GOVERNMENT OF KARNATAKA

MATHEMATICS

Text cum Workbook

(Revised)

ENGLISH MEDIUM

4

FOURTH STANDARD

Part - I

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KARNATAKA TEXT BOOK SOCIETY (R.)
6th Cross, Malleshwaram
Bengaluru-560 003

PREFACE

The Textbook Society, Karanataka has been engaged in producing new textbooks according to the new syllabi prepared which in turn are designed based on NCF - 2005 since June 2010. Textbooks are prepared in 12 languages; seven of them serve as the media of instruction. From standard 1 to 4 there are the EVS, mathematics and from 5th to 10th there are three more core subjects namely mathematics, science and social science.

NCF - 2005 has a number of special features and they are:

- Connecting knowledge to life activities.
- Learning to shift from rote methods.
- Enriching the curriculum beyond textbooks.
- Learning experiences for the construction of knowledge.
- Making examinations flexible and integrating them with classroom experiences.
- Caring concerns within the democratic policy of the country.
- Make education relevant to the present and future needs.
- Softening the subject boundaries-integrated knowledge and the joy of learning.
- The child is the constructor of knowledge.

The new books are produced based on three fundamental approaches namely Constructive Approach, Spiral Approach and Integrated Approach.

The learner is encouraged to think, engage in activities, to master skills and competencies. The materials presented in these books are integrated with values. The new books are not examination oriented in their nature. On the other hand they help the learner in the all round development of his/her personality, thus helping him/her become a healthy member of a healthy society and a productive citizen of this great country, India.

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Young learners in their initial stages of learning i.e., between the ages of 5 and 10, acquire most of the concepts which they need in consolidating learning in later stages. If this learning is properly planned and well executed in the classroom, children may find learning easy and enjoyable.

Based on these principles, in the early stages from class 1 to 5, the following subject areas have been introduced- Mother tongue, state language, English as a practice language, mathematics and environmental studies. Environmental studies include science and social science related to their daily life experiences, information about their environment, society, country, their duties and rights. These topics are presented through interesting situations and activities. Opportunities have been provided for self learning and creativity. At this stage importance is given to children sitting in pairs and groups and to exchange their experiences. The efforts have been made to make illustrations colourful, attractive and meaningful. Teachers are expected to make use of these and help children learn meaningfully and with pleasure. The textbooks aim at making learning interesting, enjoyable and satisfying.

The Textbook Society expresses grateful thanks to the chairpersons, writers, scrutinisers, artists, staff of DIETs and CTEs and the members of the Editorial Board and printers in helping the Text Book Society in producing these textbooks.

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About the book.....

As Per 2005 National curriculum frame work children are expected to gain knowledge on their own by their day to day experience. The 2nd standard textbook has been designed on the basis of National curriculum frame work. the committee has tried to help teachers, students and parents by providing the favour able learning environments to take them to achieve the goal in a meaningful, joyful and day to experienced situation.

The main features of this textbook is

- to provide the students graded learning activities.
- to facilitate the students to draw the inference by understanding the truth of concepts and to generalise the concepts on their own.
- to provide enough opportunities to the students to understand the new concepts and to express the same on their own.
- to help the students to apply their mathematical knowledge in their day to day affairs and in different circumstances.

Each unit of this text book starts with teaching concrete examples, activities and group activities. Teachers may use the same activities or the parallel activities designed by them.

'Mathematical words' or generalisation are used only after the child gets the experience of Mathematical operations by day to day experience. In other words from known to unknown.

Three new chapters are introduced in this textbook.

'Mental Mathematics' to give importance to mental arithmetic and to achieve quick and correct calculation. 'Pattern' this unit provides an opportunity for the students to correlate the different patterns they observe around them in their day to day affairs and to appreciate the esthetic beauty of mathematics. 'Data handling' this chapter help the students to develop the skill to collect information, to arrange them in an order and tabulate them.

We welcome all positive suggestions from teachers, parents, students and general public to improve the standard of this text book.

I congratulate the guiding officers of the department and members of all the teachers involving in the team of Mathematics framing textbook.

Sri D.R. Krishnaprasad
Chair Person
Textbook committee

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About the Revision of Textbooks

Honourable Chief Minister Sri Siddaramaiah who is also the Finance Minister of Karnataka, in his response to the public opinion about the new textbooks from standard I to X, announced, in his 2014-15 budget speech of constituting an expert-committee, to look into the matter. He also spoke of the basic expectations there in, which the textbook experts should follow: "The textbooks should aim at inculcating social equality, moral values, development of personality, scientific temper, critical acumen, secularism and the sense of national commitment", he said.

Later, for the revision of the textbooks from class I to X, the Department of Education constituted twenty seven committees and passed an order on 24-11-2014. The committees so constituted were subject and class-wise and were in accordance with the standards prescribed. Teachers who are experts in matters of subjects and syllabi were in the committees.

There were already many complaints, and analyses about the textbooks. So, a freehand was given in the order dated 24-11-2014 to the responsible committees to examine and review text and even to prepare new text and revise if necessary. Eventually, a new order was passed on 19-9-2015 which also give freedom even to re-write the textbooks if necessary. In the same order, it was said that the completely revised textbooks could be put to force from 2017-18 instead of 2016-17.

Many self inspired individuals and institutions, listing out the wrong information and mistakes there in the text, had sent them to the Education Minister and to the Textbook Society. They were rectified. Before rectification we had ex-

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changed ideas by arranging debates. Discussions had taken place with Primary and Secondary Education Teachers' Associations. Questionnaires were administered among teachers to pool up opinions. Separate meetings were held with teachers, subject inspectors and DIET Principals. Analytical opinions had been collected. To the subject experts of science, social science, mathematics and languages, textbooks were sent in advance and later meetings were held for discussions. Women associations and science related organistation were also invited for discussions. Thus, on the basis of all inputs received from various sources, the textbooks have been revised where ever necessary.

Another very important aspect has to be shared here. We constituted three expert committees. They were constituted to make suggestions after making a comparative study of the texts of science, mathematics and social science subjects of central schools (NCERT), along with state textbooks. Thus, the state text books have been enriched based on the comparative analysis and suggestions made by the experts. The state textbooks have been guarded not to go lower in standards than the textbooks of central school. Besides, these textbooks have been examined along side with the textbooks of Andhra Pradesh, Kerala, Tamil Nadu and Maharashtra states.

Another clarification has to be given here. Whatever we have done in the committees is only revision, it is not the total preparation of the textbooks. Therefore, the structure of the already prepared textbooks have in no way been affected or distorted. They have only been revised in the background of gender equality, regional representation, national integrity, equality and social harmony. While doing so, the curriculum frames of both central and state have not been transgressed. Besides, the aspirations of the constitution are incorporated

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carefully. Further, the reviews of the committees were once given to higher expert committees for examination and their opinions have been inculcated into the textbooks.

Finally, we express our grateful thanks to those who strived in all those 27 committees with complete dedication and also to those who served in higher committees. At the same time, we thank all the supervising officers of the Textbook Society who sincerely worked hard in forming the committees and managed to see the task reach its logical completion. We thank all the members of the staff who co-operated in this venture. Our thanks are also due to the subject experts and to the associations who gave valuable suggestions.

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Part - I

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CHAPTER-1

PERIMETER AND AREA OF SIMPLE GEOMETRICAL FIGURES

C3E7P7

After studying this chapter you can

- find the perimeter of simple geometrical figures,
- develop the concept of perimeter and solve problems,
- understand the area of simple geometrical figures,
- calculate the area of given geometrical figures.

Raju's father has purchased a site. It should be fenced around. How many metre of wire is required? How to find it?

Rita wants to put a border around her table. How many metre of border is required for her? How to find it?

How to solve the problem of these two cases? Think. In both of the above examples total length is to be calculated. What is this total length called? Think.

Perimeter of simple geometrical figures

In the previous class, you have learnt simple plane figures. Represent some simple geometrical figures through diagram. One is given below as an example.

1)	2) .....
3)	4) .....

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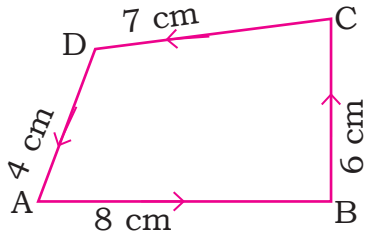
Observe this figure.



ABCD is simple geometrical figure. Observe the measurements given with respect to the sides of the figure.

What is the distance from A to B?

What is the distance from C to B?

What is the distance from D to C?

And what is the distance from A to D?

Observe : The distance of B from A is represented as AB.

Then AB = ... cm

BC = ... cm

CD = ... cm

DA = ... cm

What is the total distance from A to B,B to C, C to D and D to A

AB + BC + CD + DA = 8 + 6 + 7 + 4

= 25 cm

Starting from A and again to reach A the total distance to be covered is 25 cm. What is this total distance called? Think.

The sum of length of all the sides of a geometrical figure is called its perimeter.

Activity : Find the perimeter of your text book, window of your class room, top surface of a table. Which has the highest perimeter? Observe.

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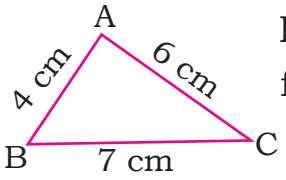
Model Sum :

1) 

Find the perimeter of the geometrical figure (triangle).

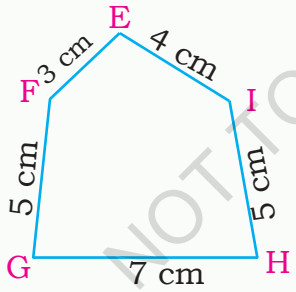
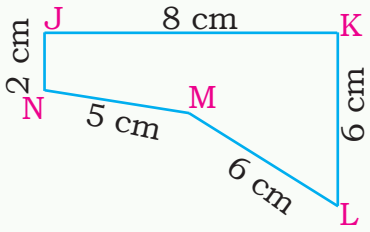
Given AB = 4 cm, BC = 7 cm, CA = 6 cm.

