday, when Dashmat was helping his mother in house cleaning, he got some old papers from grandmother's almirah. Dashmat knows, what is written on that paper very well, but something he doesn't understood. That signs were looked like a few numbers but still he didn't recognize them. So he asked his mother by pointing that number "What are these"? Ramu kaka also writes like this, when he calculates grocery item bill. Mother smile and told – These are numbers. Dashmat told – but we don't write like this.

Then mother told – "These numbers are written in Devanagari numerals. For writing the numbers we use these numerals. Mother read these numbers also. Now Dashmat also wants to learn that numbers . Then mother told international numerals 0, 1, 2, 3, 4, 5, 6, 7, 8 and 9 are written as ०, १, २, ३, ४, ५, ६, ७, ८ and ९ respectively in Devanagari . Mother showed calender, Ramu kaka's shop bill and some other things too, in which the numerals are written in Devanagari numerals.

Till now you have learnt addition, subtraction, multiplication and division in international system and you have also recognize Devanagari numerals. Now do these exercise to identify them properly.

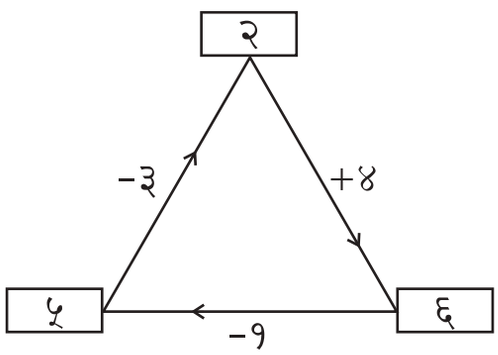
Discuss with your teacher if you have any difficulty.

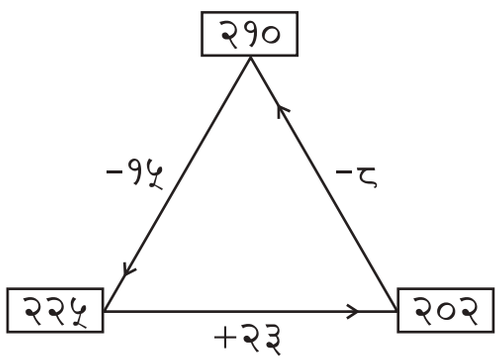
Fill this table with remaining numbers.

१									९१
		२२							
४									
	१५							८५	
			३६						
७				४७					
९									
		३०				७०			१००

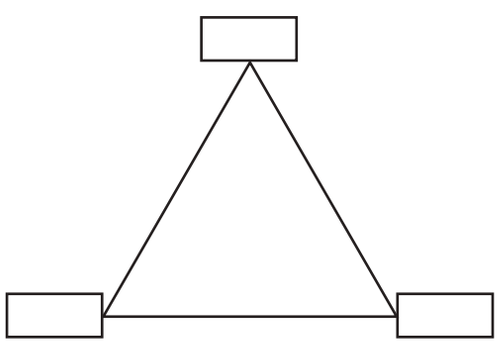
Remember that addition, subtraction, multiplication and division of Devanagari numerals are similar as you solve in international numerals.

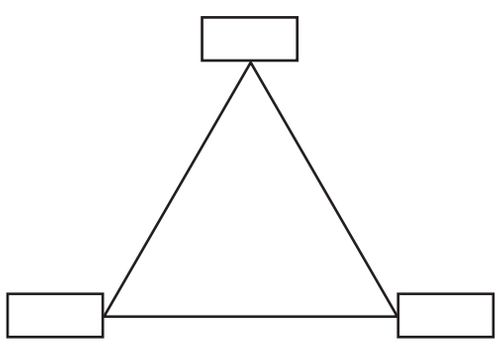
Let us do -

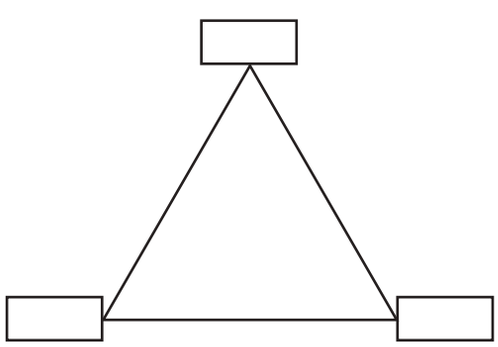


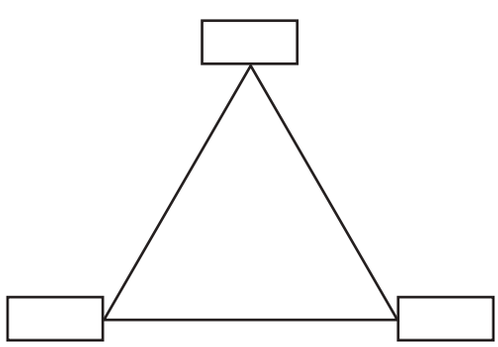


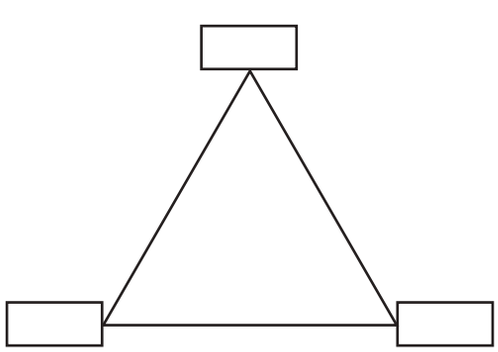
Now, Make your own questions -

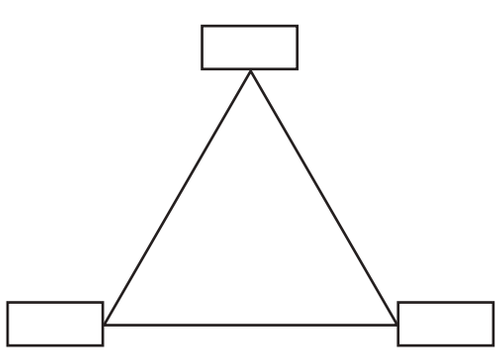












If needed, take your teacher's help -

You are given some numbers in figures and words. Look at them and read the names

౧౨,౫౦౦	Twelve thousand five hundred
౫౨,౪౫౭	Fifty two thousand four hundred fifty seven
౯౩,౫౦౯	Ninety three thousand five hundred nine
౯౪,౦౬౦	Ninety four thousand sixty
౧౦,౩౨౫	Ten thousand three hundred twenty five
౨౭,౬౨౭	Twenty seven thousand six hundred twenty seven
౨౦,౦౦౫	Twenty thousand five
౩౦,౩౬౦	Thirty thousand three hundred sixty
౦౪,౨౫౨	Four thousand two hundred fifty two



Write the given numbers in words:

౯౦,౯౩౨	. . . . .
౭౬,౧౮౦	. . . . .
౫౮,౧౫౧	. . . . .
౬౫,౮౩౯	. . . . .
౦౯,౪౨౪	. . . . .
౧౮,౩౮౧	. . . . .
౭౭,౧౨౪	. . . . .
౪౫,౮౬౪	. . . . .
౮౯,౬౯౧	. . . . .

Place value

Example 1 : Write the place value of each digit of ४८,५६७ and write it in the expanded form.

Solution :

Digit	position	place value
७	Ones	७ × १ = ७
६	Tens	६ × १० = ६०
५	Hundreds	५ × १०० = ५००
८	Thousands	८ × १००० = ८०००
४	Ten thousands	४ × १०००० = ४००००

The expanded form of ४८,५६७ = ४०,००० + ८,००० + ५०० + ६० + ७

Write the place value of each digit of the given numbers and write the expanded form too :

(१) २५४६२ (२) ८२५७४ (३) ३४०१६

(४) ४०७१० (५) ५००७८ (६) ६३५०६

Make some numbers of 5 digits and write the place value of the digits and write the expanded form of each.

Write the numbers which come just before and just after:

---------- ६८२६७ ----------

---------- ५०६३२ ----------

---------- ४६२६१ ----------

---------- १५८१७ ----------

---------- १४५०६ ----------

The number which comes just before is called the predecessor of the given number.

The number which comes just after is called the successor of the given number.

Now answer these:

(१) Successor of ६६ is -------- (२) Predecessor of १०० is ---------

(३) Successor of ६६६ is ------- (४) Predecessor of १००० is---------

The smallest ३ digit number comes just after the largest २ digit number.

The largest २ digit number comes just before the smallest ३ digit number.

So can we say that the smallest ६-digit number comes just after the largest five-digit number? Find out.

Write the following numbers in an increasing order:



१.	१५७७५	२५५२५	२०६५०	१५६७५
२.	७७७७७	७०७७७	७७०७७	७७७०७
३.	४५५५४	४५५४५	४५४५५	४४५५५
४.	६०६७६	८६६७६	७६६८६	८७६७६

Write the following numbers in a decreasing order:

१.	१७४२६	२७२४६	३७६४२	४७५४८
२.	३०६३६	३५०४५	०४५४५	४०५३८
३.	६६७८	७८६०६	८१३१६	५२३७४
४.	३३२२५	५२२३३	११११	१२३४५

Lakh, Ten lakhs, Crore

Now you know how numbers increase. Whenever we reach the tenth beads in any position, we add one bead is the next position instead of १० beads in that position. Each new position has a new name.

We know that:

१० Ones = १ Ten

१० Tens = १ Hundred

१० Hundreds = १ Thousand

१० Thousands = १ Ten Thousand

This continues even after the ten thousands, also. Let us know the number which come after ten thousand.

१० Ten thousand = १ Lakh

१० Lakh = १ Ten lakh

१० Ten lakh = १ Crore

१० Crores = १ Ten Crores

The numbers given in the table below are written in figures and words. Understand them properly and take the help of your teacher if required.