Perimeter of Δ ABC = AB + BC + CA
= 4 cm + 7 cm + 6 cm

= 17 cm

Exercise 1.1

I. Find the perimeter of following geometric figures.

1)		
2)		

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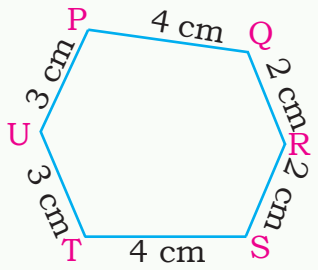
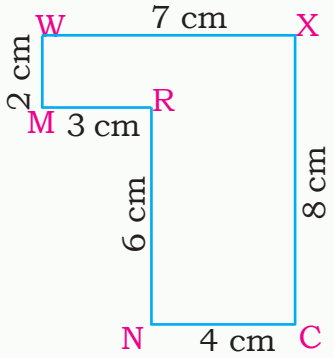
3)		
4)		

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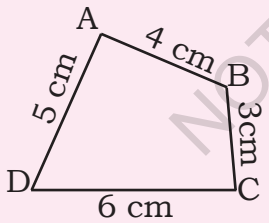
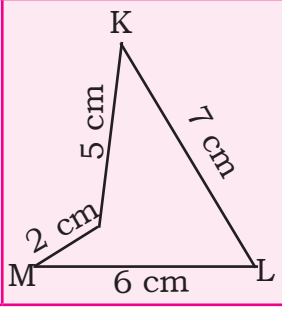
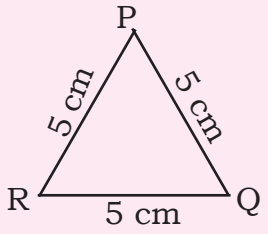
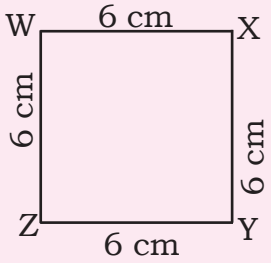
II. In list 'A' plane figures and in list 'B' their perimeters are given. Match list 'A' with list 'B' :

	A	B	Answer
1)		a) 20 cm	_____
2)		b) 15 cm	_____

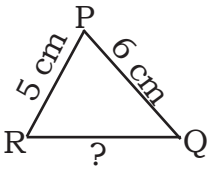
3)		c) 24 cm	_____
4)		d) 22 cm	_____
		e) 18 cm	

You know how to find the perimeter of simple shapes when length of sides are given. Excluding one side, if the length of all the sides and perimeter of a shape is given, then how do you find the length of remaining side?

In order to find the length of remaining side, subtract the sum of all the given sides from its perimeter.

Model Sum

1) The length of two sides of the given figure (Triangle) measures 5 cm and 6 cm. If its perimeter is 15 cm, then find the length of third side.



Perimeter (Sum of 3 sides) = 15 cm

- Sum of 2 sides = 11 cm

∴Length of the 3rd side = 4 cm

Sum of given two sides = 5 cm + 6 cm

= 11 cm

Length and third side = Perimeter - Sum of two sides

Length of third side = 15 cm - 11 cm

= 4 cm

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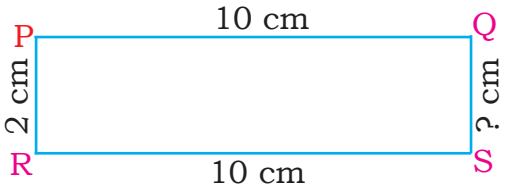
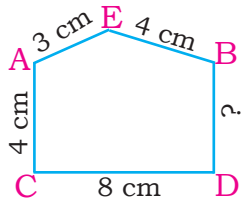
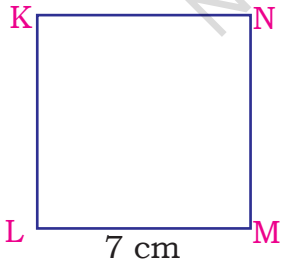
Exercise 1.2

1) 

Observe the given figure. If its perimeter is 24 cm, then what is the length of the fourth side(QS)?

2) 

In the figure,the measurements of four sides are given. If the perimeter is 24 cm, then find the length of remaining side.

3) 

In the figure the length of one side is 7 cm. If all the side are equal, then find its perimeter.

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Activity : You know how to find the perimeter of shapes bound by sides. Observe the following figures.

How to find the perimeter of these shapes? Think, discus with your teacher and know about it

Area of simple shapes

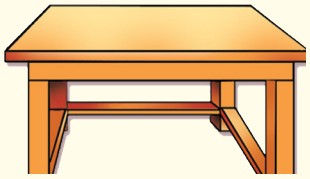	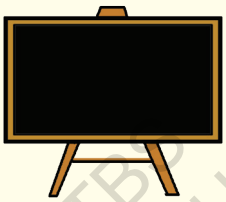	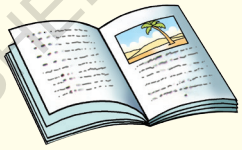
Table (1)	Black Board (2)	Book (3)

In the above shape observe the surface of table, black board, and the book. Among these, which is the biggest and which the smallest shape? On what basis would you decide?

The second shape, blackboard is the biggest one and the third shape, surface of book is the smallest.

What is the reason for your answer?

Second shape occupied more space and third one occupied less space.

What do you call the space or the region bounded by a shape?

This is called the area of the shape.

The space or the region bound by a given closed figure is called its area.

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How to find the area of a shape? Think.

1) In which of the circumstances does a carpenter calculates the area? How will he find? Know about this by visiting a carpenter's shop.

2) Visit a tailor shop and know how much of cloth is required to stitch a shirt for you.

Activity : List out any four circumstances where we usually calculate area.

Example : Area of the floor of a room.

1) _____

2) _____

3) _____

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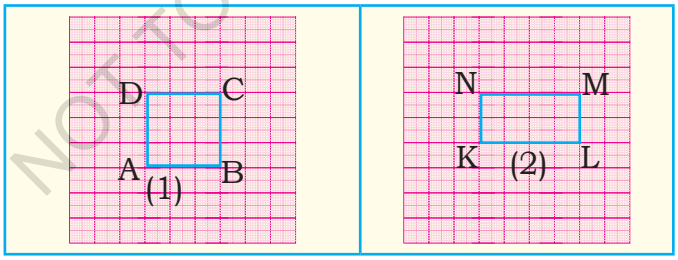
How is the area found out in all the above circumstances?

Generally, the area of a shape is obtained by multiplying the length and its breadth.

Unit of area



Observe the two figures drawn on graph sheet. Which one is bigger? How to find out?

By how many squares is the first figure bound?

It is bound by 9 squares.

That means the area of first figure is 9 and the area of second figure is 8. Here you have expressed the area without using any unit. What is the unit of area? Think

Already you know that the area of a shape is obtained by multiplying its length and breadth.

In the above figures what is the length of the first figure? that means what is the measurement of AB?

3 cm

What is the measurement of breadth BC?

3 cm

By using the measurement of these two sides find the area of 1st figure.

Area of 1st figure = 3 cm × 3 cm = 9 cm^2 = 9 Square cms.

cm^2 is the unit of area when measurements are in cm.

Observe : When the two measurements expressed in centimeter (cm) are multiplied, the unit of the product obtained is expressed in cm^2 (read as square centimeter).

Observe the following statements.

4 square metre of cloth, area of the wall is 15 square metre, a big pond is 1 square kilometer, area of zoo is two square kilometer etc.

Observe the different units used.

If the measurement is in meter then the unit of area is square meter.

If the measurement is in kilometer then the unit of area is square kilometer.

In general area is expressed in square unit.

∴ Units of Area : Sq cms, Sq mtrs, Sq kms... etc.

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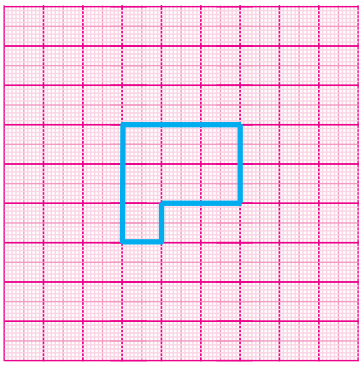
Model sum

The area of each square on the graph sheet is 1 sq cm. Find the area of the given shape.



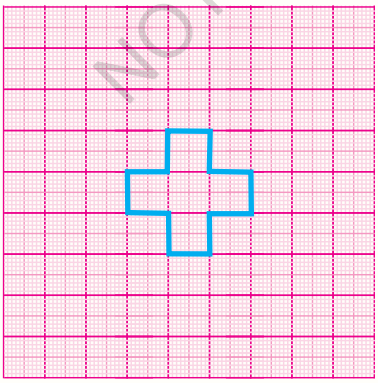
Count the number of squares inside the shape.

Totally there are 7 squares.

Area of given shape = 7 sq cm

Exercise 1.3

I. On the graph sheet given, the area of each square is 1 sq cm. Find the area of the given shapes.

1		

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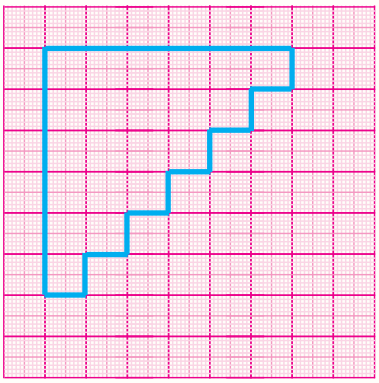
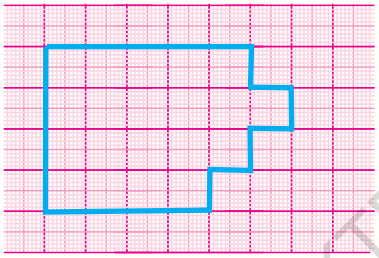
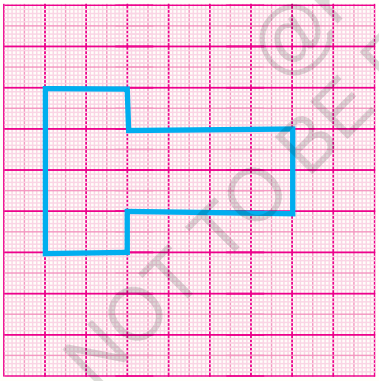
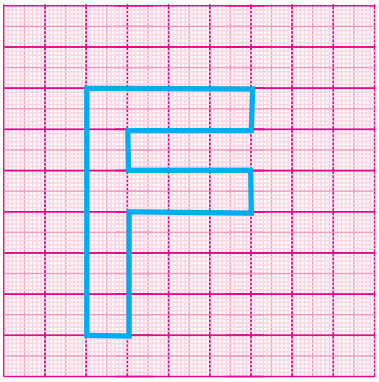
2		
3		
4		
5		

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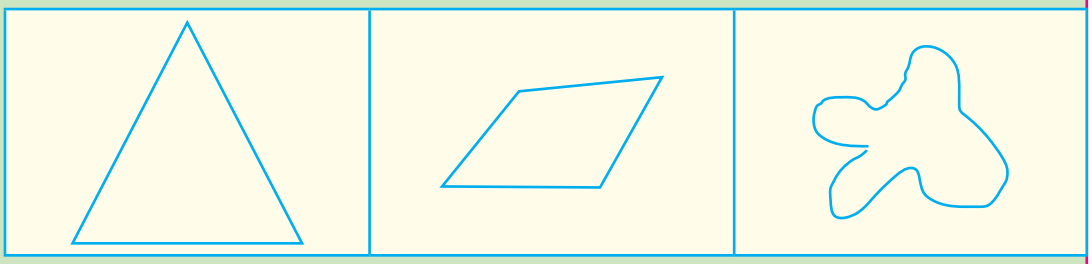
Activity :

1) *Observe the given shapes.*



Draw these shapes on a graph sheet and try to find the area of these. Discuss with your teacher and know about it.

2. On a graph sheet draw two shapes in such a way that one has perimeter 20 cm and another 16 cm. Find the area of both the shapes.

Compare the perimeter and area of both the shapes. What do you observe? What is your conclusion? Discuss with your teacher.

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CHAPTER-2

NUMBERS

U4U2Y9

After studying this chapter you can

- read and write number up to 9999 in an order,
- write four digit number in the place value chart,
- write preceding, succeeding and middle numbers for the given four digit numbers,
- write four digit numbers in expanded form and in general form using the expanded notation,
- identify the place value and face value of digits of a number,
- identify the greatest and smallest number from the four digit numbers,
- arrange the given 4 digit numbers in ascending and descending order,
- form the greatest and smallest number using the given digits.

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Four digit numbers

Srivani went to a household exhibition cum sale centre with her mother. Things which were liked by her are shown in the picture with their cost. You also observe.

Srivani started to read the cost of these things

₹ 796 =Rupee seven hundred ninety six

₹ 687 = Rupee six hundred eighty seven

₹ 425 = Rupee four hundred twenty five

₹ 990 = Rupee nine hundred ninety

₹ 2356

₹ 3250

₹ 1986

₹ 8995

How to read these ?

She read the three digit numbers quickly. She decided to learn reading four digit numbers from her teacher. Can you read such four digit numbers?

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In your previous class you have learnt to read, write and expand three digit numbers. Now, by recalling those try to learn four digit numbers.

Which is the smallest three digit number? (100)

Which is the greatest three digit number? (999)

The number is written in place value chart. Observe.

Thousands	Hundreds	Tens	Units
100×10	10×10	1×10	1
1	0	0	0

One place is increased to the left of hundred place. That place has ten times the value of hundred place. It is identified as the thousandth place.

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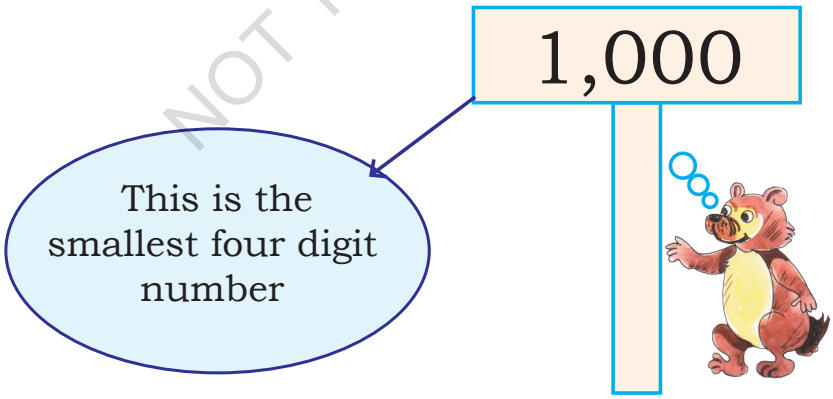
Reading method : One thousand



Method of writing numbers after 1000

Which is the next number to 1000? (1000 + 1 = 1,001)

Which is the next number to 1001? (1001 + 1 = 1,002)

Like wise let us prepare a chart of numbers that come after 1,000 and read.

1001	1002	1003	1004	1005	1006	1007	1008	1009	1010
1011	1012	1013	1014	1015	1016	1017	1018	1019	1020
1021	1022	1023	1024	1025	1026	1027	1028	1029	1030
1031	1032	1033	1034	1035	1036	1037	1038	1039	1040
1041	1042	1043	1044	1045	1046	1047	1048	1049	1050
1051	1052	1053	1054	1055	1056	1057	1058	1059	1060
1061	1062	1063	1064	1065	1066	1067	1068	1069	1070
1071	1072	1073	1074	1075	1076	1077	1078	1079	1080
1081	1082	1083	1084	1085	1086	1087	1088	1089	1090
1091	1092	1093	1094	1095	1096	1097	1098	1099	1100

1101	1102								
									1200

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3701	3702								
3741									3750
									3800

9901	9902	9903							
9991	9992	9993	9994	9995	9996	9997	9998	9999	

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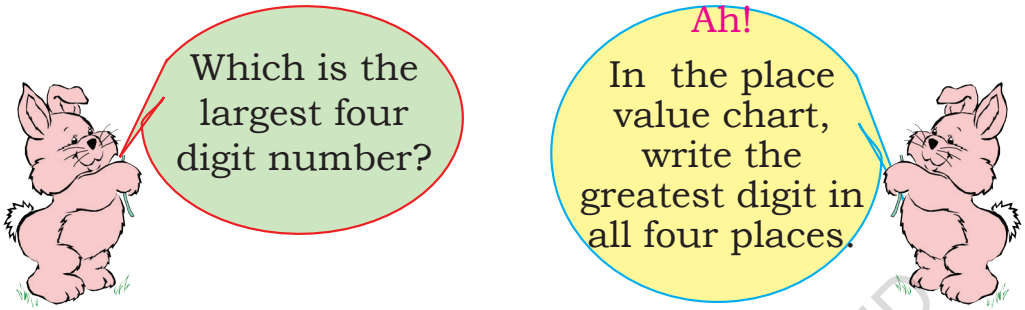
Among the four digit numbers, select a few numbers and prepare a chart as shown above. Observe the numbers in the column. Identify the pattern in them.



Th	H	T	U
9	9	9	9

The largest four digit number is 9,999 (Nine thousand nine hundred ninety nine)

Four digit numbers

Smallest number 1,000

Greatest number 9,999

Observe the method of reading the numbers.

Example : 4009 since the ten's place and hundred's place contain zero. it is read and written as four thousand nine.

Th	H	T	U	
2	3	5	6	Two thousand three hundred fifty six
3	2	5	0	Three thousand two hundred fifty
1	9	8	6	One thousand nine hundred eighty six
8	9	2	5	Eight thousand nine hundred twenty five

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In the same way try these.

Write the following numbers in words :

1) 5,004 → ----------

2) 7,305 → ----------

3) 9,000 → ----------

4) 5,876 → ----------

Write the following in numbers :

1) Six thousand four hundred seventy one → _____

2) Three thousand nine → _____

3) Nine thousand eight hundred ninety nine.→ _____

4) Two thousand four hundred twenty → _____

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Try yourself

1) Read the following numbers.

3,705	4,600	3,576	1,005	5,009	9,827

2) Prepare a chart of numbers from 1801 to 1900.

3) The numbers which represent pictorially are written in the place value chart. Observe the example and complete.

Th	H	T	U
1	4	2	6

Th	H	T	U

To write the preceding, succeeding and the middle numbers.

1) Which is the succeeding number to 3876?

3877 it is? How did you identify?

(To get the succeeding number of a given number, add '1' to it)

Similarly

➤ The succeeding number of 5938 is → 5939

Write the succeeding numbers of the following

7999

8407

9000

2) Which is the preceding number of 5863?

5862 it is? How did you identify.

∴ Preceding number of 5863 is → (5863-1) = 5862

Similarly Write the preceding numbers of the following

4567

7659

8000

3) Which is the middle number of 6,896 and 6898?
The middle number of 6896 and 6898 is 6897

Observe the middle number between the following numbers. Identify the relation between middle number and other two numbers.

3695,	**3696**,	3697
8406,	**8407**,	8408
9000,	**9001**,	9002
8999,	**9000**,	9001

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Do it yourself

1) The succeeding number of 3976 is _____ .

2) The preceding number of 2900 is _____ .

3) The middle number of 3998 and 4000 is _____ .

4) The succeeding number of 8476 is 8477, which is more than 8476 _____.

Exercise 2.1

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I. Read the following numbers, then write in words.

1) 697 2) 809 3) 1576 4) 5298

5) 7005 6) 9899 7) 7203 8) 8004

II. Write the following numbers in the place value chart

Example : 3594

Th	H	T	U
3	5	9	4

1) 307

Th	H	T	U

2) 611

Th	H	T	U

3) 5926

Th	H	T	U

4) 6000

Th	H	T	U

5) 8888

Th	H	T	U

6) 9400

Th	H	T	U

7) 9991

Th	H	T	U

8) 7343

Th	H	T	U

III. Write the following numbers in words

Example : 2490 = Two thousand four hundred ninety

1) 3524 = _____

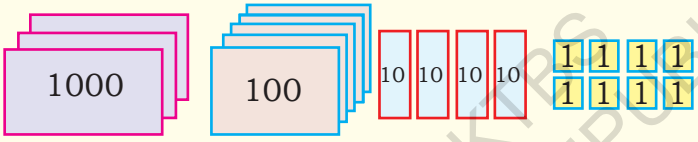
2) 4967 = _____

3) 8740 = _____

4) 8001 = _____

IV. Write the number which is represented in the picture in the place value chart and read.

Example :



Th	H	T	U
3	5	4	8

Th	H	T	U

Th	H	T	U

Th	H	T	U

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V. Write the succeeding number of .