	Crores		Lakhs		Thousand				
	Ten Crore	Crore	Ten Lakh	Lakh	Ten thousand	Thousand	Hundred	Tens	Ones
७,२५,४२०				७	२	५	४	२	०
Seven lakh twenty five thousand four hundred twenty									
२५,०४,५६२			२	५	०	४	५	६	२
Twenty five lakh four thousand five hundred sixty two									
१०,२७,९८५			१	०	२	७	९	८	५
Ten lakh twenty seven thousand nine hundred eighty five									
३,१५,३४,८५९		३	१	५	३	४	८	५	९
Three crore fifteen lakh thirty four thousand eight hundred fifty nine									
९४,२४,१५,३७८	९	४	२	४	१	५	३	७	८
Ninety four crore twenty four lakh fifteen thousand three hundred seventy eight									

Write the given numbers in figures or words as required

૭,૨૪,૫૨૦ . . . . . .

. . . . . Five lakh twenty three thousand seven hundred twelve

૨૫,૫૪,૩૬૬ . . . . . .

. . . . . Seventy two lakh six thousand three hundred ten

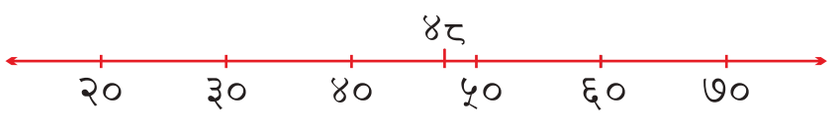
૧,૬૩,૨૫,૪૬૫ . . . . . .

. . . . . Three crores twenty two lakhs fourty six thousand

. . . . . Seven crores

૬૦,૦૦,૦૦,૦૦૦ . . . . . .

Which number is nearest to which one -



૪૮ is the number between ૪૦ and ૫૦

૪૮ is nearest to which number? ૪૦ or ૫૦ .....

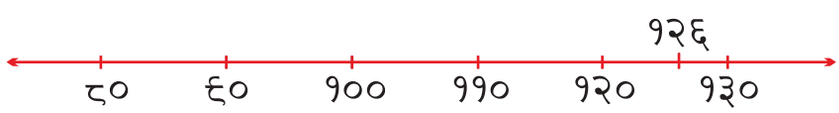
The number represent on number line, we find that ૪૮ is nearest to ૫૦. Which is nearest ten.



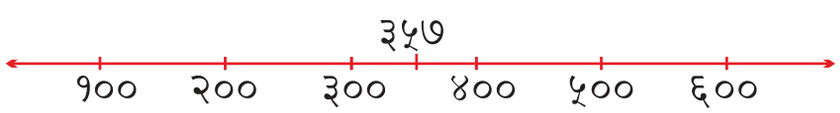
૪૨ is the number between ૪૦ or ૫૦

૪૨ is nearest to which number?.....

The number representation on number line we find that ૪૨ is nearest to ૪૦. Which is nearest ten.



૧૨૬ is nearest to which number?



૩૫૭ is between ૩૦૦ and ૪૦૦, nearest to which number?

Operations

Addition & Subtraction

We have done addition and subtraction of numbers in 4 digits in the previous class. Let us revise :

(A) Solve

(૧)

૩૭૨૧
+ ૨૫૧૦

(૨)

૧૫૭
૬૮૩૨
+ ૫૩૧૮

(૩)

૬૫
૭૨૧
૫૩૨૮
+ ૩૭

(૪)

૨૭૩૧
- ૧૫૪૨

(૫)

૬૭૧૦
- ૫૨૮

(૬)

૫૬૩૨
- ૩૩૦૭

(B) Fill in the boxes with the correct number:

(૧)

૬ ૮ ૮ ૨
+ ૨ □ ૩ ૮
□ ૩ □ ૦

(૨)

૪ ૨ ૪ ૫
+ ૩ ૧ □ ૪
૭ □ ૩ □

(૩)

૫ ૩ ૦ □
+ □ ૮ □ ૮
૬ □ ૦ ૭

(૪)

૫ ૮ ૨ ૦
+ ૩ □ ૩ ૭
□ ૮ □ □

(૫)

૮ ૩ ૩ ૮
+ □ ૬ ૨ □
૬ □ □ ૬

(૬)

□ ૭ □ ૬
+ ૨ ૬ ૮ □
૭ □ ૧ ૭

Addition of numbers with 5 digits

See and understand

Example 1:

	T.Th	Th	H	T	O
	३	२	७	८	५
+	१	३	२	१	३
	४	५	९	९	८

Example 2:

	T.Th	Th	H	T	O
	६	५	८	६	५
+	२	६	०	२	६
	९	१	८	९	१

Add :-

(१) ५६,७८४ and ४८,७६५

(२) २७,८३५ and ३०८

(३) ४०,३१२ and ५०४० and ८०९

(४) ६२२१ and ५६३ और ५१,७३८

(५) ५३८१७ and ३७४०५



Subtraction of numbers with 5 digits

See and understand

Example 1:

	T.Th	Th	H	T	O
	६	८	९	३	५
-	४	७	८	१	४
	२	१	१	२	१

Example 2:

	T.Th	Th	H	T	O
	३	३	९	१	८
-	१	४	७	०	९
	१	९	२	०	९

Subtract:-

(१) ५९,७२६ from ८०,७८०

(२) ६८,३४९ from ७३,४०५

(३) ४२३६ from ४७,८९५

(४) २३,५६२ from ७८,३५४

(५) ३१,४०५ from ५३,८१७



After having solved the above questions you will have realised that the subtraction and addition of a 5 digit number is exactly the same as you would do with a 4 digit, 3 digit or 2 digit number. In fact, the addition and subtraction of numbers with more than five digits is also the same.

See and understand :

Example 1:

Lakh	Tth	Th	H	T	O
७	५	३	४	२	८
+ १	४	८	५	६	३
६	०	१	६	६	१

Example 2:

Ten lakh	Lakh	Tth	Th	H	T	O
७	६	३	५	४	८	७
+ २	०	८	३	८	०	६
६	७	१	६	२	६	३

Exercise

(१) २ ६ ३ ७ ० ३
+ ७ ८ ३ ६ ५

(२) ५ ५ ० ० ७
+ १ ७ ३ ८ ६ ०

(३) ३ ७ ८ ३ ५ ४ ६
+ ६ २ ३ ५ ६ २ ७

(४) ६ ६ ४ २ ५ ५
+ ५ ६ ३ ५ ० ६

(५) ६ ० २ ७ ६ २ ७
+ ६ ४ ० ० ०

(६) ८ ३ ८ १ २
+ ६ १ ६ ४ १ ४ १

(७) ६ २ ७ ३ ६ ० ४
+ ४ ० ६

(८) ३ ८ ६
+ ८ ६ २ ३ १ ३

Subtraction of six digit or seven digit numbers

See and understand-

Example 1 : ७ ८ ६ ५ ३ ८
- २ ३ ८ ७ १ ५
५ ४ ७ ८ २ ३

Example 2 : २ ४ ४ ७ ८ २ ३
- १ ६ ३ ८ ७ १ ५
० ८ ० ६ १ ० ८

Exercise

(१) ७ ८ ५ ० २ ५ २
- ६ २ ४ १ ० ४ ६

(२) ५ १ २ ४ २ ८ ६
- २ ५ २ ६ २ १ ४

(३) ६ ६ २ ६ ४ ६
- ६ ६ ६ ६ २ ७

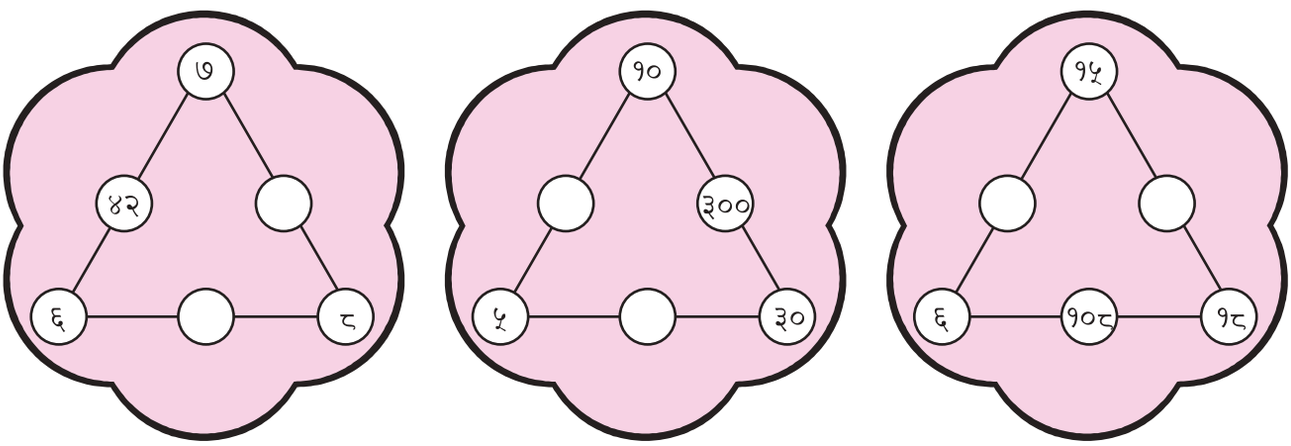
(४) ८ ६ ८ २ २ ३
- २ २ ३ १ ० ४

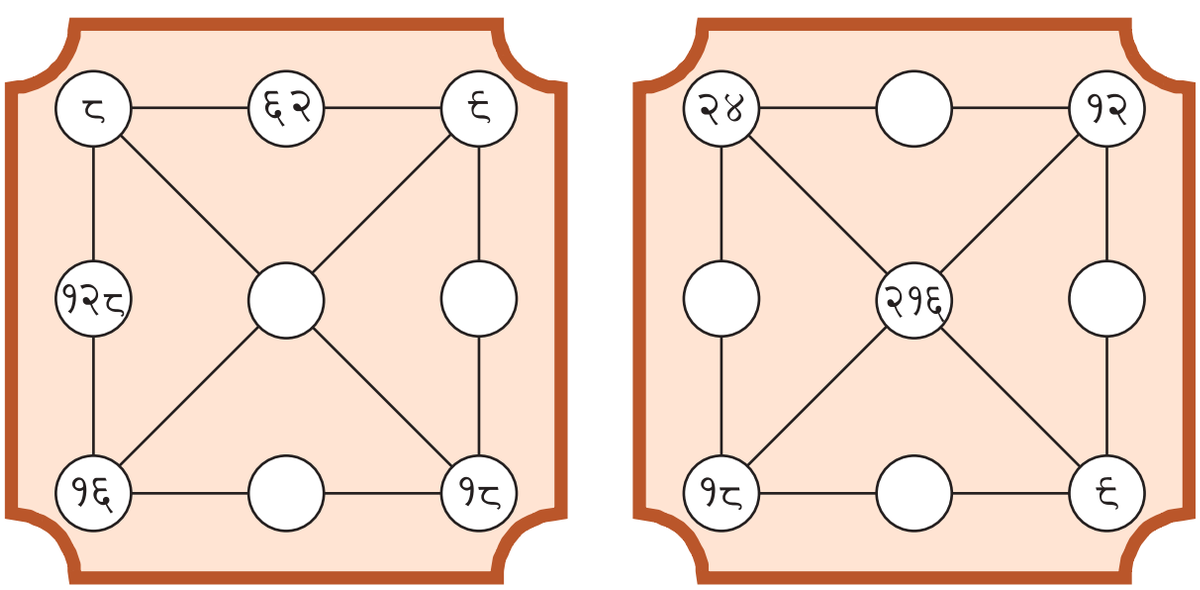
(५) ५ ५ ६ ३ ४ ७ ५
- ५ ८ ७ ५ २

(६) ४ ४ ६ ७ ८ ६ ५
- ५ ६ ३ २ ५ १