1) 6820, _____

2) 3948, _____

3) 5201, _____

4) 7605, _____

5) 4200, _____

6) 3999, _____

7) 2829, _____

8) 3007, _____

VI. Write the preceding number of.

1) _____, 3926

2) _____, 5439

3) _____, 6400

4) _____, 3570

5) _____, 4900

6) _____, 5000

7) _____, 3827

8) _____, 4999

VII. Write the middle number.

1) 2769, _____, 2771

2) 5490, _____, 5492

3) 3999, _____, 4001

4) 5888, _____, 5890

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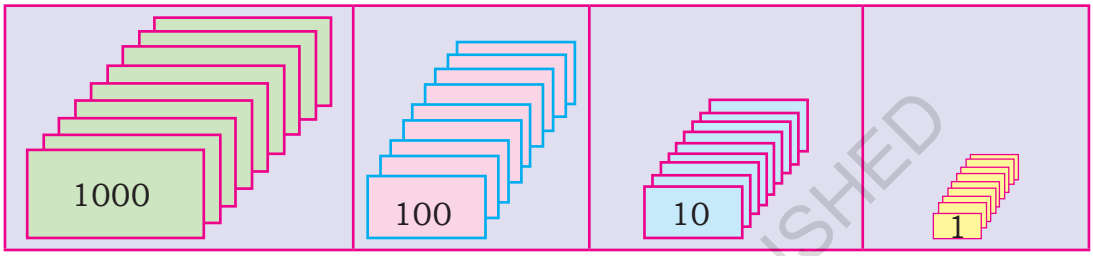
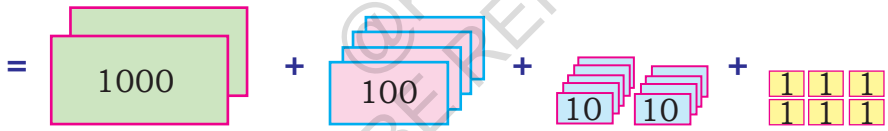
Expanded form of numbers

You have already learnt to expand three digit number according to place value. Do this activity now.

Activity : After preparing the number cards using paper or card board, arrange them in an order according to the numbers written on the board.



Example 1 : of 2496 Arrange the number card according to the place value of each digit.



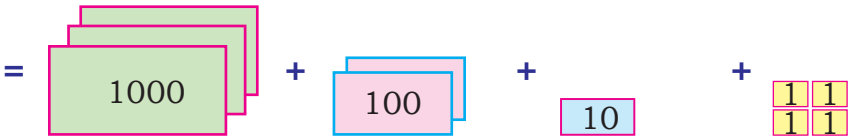
In expanded form we write using numbers as follows

$= 2 \times 1000 + 4 \times 100 + 9 \times 10 + 6 \times 1$

$\therefore 2496 = 2000 + 400 + 90 + 6$

Example 2 :

of 3214 Arrange the number card according to place value of each digit.



The arranged number can be written using numbers as follows. Observe

$= 3 \times 1000 + 2 \times 100 + 1 \times 10 + 1 \times 4$

$\therefore 3214 = 3000 + 200 + 10 + 4$

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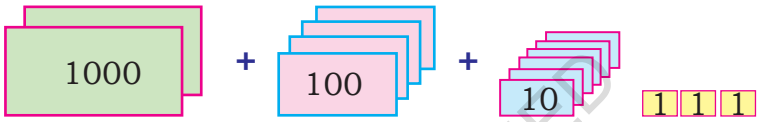
Do it yourself

Use the number cards which you have prepared and write the expanded form.

a) 5423 b) 3805

To write the expanded numbers in the general form. Write the numbers represented by the number cards.

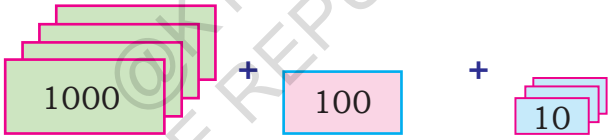
Example 1 : = 

= 2 × 1000 + 4 × 100 + 6 × 10 + 3 × 1

= 2000 + 400 + 60 + 3

= 2463

Th	H	T	U
2	4	6	3

Example 2 : = 

= 4 × 1000 + 1 × 100 + 3 × 10 + 0 1 ×

= 4000 + 100 + 30 + 0

= 4130

Th	H	T	U
4	1	3	0

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Exercise 2.2

I. Write the following numbers in the expanded form

1) 6487 = _____

2) 2069 = _____

3) 5004 = _____

4) 9678 = _____

II. Write these numbers in general form

Example 3 × 1000 + 4 × 100 + 8 × 10 + 2 × 1 =	Th H T U 3 4 8 2	= 3482
1) 1 × 1000 + 3 × 100 + 6 × 10 + 5 × 1 =	Th H T U 	= _____
2) 4 × 1000 + 0 × 100 + 7 × 10 + 9 ×1 =	Th H T U 	= _____
3) 8 × 1000 + 1 × 100 + 5 × 10 + 5 × 1 =	Th H T U 	= _____
4) 6 × 100 + 3 × 10 + 2 × 1 =	Th H T U 	= _____

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Write these numbers in general form :

Example 1 : 8 × 1000 + 6 × 100 + 0 × 10 + 9 × 1

= 8000 + 600 + 0 + 9

= 8609

Th	H	T	U
8	6	0	9

Example 2 : 9 × 1000 + 4 × 100 + 0 × 10 + 5 × 1

= 9000 + 400 + 0 + 5

= 9405

Th	H	T	U
9	4	0	5

Do it yourself

Write these expanded numbers in the general form.

a) 5 × 1000 + 3 × 100 + 9 × 10 + 2 × 1

b) 8 × 1000 + 2 × 10 + 3 × 1

Place value - Face value.

Already you know the place value of numbers. You also know how to read and write the numbers according to their place value.

Observe these examples.

4173

4237

4314

3125

Identify the place value of 3 in each example.

How do the value of 3 changes according to its place value?

But if you consider 3, does its value change?

No, it doesn't?

In this way the digit does not change its value.

What is this value called?

This is called the face value.

Every digit possesses its own value known as face value. It takes different place value based on its position in the number. Observe the following examples.

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Example 1 : 4 $\boxed{3}$ 78

Face value is 3	Place Value 3 × 100 = 300

$\boxed{5}$ 847

Face value is 5	Place value 5 × 1000 = 5000

367 $\boxed{2}$

Face value is 2	Place value is 2 × 1 = 2

Example 2

3 8 9 5

Face value of 8 is 8	Face value of 9 is 9
Place value	Place value
8 × 100 = 800	9 × 10 = 90

Example 3

7 3 2 7

Face value of 7 is 7	Face value of 7 is 7
Place value	Place value
7 × 1000 = 7000	7 × 1 = 7

From the above examples mention any one difference between the place value and the face value.

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Method of finding the difference between the place value and the face value.

1) **In 2389 what is the difference between the place value and the face value of 3?**

In 2389 the Place value of 3 → 300

the Face value of 3 → 3

Difference → 297

2) **In 6547 what is the difference between the place value and the face value of 6?**

In 6547 Place value of 6 → 6000

Face value of 6 → 6

Difference → 5994

3) In 2998 find the difference between the place value of the two 9.

In 2998 place value of 9 in hundred place → 900

Place value of 9 in tens place → 90

Difference → 810

Activity : For each of the number given below, match the place value and face value of the marked digits by drawing line as shown.

Number	Face value	Place value
1) 85 [3] 6	4	200
2) 3 [2] 67	3	4000
3) [4] 673	2	30
4) 907 [6]	9	900
5) 6 [9] 78	6	6

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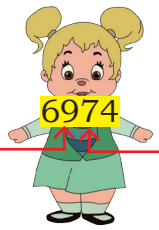
Exercise 2.3

I. Fill in the blanks with suitable Numbers:

1)

The place value of 9 is .....

Its face value is .....

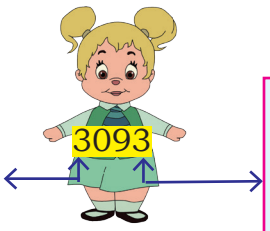


The place value of 7 is .....

Its face value is .....

2)

place value of 3 is .....
Its face value is .....



place value of 3 is .....
Its face value is .....

II. For each question given below four alternates are given. Choose the correct answer and write it.

1) In 4267, the difference between the place value and face value of 6 is _____ .

a) 0 b) 1 c) 9 d) 54

2) In 3498 the difference of the place value and face value of 4 is _____

a) 496 b) 409 c) 396 d) 90

3) In 5435, the difference of the place values of 5 is _____

a) 999 b) 4005 c) 4995 d) 5005

4) In 1694 the digit whose place value and face value are equal is _____

a) 0 b) 1 c) 4 d) 6

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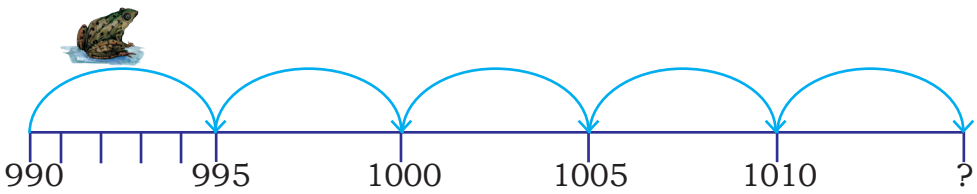
Common Difference Numbers

Observe these examples:

A frog, rabbit, deer and cheetah will jump according to their capacity. Their each jump is shown on the number line.

How long does the frog move in each jump?

1)



What is the gap between each jump of the frog = (_____)

How many numbers are added in each jump of the frog?

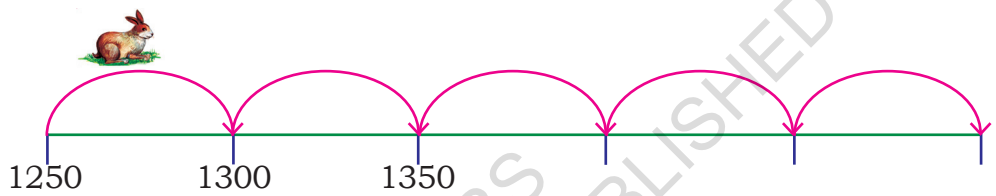
995 - 990 = 5, 1000 - 995 = 5

∴ It has jumped 5 numbers in each jump.

Finally which number did the frog reach?

(1010 + 5 - 1015)

2)



How did you find the distance between the 2 successive (consecutive) jumps?

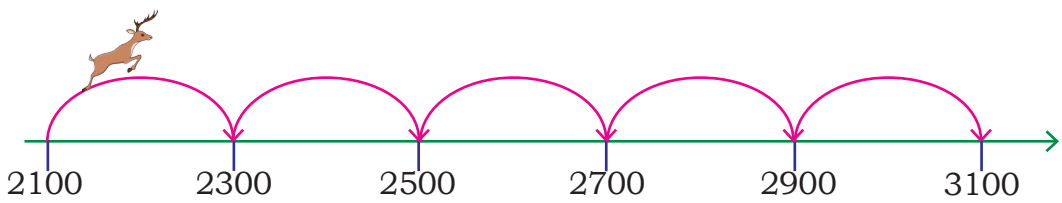
Distance covered in each jump of the rabbit = (_____)

Identify the numbers till the end point where the rabbit reaches.

How did you find the distance between the jumps?

Following the above example find the extra distance covered in jump by deer and cheetah.

3)



How much does the deer jump each time? (_____)

Which is the number reached by it finally? (_____)

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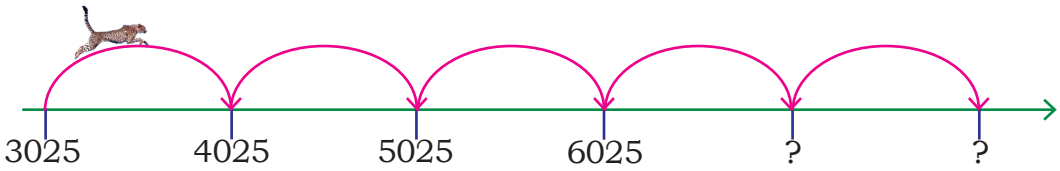
4)



How much does the cheetah jump each time? (_____)

Identify the number reached by the cheetah at the 4th and 5th jump.

Example 2: Write the missing numbers in the following sequence.

1) 1572, 1574, 1576, _____, _____, _____

The difference of the two consecutive numbers is 1574 - 1572 = 2.

Hence write the sequence by adding 2 each time.

∴ 1572, 1574, 1576, 1578, 1580, 1582

2) 3480, 3500, 3520, _____, _____, _____

The difference of the two consecutive numbers is 3500 - 3480 = 20

Hence write the sequence by adding 20 each time.

∴ 3480, 3500, 3520, 3540, 3560, 3580

3) 6205, 6505, 6805, 7105 _____, _____

The difference of the two consecutive numbers 6505 - 6205 = 300

∴ 6205, 6505, 6805, 7105, 7405, 7705

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Do it yourself

1) Write the next numbers in the series.

a) 5240, 5250, 5260, _____, _____, _____,

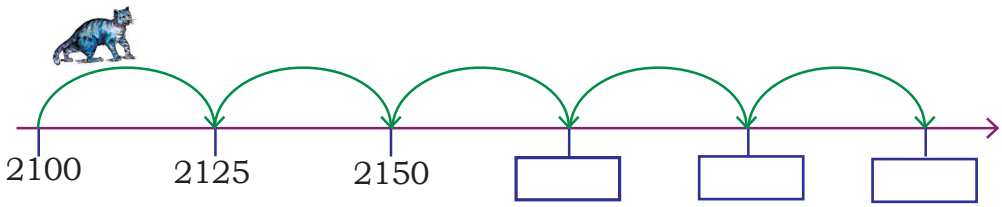
b) 8425, 8450, 8475, _____, _____, _____,

c) 5049, 6049, 7049, _____, _____, _____,

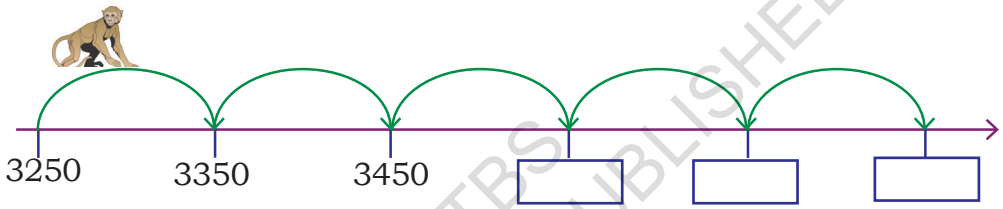
Exercise 2.4

I. Complete the number line by writing the missing numbers.

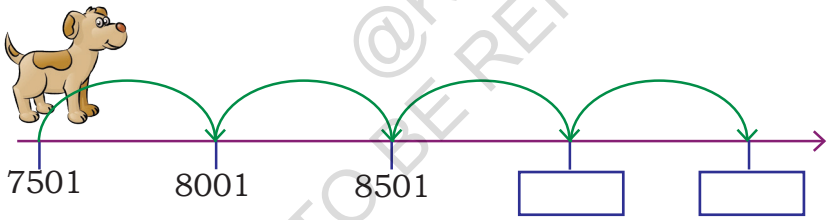
1)



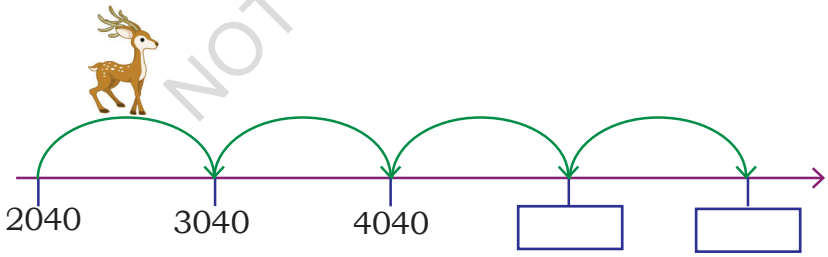
2)



3)



4)



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II. Write the missing numbers in the following number series.

1) 2326, 2330, 2334, _____, _____, _____

2) 1540, 1550, 1560, _____, _____, _____

3) 1850, 1900, 1950, _____, _____, _____

4) 3650, 3950, _____, 4550, _____, _____

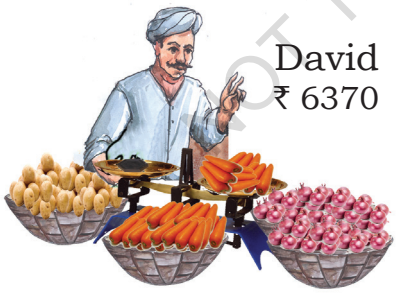
5) 4107, _____, 6107, _____, 8107, _____

To identify the largest and the smallest number

Observe these pictures. The investment details of four vegetable vendors are given. Observe and answer the following questions.

Rizwan
₹ 5256

Gowramma
₹ 4960



David
₹ 6370

Fathima
₹ 3480

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- Among these, who has invested more amount?
- Among these, who has invested the least amount?

What you did to get the answer? You compared all the numbers. You have learnt to compare the method of three digit numbers in your previous class. Recall it and compare the numbers from highest place value and identify the largest and the smallest number.

5256; 4900; 6370; 3480 are the four digit numbers.

The digit in the thousand's place are 5,4,6 and 3 respectively.

Among them 6 is the greatest and 3 is the smallest.

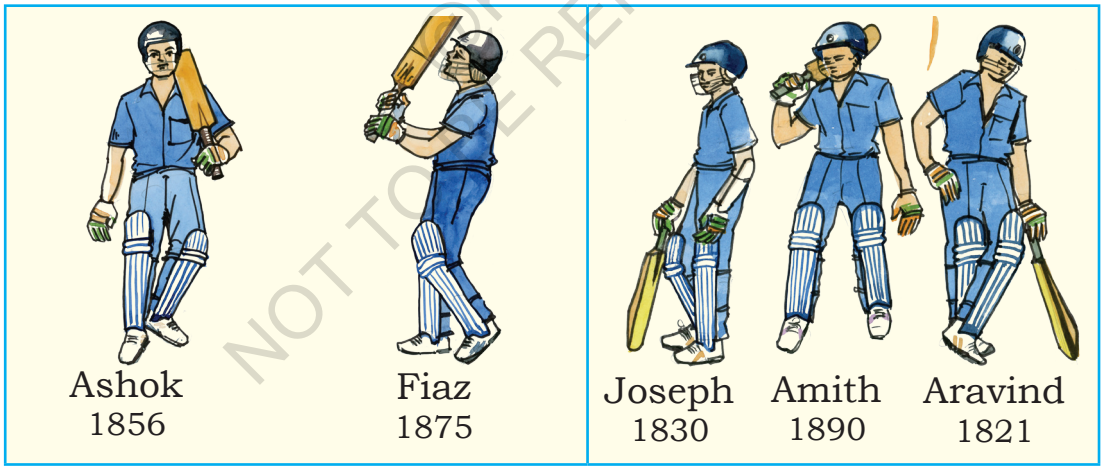
Among these numbers, the greatest number is : 6370 and

the Smallest number is : 3480.

∴ Among them, the person who has invested the most is David (₹ 6370)

The Person who has invested the least is Fathima (₹ 3480)

Example : The runs scored by players in a professional cricket team is as follows. Among them, who has scored the highest? Who has scored the least?



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The numbers given here are 1856, 1875, 1830, 1890 and 1821. All are four digit numbers. Observe digits in each place.

The digits in thousand's place and hundred's place are same. Hence to compare them we must compare the digits in ten's place

The digits in ten's place are 5, 7, 3, 9 and 2. Among them 9 is the largest and 2 is the smallest.

∴ The largest number among these is 1890 and the smallest is 1821.

The highest number of runs is scored by Amith (1890)

The least number of runs is scored by Aravind (1821)

Example : Among the given number cards, identify the largest and least value.

8692 8940 8629 8490 8094

The digits in the thousand's place are same. Now compare the digits in hundreds place. The digits in hundred's place are 6, 9, 2, 4 and 0. Hence the greatest number is 8940. In hundred's place 0 is the smallest digit. Hence the smallest number is 8094.

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Do it your self.

A. Circle the greatest number.

1) 3247, 3280, 3228, 2267 2) 5694, 5384, 5820, 5973

B. Circle the smallest number.

1) 8826, 8823, 8821, 8829 2) 5747, 4768, 6000, 3899

Ascending order - Descending order

In the previous class you have learnt to write the three digit numbers in ascending and descending order. By remembering that write the given numbers in the ascending order

Example : 679, 368, 796, 697

Ascending order : 368, 679, 697, 796

By following the same method how do you write the four digit numbers in ascending and descending order?

Example 1: 5839, 5093, 5872, 5829

----------, ----------, ----------, ----------,

Which method did you use to write these numbers in the ascending order? Identify and write.

_____,

_____,

_____

Example 2 : 2167, 1679, 3847, 500

----------, ----------, ----------, ----------,

Which method did you follow?

----------,

----------,

Observe : While writing the numbrs in ascending order.

- First, Observe thousand's place.
- Next, Observe hundred's place.
- Observe tens place.
- Observe units place.

By observing all these places, write numbers from the least to the largest.