Multiplication

Observe, understand and complete the following-





Make some similar questions and give them to your friends to solve.

Let us do and learn-

You have already learnt the method of multiplying a two digit number with another two digit number.

The examples given below will make it clear how you can multiply a three digit number with a two digit number.

Example १ : ४६३ × ५८ = ?

Solution :

४६३	४६३ × ५८
× ५८	= ४६३ × (५०+८)
३७०४ ⟶	४६३ × ८ = ३७०४
+ २३१५० ⟶	४६३ × ५० = २३१५०
२६८५४	२६८५४

Example २: ६४५ × २७३ = ?

Solution :

६४५	६४५ × २७३
× २७३	६४५ × (२००+७०+३)
१९३५ ⟶	६४५ × ३ = १९३५
४५१५० ⟶	६४५ × ७० = ४५१५०
+१२९००० ⟶	६४५ × २०० = १२९०००
१७६०८५	१७६०८५

Now try these :

(೧) ೮೩೬ × ೨೮ (೨) ೬೬೬ × ೬೧

(೩) ೬೧೩ × ೨೩೬ (೪) ೬೪೦ × ೮೦

(೬) ೮೬೮ × ೪೬೮ (೬) ೮೮೮ × ೨೨೨

(೮) ೩೦೬ × ೨೦೪ (೮) ೬೪೩೮ × ೩೦

(೯) ೨೨೮೪ × ೮೪೬

Make some similar questions on your own and show the solutions to your teacher.

Statement sums

೧. A cooler costs Rs. ೪೩೬೦ . If a hostel purchases ೧೬ coolers, what would the total cost of the coolers?

೨. A cycle costs Rs. ೧೯೮೬ . If there are ೪೩ girls in a high school and each child is given one cycle. Find the total amount required for purchasing the cycles.

೩. ೪೬೩೬ metre cloth is made in a factory in one day. What is the total length of cloth produced in the month of January?

೪. A godown has ೮೮೩೪ sacks of grain. If each sack contains ೮೬ kg. of grain. What is the total quantity of the grain in the godown?