Think : If zero is written first, then will it become a four digit number?

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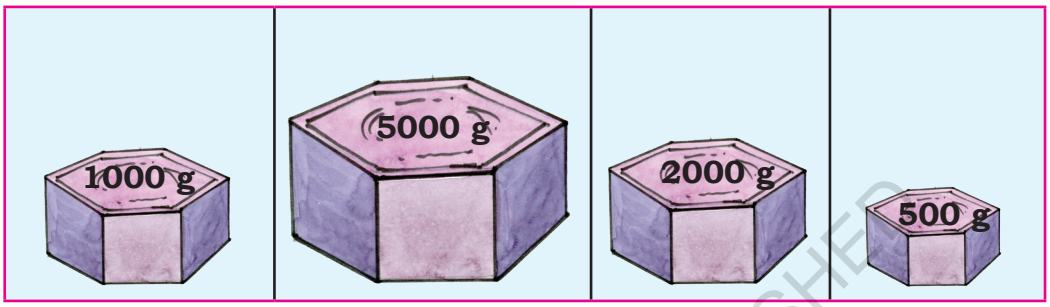
Ascending order [From Small to Big]

Example 1:

Observe the following weights. Arrange them in ascending order.

[Weighing Blocks]

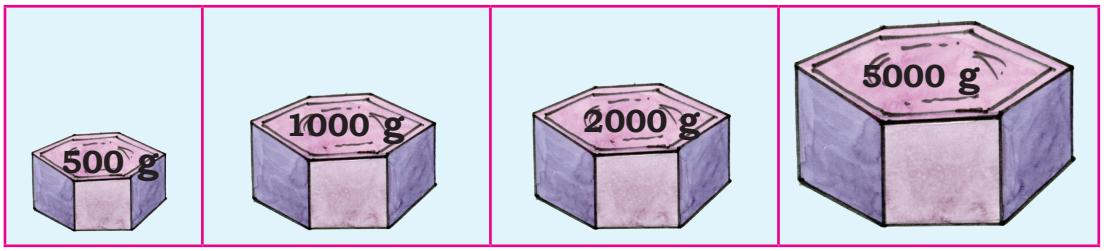


To write in ascending order, which number should be written first?
The smallest number should be written first.

- Which is the smallest weight among these? (500)
- Among the remaining weights, which is the smallest number? (1000)
- Now the remaining weights are 5000 and 2000. Now which is the smallest among these two? (2000)
- So, Which is the remaining weight in the end? (5000)

Starting from the smallest to the last left weight, all the weights are written in an order.

This is in ascending order.



∴ Ascending order = 500, 1000, 2000, 5000

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Example 2 : Arrange the following number cards in ascending order.

3920	2890	5436	3860

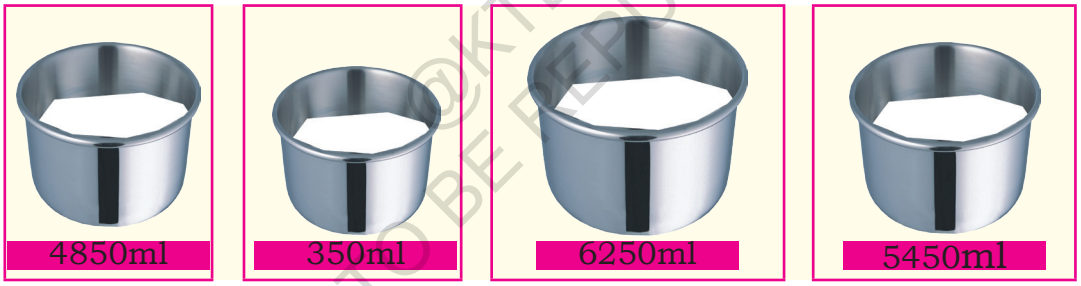
- Identify and write the smallest number (2890)
- Among the remaining numbers, write the smallest number each time, in order.

∴ Ascending order : 2890, 3860, 3920, 5436

Remember : When the numbers are written in ascending order, the smallest number will be at the beginning and greatest number at the end.

Descending order [From Big to Small]

Observe the quantity of milk in each of the following vessels given. Write these numbers in descending order.



- Which number is to be written first in descending order? (Greatest number)
- Which is the greatest number? (6250)
- Among the remaining numbers, which is the greatest number? (5450)
- Now 4850 and 3500 are left. Out of these two which is greater (4850)?
- Which is left out? (3500)

Starting from the greatest number the numbers are written in an order.

Observe: 6250, 5450, 4850, 3500

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This is in descending order.

6250 ml

5450 ml

4850 ml

3500 ml

∴ Descending order

----------, ----------, ----------, ----------,

Example 2 : Arrange these number cards in descending order.

5420	5840	4696	4890

- Identify the greatest number. (5840)
- Among the remaining numbers, write the greatest number each time in an order.

∴ Descending order = 5840, 5420, 4890, 4696

Remember: When numbers are written in descending order, the greatest number is at the beginning and the last number is the smallest.

Do it yourself

A) Write the following numbers on the step, in ascending order

5026	2650	6520	5640

B) Arrange the following numbers on the steps in descending order.

3856	3656	3695	3965

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Exercise 2.5

I. Circle the smallest number and put `✓' tick mark for the greatest number.

Example : 3675, 3765✓, (3265), 3475

1) 8820, 3790, 6530, 2905
2) 9297, 8470, 9680, 5875
3) 5600, 6500, 6005, 5006
4) 9270, 9267, 9207, 9217

II. Write these numbers in ascending order.

1) 679, 368, 796, 697
   Ascending order: _____
2) 5839, 5093, 5872, 5829
   Ascending order: _____
3) 2167, 1679, 3847, 5000
   Ascending order: _____
4) 6493, 6394, 4693, 3625
   Ascending order: _____

III. Write these numbers in descending order.

1) 2765, 3847, 1629, 4867
   Descending order: _____
2) 3926, 3967, 3908, 3937
   Descending order: _____
3) 4798, 4792, 4087, 4800
   Descending order: _____
4) 8620, 8629, 8630, 8624
   Descending order: _____

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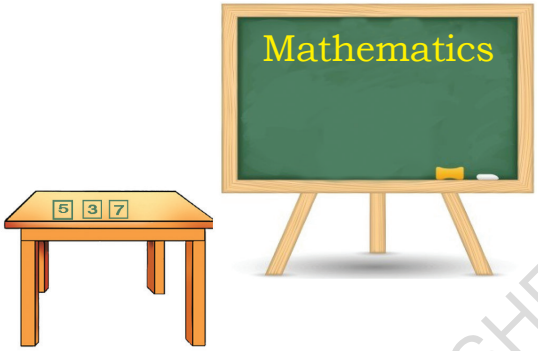
To form four digit number from the given numbers

You have already learnt how to form three digit number from the given numbers. Let us learn how to form four digit numbers by recalling the same.



There were three number cards on the table in the class room. Using these number cards. Students who came there formed different numbers.

Number cards	Numbers formed by them.
5 3 7 →	5 3 7 , 3 7 5 , 7 5 3 , 3 5 7 , 7 3 5 , 5 7 3

Which is the greatest number among the numbers formed?
753 (Seven hundred fifty three)

Observe each digit in the number 753. What is the order of the digits 7, 5 and 3? (Descending order)

Observe : To form the greatest number from the given digits, arrange the digits in descending order.

Which is the smallest number among the numbers formed?

357 (Three hundred fifty seven)

Observe each digit in the number 357

What is the order of the digits 3,5 and 7? (Ascending order)

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Observe : To form the smallest number from the given digits, the digits are arranged in ascending order.

Activity 1 :

A box containing number cards is on the table in your class room. The following number cards are there in the box.

8	0	3	7	6	9	5	1	4	2

Pick any four number cards. Keep them on the table.

Assume that you have picked the number cards | 3 | 6 | 4 | 8 |

By using the above number cards make the greatest four digit number. Arrange the digits in descending order. The descending order of the digits is | 8 | 6 | 4 | 3 |

The number obtained is 8643 (Eight thousand six hundred forty three)

∴ The greatest number formed from those is 8,643

Again, which is the smallest four digit number that can be formed using 3, 6, 4 and 8?

Arrange the digits in ascending order.

The ascending order of the numbers is | 3 | 4 | 6 | 8 |

The obtained number is 3,468 (Three thousand four hundred sixty eight)

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∴ The smallest number formed from those is 3,468

Activity 2 : Manya removed 4 number cards from the box. Those number cards are [7], [5], [0] and [8]. Which is the greatest number that can be formed using these four digits?

She arranged them in descending order to get the greatest number.

The descending order is [8] [7] [5] [0]

The number formed from item is 8750. (Eight thousand seven hundred fifty)

∴ The greatest number formed from them is 8,750

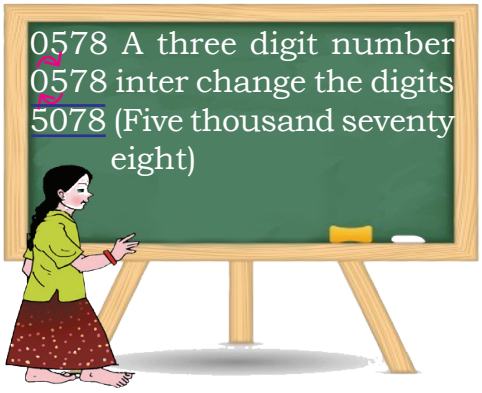
Using [7], [5], [0], [8] which is the smallest number that can be formed?

Manya arranged them in ascending order.

Ascending order : 0, 5, 7, 8

She said that the number formed from those is 0,578.

She read it as 0,578 (Five hundred seventy eight). In 0578 there are no thousands. So it has become a three digit number!



Thinking so, she looked at the teacher. The teacher clarified her doubt as follows. If zero occurs in the highest place it will not be considered in that number (0578 = Five hundred seventy eight)

In such cases inter change the digits of zero in the highest place with the digit in the next place. Write 0578 as 5078. Now (Five thousand seventy eight) this is a four digit number.

∴ 5078 is the smallest four digit number that can be formed using the digits 0, 5, 7 and 8.

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Remember

Follow these points to form smallest number, when the given digits include zero,

- Considering zero, write the digits in ascending order.
- Interchange the beginning zero and the next digit, write the remaining numbers as it is.

Activity 3: Which is the smallest four digit number that can be formed using all the digits 6, 2, 0, and 5?

• Arrange the given digits in ascending order. • Interchange the beginning zero and its next digit. • Write the number.	Ascending order = 0, 2, 5, 6 = 2, 0, 5, 6 Smallest number is = 2,056

Think : In the above example 0256 is not the smallest number, why?

Do it yourself.

1) Given the digits [6], [9], [7], [1] using all these digits,

   a) The greatest number that can be formed is _____.

   b) The smallest number that can be formed is _____.

2) Given the digits [4], [0], [3], [7] using all these digits

   a) The greatest number that can be formed is _____.

   b) The smallest number that can be formed is _____.

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Exercise 2.6

I. Fill in the blans

1) The greatest number that can be formed using the digits [4],[6],[8],[5] is _____.

2) 3,046 is _____ digit number.

3) 0,734 is _____ digit number.

4) The smallest four digit number that can be formed using the digits [3],[1],[0],[9] is _____.

II. Write as directed.

1) 5, 8, 7 and 2. By using these digits,
The greatest four digit number that can be formed is _____.
The smallest four digit number that can be formed is _____.

2) 2, 8, 9 and 0. By using these digits
The greatest four digit number that can be formed is _____.
The smallest four digit number that can be formed is _____.

3) 3, 5, 2 and 9. By using these digits
The greatest four digit number that can be formed is _____.
The smallest four digit number that can be formed is _____.

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CHAPTER - 3

ADDITION

B9E1T5

After studying this chapter you can

- add four digit numbers with out regrouping,
- add four digit numbers with carry,
- solve verbal problems in daily life by writing numbers according to their place value,
- add mentally and quickly by knowing the process of addition.

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You have already learnt the addition of three digit numbers. Observe this example.

Example :

Different articles available in a shop are given along with cost. Observe them and answer the questions that come next.

In that shop

- What is the cost of a calculator? _____ ,
- What is the cost of a Mixer? _____ ,
- What is the cost of a radio? _____ ,
- What is the cost of a mobile set? _____ ,

Observe the example problems:

A person has purchased the articles given below from a shop. What is their total cost?

We should add these prices in accordance with the place value.

These prices are represented through symbolic pictures and are added. Observe.

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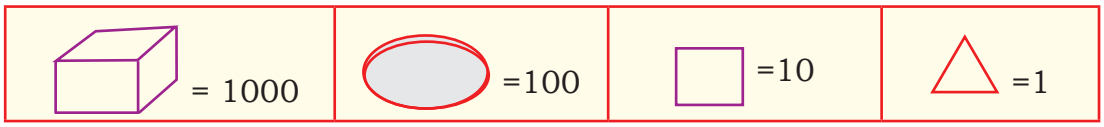

Particulars	Groups			
	Thousands	Hundreds	Tens	Units
1) Cost of Mobile ₹2454	1000 1000	100 100 100 100	10 10 10 10 10	1 1 1 1
2) Cost of calculator ₹324		100 100 100	10 10	1 1 1 1
Total ₹2778	1000 1000	100 100 100 100 100 100 100	10 10 10 10 10 10	1 1 1 1 1 1 1 1

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Observe the method of adding these by writing them in place value chart.

	Th	H	T	U
1)Cost of a mobile ₹	2	4	5	4
2) Cost of a calculator ₹		3	2	4
	2	7	7	8

Total cost = ₹ 2778.

Rupees two thousand seven hundred seventy eight only.

Step 1

- Digits in the units place are added first.
- Then digits in the tens, hundreds and thousands place are respectively added and written.

2) A house-wife purchased the articles shown in the picture from a shop. What is the total cost?

Cost of these articles are first represented by symbolic pictures and added. Observe.

Particulars	Groups			
	Thousands	Hundreds	Tens	Units
1) Cost of a player ₹2420	1000 1000	100 100 100 100	10 10	
2) Cost of wrist watch ₹1349	1000	100 100 100	10 10 10 10	1 1 1 1 1 1 1 1 1
Total ₹	1000 1000 1000	100 100 100 100 100 100	10 10 10 10 10 10	1 1 1 1 1 1 1 1 1

Observe the method of addition by writing them in place value chart.

Particulars	Th	H	T	U
1) Cost of player ₹	2	4	2	0
2) Cost of wrist watch ₹	1	3	4	9
Total ₹	3	7	6	9

Addition method.

Observe that the digits are added and written in their respective places, starting from units place.

Total cost = ₹ 3769

Rupee three thousand seven hundred sixty nine.

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Do it yourself.

1) Write the cost of articles in place value chart and find their total cost.

a)

	Th	H	T	U
₹				
₹				
Total ₹				

b) What is their sum?

₹ 3626 + ₹ 5243

	Th	H	T	U
₹				
₹				
Total ₹				

c) Find the sum of these.

1) 5476 + 213

2) 3048 + 2851

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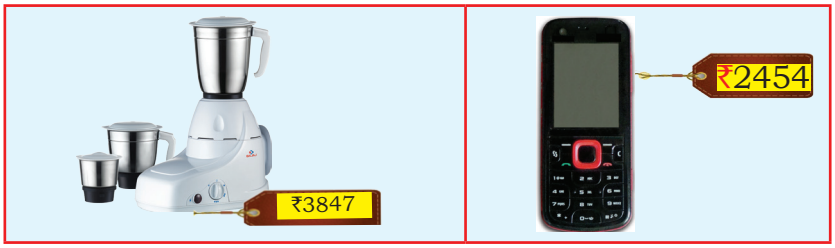
Addition with carry

Example 1: A customer purchased the articles as shown. What is the total cost of these articles?



₹ 5247 + ₹ 2454 = ?

Cost of these articles is first represented by symbolic pictures and they are added. Observe.

Particulars	Groups			
	Thousands	Hundreds	Tens	Units
	1000	100	10	
1) Cost of Mixer ₹ 3847	1000 1000 1000	100 100 100 100 100 100 100 100	10 10 10 10	1 1 1 1 1 1 1
2) Cost of Mobile ₹ 2454	1000 1000	100 100 100 100	10 10 10 10 10	1 1 1 1
Total cost ₹ 6301	1000 1000 1000 1000 1000 1000	100 100 100		1

₹ 6301 (Six thousand three hundred one)

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Step 1 :

On adding the digits 7 and 4 in the units place, we get 11. It has 1 tens and 1 unit. Write 1 in unit place. Write 1 in tens place.

Th	H	T	U
		1	
3	8	4	7
2	4	5	4
			1

Step 2 :

Now, we have 1 tens , 4 tens and 5 tens in tens place. Adding we get 10 Tens. 10 tens has 1 hundred and 0 tens. Write 0 in tens place and carry 1 hundred to hundreds place.

Th	H	T	U
	1	1	
3	8	4	7
2	4	5	4
		0	1

Step 3 :

In hundred's place we have 1 hundred, 8 hundred and 4 hundreds. On adding we get 13 hundred. Thirteen hundred means 1 thousand and 3 hundred. From this write 3 in the hundred's place of total and write 1 as carry for thousand's place.

TH	H	T	U
1	1	1	
3	8	4	7
2	4	5	4
	3	0	1

Step 4 :

Now in thousand's place, 1 thousand, 3 thousand and 2 thousand are there. On adding it becomes 6 thousand. Write 6 in the thousand's place total cost of the articles purchased by the customers is (Rupee Six thousand three hundred one)

TH	H	T	U
1	1	1	
3	8	4	7
2	4	5	4
6	3	0	1

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Example 2 : A person purchased the articles shown in the following picture from a shop. Find their total cost.

	Th	H	T	U
	1	1	1	
Cost of tape recorder ₹	3	2	9	8
Cost of Mixcer ₹	3	8	4	7
Total cost ₹	7	1	①4	①5

Total cost = ₹ 7,145 (Rupees seven thousand one hundred and forty seven) here starting from units place when the numbers are added in their respective places the carry will be added to the right side place. Observe

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Example 3 :

What is the sum of 3895, 2436 and 159?

After writing the numbers according to its place value add as in the previous example.

Th	H	T	U
①	①	②	
3	8	9	5
2	4	3	6
	①1	①5	①9
6	4	9	0

With out writing the carry in the next place value we can solve by keeping carry in mind.

```
 3895
 2436
  159
 6490
```

Total cost = ₹6,490

Do it yourself.

1) 4675 + 3452

	Th	H	T	U
	4	6	7	5
+	3	4	5	2

2) 5368 + 2097

	Th	H	T	U
	5	3	6	8
+	2	0	9	7

3) 359 + 4276+ 2573

	Th	H	T	U
		3	5	9
	4	2	7	6
+	2	5	7	3

4) 3948 + 206 + 92

	Th	H	T	U
	3	9	4	8
		2	0	6
+			9	2

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Oral sums

In many situations in our daily life we will solve the problems mentally.

Example : Getting change for a given currency note in a shop.

Remember any two other instances and write.

1) _____

2) _____

While solving problems mentally, we will follow different procedures.

Observe these examples.

1) What is the sum of 328 and 241?

Method - 1

Expand one of the given numbers and add in an order.

328 + 241 = ?

= 328 + (200 + 40 + 1)

328 +200= 528

528 + 40 = 568

568 + 1 = 569

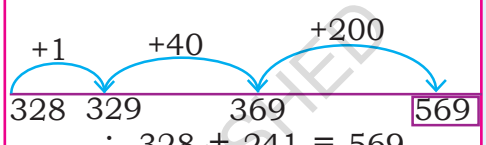
∴ 328 +241= 569

Method - 2

Expand one of the given numbers and add from the unit place digit.

328 + 241 = ?

= 328 + (200 + 40 + 1)



∴ 328 + 241 = 569

2) What is the sum of 5347 and 2635?

Method - 1

5,347 + 2,635 = ?

= 5347 + (2000+600+30+5)

5347 + 2000 = 7347

7347 + 600 = 7947

7947 + 30 = 7977

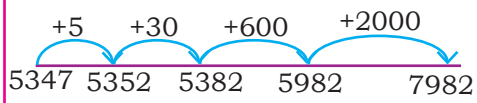
7977 + 5 = 7982

Sum = 7982

Method - 2

5347 + 2635 = ?

= 5347 + (2000+600+30+5)



Sum= 7982

Do it your self : In each of the given sums expand one of the numbers and add in an order to the next number.