೬. Mohan saves Rs. ೮೬೦ each month in his savings account. What amount would he saves in 5 years?

Division

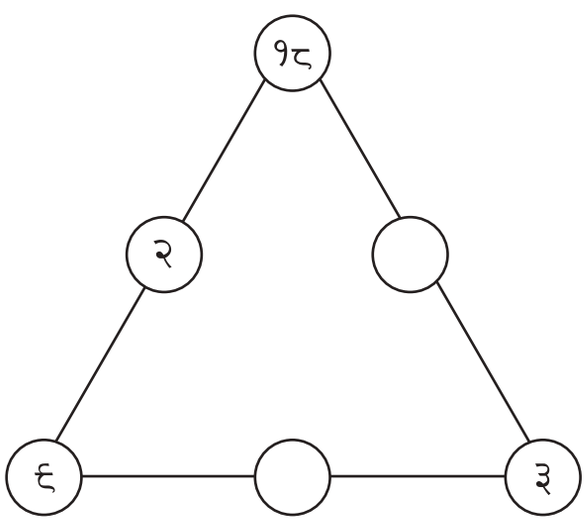
You have already learnt how to divide a three digit number by a one digit or a two digit number. Let us see some questions of this type:-

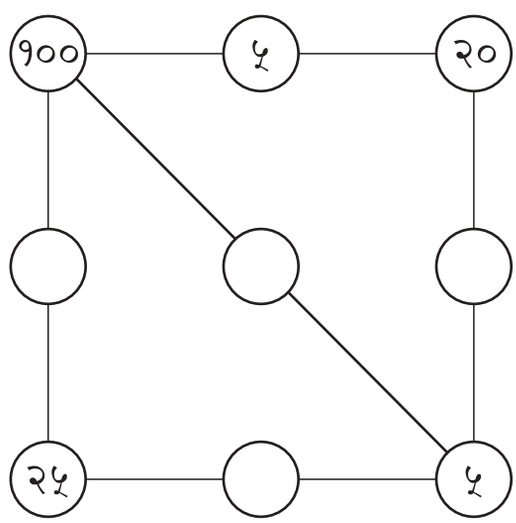
(૧) ૩૬૫ ÷ ૫ (૨) ૮૧૬ ÷ ૮ (૩) ૬૭૮ ÷ ૭

(૪) ૭૩૫ ÷ ૧૩ (૫) ૬૨૫ ÷ ૧૨ (૬) ૪૩૨ ÷ ૧૫

(૭) ૬૬૬ ÷ ૧૧ (૮) ૩૮૪ ÷ ૬ (૯) ૫૮૬ ÷ ૧૬

Observe, understand and complete the following :-





Methods of Vedic Maths

You have already learnt addition, subtraction, multiplication and division. There are a few simple and interesting methods for this processes in Vedic Maths also. Here we will introduce them to you. Before knowing about these methods let us get acquainted with digits.

Digits (Ank)- 0,1,2,3,4,5,6,7,8,9. These are the ten digits. All the numbers are written using these digits.

Bijank- In Vedic Maths digits from 1 to 9 are called Bijank. To find out the Bijank of any number, the digit of the number are added till a single digit number is obtained.

For example –

To find out the Bijank of 35, we will add its digits.

3 + 5 = 8

So the Bijank of 35 is 8

Similarly -

Bijank of 97

9 + 7 = 16 but 16 has 2 digits So we will add these digits also

1 + 6 = 7

So the Bijank of 97 is 7

Param Mitra Ank –

Any 2 digits whose total is 10 are called Param Mitra of each other.

For example –

1 + 9 = 10

So 1 is Param Mitra of 9

and 9 is Param Mitra of 1

Now let's practice it a bit

Practice

Q. 1 - What are the digits that are used for writing numbers?

Q. 2 - Write the Bijank of following numbers.

(i) 12 (ii) 15 (iii) 17 (iv) 19 (v) 37

(vi) 44 (vii) 56 (viii) 67 (ix) 96 (x) 183

Q. 3 - Write the Param Mitra number of the following numbers.

(i) 2 (ii) 3 (iii) 4 (iv) 5

Ekadhiken Poorven

The meaning of **Ekadhiken Poorven** is take one more than the previous number.

For example - 3 is the ekadhik of 2

Similarly - 4 is the ekadhik of 3

Can you tell the ekadhik of each digit from 1 to 9 ?

Eknyunen Poorven

The meaning of **Eknyunen Poorven** is take one less than the previous number.

For example - 7 is eknyune of 8, Similarly 4 is eknyune of 5

Now you tell the eknyune of all the digit from 1 to 9.

In the methods of Vedic Maths, Ekadhiken Poorven and Eknyunen Poorven are used of many places.

Now tell –

What numbers will you get from the following numbers by doing Ekadhik?

(i) 22 (ii) 43 (iii) 30 (iv) 58

Sometimes it is necessary to do Ekadhik or Eknyun more than once.

For example –

We get 13 by doing Ekadhik of 12 and 14 when we again do Ekadhik of 13 that is get 14 when we do Ekadhik of 12 twice.

Now lets do Eknyune of 12 twice.

We get 11 by doing Eknyune and 10 when we again do Eknyun of 11 that is we get 10 when we do Eknyune of 12 twice.

What numbers we will get when we do Ekadhik of these numbers thrice?

(i) 23 (ii) 15 (iii) 36 (iv) 42

Choose some numbers on your own and practice Ekadhik of these numbers.

Now tell –

What numbers will you get by doing Eknyunen twice?

(i) 16 (ii) 30 (iii) 67 (iv) 75

What numbers will you get from these numbers by doing Eknyunen thrice?

Choose some numbers on your own and practice doing Eknyune twice or thrice.

Addition with the help of Param Mitra.

If we have to add 1,2 or 3 to any digit, we can do it by doing Ekadhik. But if both the digits are greater than 5, it is easy to add with the help of Param Mitra.

Lets, look at an example.

```
   9
+  7
-----
```

Here we have to add 9 and 7. Param Mitra Ank of 9 is 1.

So we taken 1from 7 and add it to 9.

Now 9 + 1 = 10

And taking out 1 from 7 makes it 6. By adding 6 to 10, we get 16

i.e.

```
   9
+  7
-----
  16
```

Similarly practice addition with the help of Param Mitra.

(i) 7 + 8 (ii) 8 + 6 (iii) 9 + 8 (iv) 6 + 9

In a similar way, take two digits greater than 5 and try adding them with the help of Param Mitra.

Ekadhik sign {One more} Addition by (.)

You know about addition with carry. Let us from here. Take an example

Solve these

$$\begin{array}{r} 5\ \ 4 \\ +1\ \ 8 \\ \hline \end{array}$$

(1)

$$\begin{array}{r} 5\ \ 4 \\ +1\ \ 8 \\ \hline \ \ \ 2 \end{array}$$

12 is obtain by addition of unit digits (4+8)

Unit digit 2 of this addition is written as its sum and carry 1 is written upon the 5 in ten's column.

(1)

$$\begin{array}{r} 5\ \ 4 \\ +1\ \ 8 \\ \hline 7\ \ 2 \end{array}$$

1+5+1=7 Is written as sum of ten's digit.

Sum 72 is obtained

If carry obtained from addition of unit place digit 1 is written in the from of point in ten's column then also sum is as usual. See this addition again.

$$\begin{array}{r} 5\ \ 4 \\ +1\ \ 8 \\ \hline \end{array}$$

Addition of 4 and 8 gives 12

$$\begin{array}{r} 5\ \ 4 \\ +\dot{1}\ \ 8 \\ \hline \ \ \ 2 \end{array}$$

Write 2 of 12 as addition of unit digits and mark carry 1 as one point above 1 of ten's place digit. This point is known as Ekadhik sign(.).

Now add ten's place digits 5+(.)+1=7{count (.) as1}

$$\begin{array}{r} 5\ \ 4 \\ +\dot{1}\ \ 8 \\ \hline 7\ \ 2 \end{array}$$

Total 72 is obtained

Let us one more example

Example2 Solve these

$$\begin{array}{r} 4\ \ 6 \\ +2\ \ 4 \\ \hline \end{array}$$

$$\begin{array}{r} 4\ \ 6 \\ +\dot{2}\ \ 4 \\ \hline \ \ \ 0 \end{array}$$

Add 6 and 4 of unit place. Will get 6+4=10

Write 0 of 10 of addition in unit column.

$$\begin{array}{r} 4\ \ 6 \\ +\dot{2}\ \ 4 \\ \hline 7\ \ 0 \end{array}$$

Make carry 1 as(.) above 2.

Now add ten's digits. 4+(.)+2=7 Count (.)as1. Total addition 70 obtained.

This method is easier for addition of more than two numbers

Example 3 Solve these

$$\begin{array}{r} 2\ \ 7 \\ 4\ \ 8 \\ +1\ \ 9 \\ \hline \end{array}$$

$$\begin{array}{r} 2\ \ 7 \\ \dot{4}\ \ 8 \\ \dot{1}\ \ 9 \\ \hline 9\ \ 4 \end{array}$$

7+8= 15

5+9 = 14

Add 7 and 8 of unit,15 obtained. Mark a dot(.) for 1 of 15 in the form of ekadhik sign above 4 and add 5 and 9. 14 obtained. Again mark a dot (.) for 1 of 14 as ekadhik sign above 1 of ten's column. Write 4 as result of addition. Now add digit of ten's 2+(.)+4+(.)+1=9

Example 4 Solve these

$$\begin{array}{r} 1\ \ 8 \\ 2\ \ 5 \\ +1\ \ 9 \\ \hline \end{array}$$

Solution :

$$\begin{array}{r} 1\ \ 8 \\ 2\ \ 5 \\ +1\ \ 9+ \\ \hline \end{array}$$

8+5= 13

$$\begin{array}{r} 1\ \ 8 \\ \dot{2}\ \ 5 \\ +\dot{1}\ \ 9 \\ \hline 2 \end{array}$$

9+3= 12

$$\begin{array}{r} 1\ \ 8 \\ \dot{2}\ \ 5 \\ +\dot{1}\ \ 9 \\ \hline 6\ \ 2 \end{array}$$

1 + (·) + 2 + (·) + 1 = 6

Exercise

Add with Ekadhik sign

1. 2 3 + 3 6 **2.** 3 8 + 4 5 **3.** 1 7 + 2 4 **4.** 1 5 1 7 + 2 8 **5.** 3 7 2 8 + 1 9 **6.** 2 8 1 7 + 3 6

Subtraction with Ekadhik sign {one more sign}

Problems of subtraction where borrowing of number is required. we use Ekadhik sign for subtraction. Here we have to use one more concept Parammitra of vedic maths. (Any two number whose sum is 10, are called as parammitra. Like 3 is Parammitra of 7 and 7 is Parammitra of 3 since 3+7=10. In this manner 6 and 4 are Parammitra. 5 is Parammitra of itself)

Let us understand this process with an example.

Example 1. Solve these

3 6
−1 7

3 6 +3
−1 7
9

3 6
−1 7
1 9

7 cannot be subtracted from6. Add Parammitra of 7, 3 to 6. It gives 9. Write it below as result and mark ekadhik sign above1. Now subtract (.)+1 means 2 from 3. 1 obtained. Write it below as result. Solution 19 obtained.

Example 2 Solve these

7 5
−2 8

7 5 +2
−2 8
7

7 5
−2 8
4 7

8 cannot be subtracted from 5. (add 2 Parammitra of 8 to 5, gives 7) Write it below as result. Mark Ekadhik sign(.) above 2. Subtract (.)+2 means 3 from7. Obtained 4. Write it below as result.

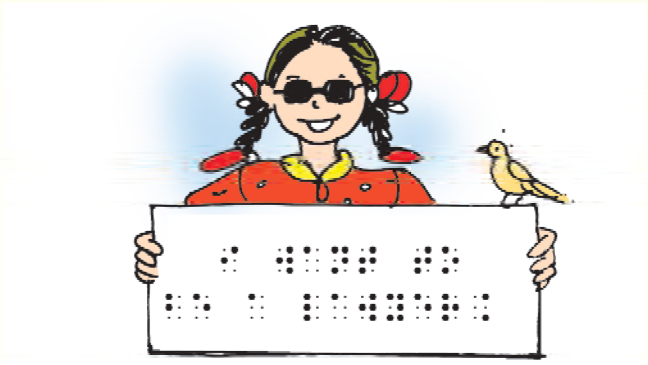
Solution 47 obtained.

Practice

Subtract with Ekadhik sign.

1. $\begin{array}{r} 72 \\ -18 \end{array}$ **2.** $\begin{array}{r} 37 \\ -19 \end{array}$ **3.** $\begin{array}{r} 40 \\ -28 \end{array}$ **4.** $\begin{array}{r} 35 \\ -26 \end{array}$ **5.** $\begin{array}{r} 46 \\ -28 \end{array}$ **6.** $\begin{array}{r} 68 \\ -39 \end{array}$

Braille An Introduction



Do you know what is written here?

It is: I want to be a lawyer.

Like devnaagri and Gurumukhi etc. Braille is also a script. Braille script is used by Blind persons to read and write. Braille was invented by Louis Braille in 1829. Braille script is based on six dots. These six dots are referred as the Braille cell. Each cell comprises of one Braille character. To write Braille script Blind person uses Stylus and Braille slate. Braille slate consist essentially of two metal or plastic plates hinged together to permit a sheet of paper to be inserted between the two plates. While writing on a Braille sheet (drawing sheet) it is to be written from right to left and then reverse the normal numbering of the Braille cell. Blind person reads these raised (embossed) dots with the help of their finger tip.



Braille cell

Total 63 combinations are possible using these 6 dots.
Some combinatios given below:

Braille Chart

a	b	c	d	e	f	g	h	i	j

k	l	m	n	o	p	q	r	s	t

u	v	w	x	y	z

A Number sign (⠼) is used before the alphabets 'a' to 'j' to convert them to numbers.

1	2	3	4	5	6	7	8	9	0



If there are Hearing Impaired students in your class:

1. To understand, these students need to see the blackboard, teacher's face, mouth and hands. They learn the pronunciation by looking at the movement of lips so make sure that they sit in the front rows.
2. All new words introduced in the classroom should be written on to the blackboard. If possible make pictures also. Ensure that such students wear their hearing aid at all times.
3. Hearing impaired students generally also have speech related difficulties. Listen to them with patience and give them the opportunity to express themselves.
4. Keep your hands away from your mouth and avoid eating or drinking while talking so that the child is able to observe you.

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If there are visually-impaired students in your class, extend your help:

1. *Always address visually-impaired students by their names and speak out whatever is written on the blackboard.*
2. *Familiarize these students with the way to the classroom, staircases, Principal's room, drinking water facility, toilet, playground and library. This will enable them to go about their tasks independently.*
3. *Visually-impaired students use the Braille script. If your school does not have sufficient resources, contact the nearest DIET office and agencies that provide Braille and audio books, cassettes and CDs.*

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