1) 643 + 250

2) 6145 + 2236

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Activity : Addition Game

Observe the numbers in the following chart. Place a tamarind seed (any object) on the two numbers to touch either row or column. Find their sum. That sum must exceed 5000

3820	2200	1750	6300	3000	4137
4150	376	4920	2157	3156	1698
1598	2900	4213	1828	2986	3800
2520	4840	238	5786	2184	5790
1546	3275	3426	3248	2900	1000
6376	2821	1680	4495	1000	9000

5 marks for each correct sum which exceeds 5000 correctly done.

If you score 100, you are the winner. If you score 150, you are champion. Try.

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Example 2 :

Philomina is doing sums in the following manner.

1 1 3820 2200 6020	2 1 4213 238 4451	3 1 2986 3800 6786	4 11 1546 6376 7922

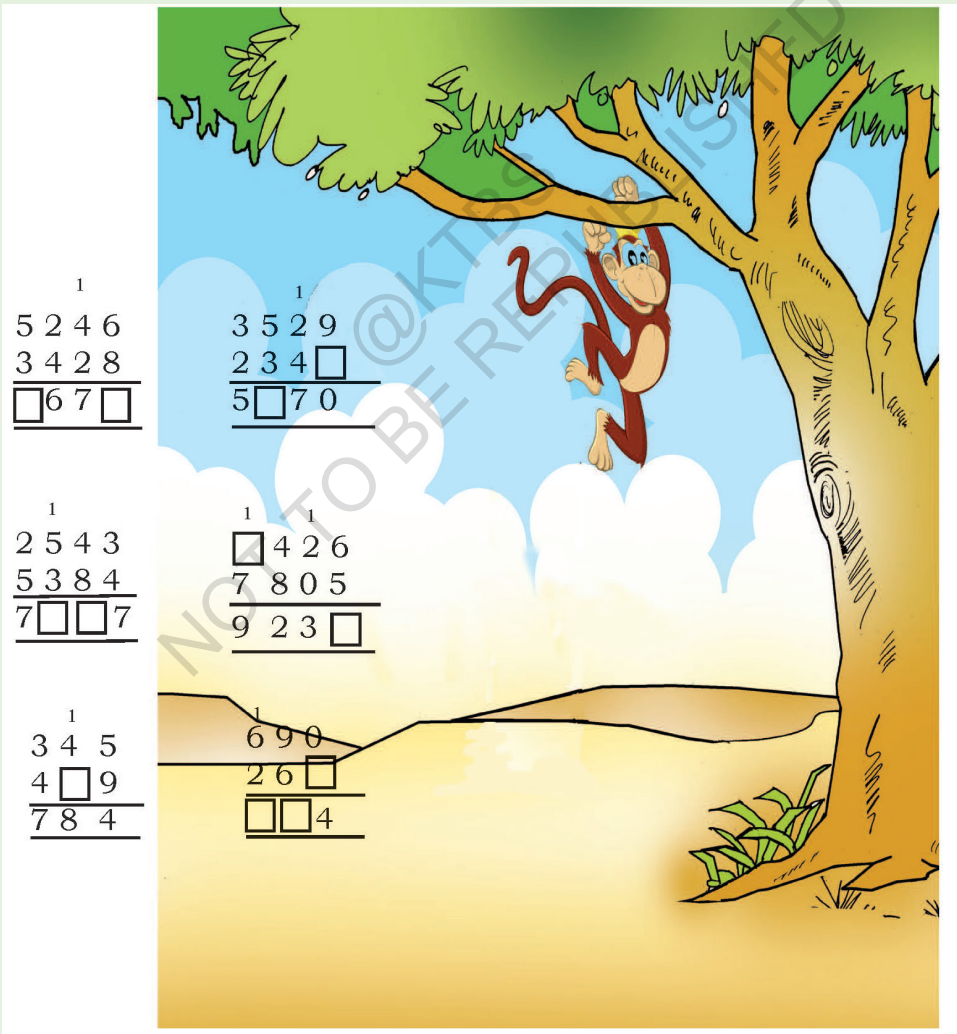
Philomina has got 15 marks. Why? Think

Activity 1 Monkey's mischief

Here is a board. On that a sum is framed using the number cards and the total is also found for each sum and placed on the board.

A monkey on the near by tree has taken away a few number cards.

You find the numbers taken by monkey and write them in their place.



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Exercise 3.1

I. Write these symbolic pictorials numbers in their place value chart and find their sum.

1)

Thousand	Hundreds	Tens	Units
1000	100 100 100 100 100	10 10 10	1 1 1 1
1000 1000 1000	100 100	10 10 10 10 10	1 1

Th	H	T	U

2)

Thousand	Hundreds	Tens	Units
1000 1000 1000 1000 1000 1000	100 100 100	10 10	
1000 1000 1000	100	10 10 10	

Th	H	T	U

II. Write these numbers according to the place value and add.

1) 6371 + 421

Th	H	T	U

2) 6039 + 2920

Th	H	T	U

3) 3487 + 5203

Th	H	T	U

4) 4675 + 2397

Th	H	T	U

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III. Find the sum

A.

1) 6 4 3 2
+ 3 2 6 4

2) 5 4 9 0
+ 3 5 0 7

3) 6 7 5 4
+ 2 1 3 5

4) 5 2 1 3
+ 3 6 7 3

B.

1) 3 4 6 8
+ 4 1 2 7

2) 5 8 9 4
+ 3 2 6 3

3) 4 3 7 2
+ 3 0 0 9

4) 5 0 9 7
+ 3 8 6 5

C.

1) 2 4 9 3
3 7 1
+ 4 4

2) 5
2 0
+ 5 3 7 4

3) 8 2 6 7
3 2 9
+ 1 4 9

4) 5 5 9 6
2 2 6 7
+ 1 4 1 3

IV. Power of Magic Square

Add the numbers in the magic square row-wise, column-wise and from corner to corner. Compare the sum each time. Show your observation to your friends and teacher.

1726	1558	2398
2566	1894	1222
1390	2230	2062

Activity: Observe the following square numbers. Add the numbers in every row and column also add the numbers along the diagonal. What do you observe?

2	7	6
9	5	1
4	3	8

You found that the sum is same in all these cases. Observing the above square can you construct another similar one starting from 12 & find the magic sum.

[Discuss with your firend / teacher].

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V. Solve these problems

1) A Godown has 2360 quintal of ragi and 3427 quintal of maize. What is the total weight of food grains stored in the Godown?

2) In a Panchayath area there are 4275 men, 4312 women and 1380 children. What is the total population of that area?

3) A circus company collected ₹6375 in the first show and ₹2895 in the second show of a day. What is the total amount of money collected on that day?

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CHAPTER-4

SUBTRACTION

E8J8Z4

After studying this chapter you can

- subtract 4 digit numbers without borrowing,
- subtract 4 digits number with borrowing,
- solve verbal problems in daily life situation,
- subtract mentally and quickly by knowing the process of subtraction.

You have already learnt to subtract three digit numbers with borrowing and without borrowing. To know the method of 4 digit subtraction, observe these examples.

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Example 1 :

5890 kg of rice was supplied to a fair price shop in the month of June. 4650 kg of rice was sold in that month. How do you find the quantity of rice remaining at the end of the month?

Method : Here, subtract the quantity of rice sold from the quantity of rice supplied.

Details	Th	H	T	U		
Quantity of rice supplied	5	8	9	0	kg	→ minuend
Quantity of rice sold	4	6	5	0	kg	→ subtrahend
Remaining rice	1	2	4	0	kg	→ difference

∴ Quantity of rice remaining = 1240 kg

Example 2 :

3268 kg ragi was supplied to a fair price shop in the month of June, 125 kg of ragi was left over at the end of the month. How much ragi was sold during the month?

Rule : Subtract remaining quantity of ragi from supplied quantity.

Details	Th	H	T	U		
Quantity of ragi supplied	3	2	6	8	kg	→ minuend
Quantity of ragi left over	0	1	2	5	kg	→ subtrahend
	3	1	4	3	kg	→ difference

∴ Quantity of ragi sold = 3142 kg

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Observe these sums:

1) Subtract 3143 from 5647.

Here 5647 is minuend and 3143 is subtrahend. Subtract subtrahend from minuend

	5	6	4	7	→ minuend
−	3	1	4	3	→ subtrahend
					→ difference

2) Subtract 3041 from 9684.

Here, which is minuend? (9684)

Which is subtrahend? (3041)

That means Subtract 3041 from 9684

	9	6	8	4	→ minuend
−	3	0	4	1	→ subtrahend
					→ difference

Do it your self.

1) Subtract 3755 from 5876. 2) Take away 3800 from 6827.

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Subtraction with borrowing

Example 1: A self help organisation has savings bank account in a co-operative bank. ₹ 8950 was credited to this account from the government as a help. The organisation has withdrawn ₹5397 to buy a tailoring machine. How much of money is remaining in the account ?

Amount credited to the account	=	₹	8950
Amount withdrawn	=	₹	5397
Remaining amount	=	₹	?

Observe step wise solution of this sum .

Step : 1 In minuend, we have '0' in unit place. It is not possible to subtract 7 from 0. So borrow 1 ten from ten's place and add to unit's place. Then 10+0=10 units. On subtracting 7 from 10 we get 3. Now in minuend 4 remains in ten's place	Th H T U 8 9 $^{4}\cancel{5}$ $^{10}\cancel{0}$ − 5 3 9 7 3
Step : 2 Now in the ten's place of minuend 4 is present. It is not possible to subtract 9 from 4. So borrow 1 hundred from hundred's place. 1 hundred has 10 tens. In tens place we get 10+4=14 tens. On subtracting 9 from 14, we get 5. Now 8 is left in hundred's place.	Th H T U 8 $^{8}\cancel{9}$ $^{14}\cancel{4}$ $^{10}\cancel{0}$ − 5 3 9 7 5 3
Step : 3 In hundred's place of minuend, on subtracting 3 from 8, 5 hundred remains.	Th H T U 8 $^{8}\cancel{9}$ $^{14}\cancel{4}$ $^{10}\cancel{0}$ − 5 3 9 7 5 5 3
Step : 4 In minuend at thousand's place subtract 5 from 8 thousand Then 3 thousand remains ∴ The remaining amount in the account is ₹ 3553	Th H T U 8 $^{8}\cancel{9}$ $^{14}\cancel{4}$ $^{10}\cancel{0}$ − 5 3 9 7 3, 5 5 3

This sum is also, represented pictorially as shown. Further observe.

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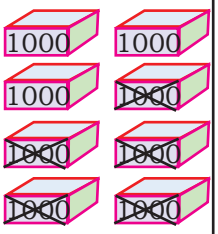
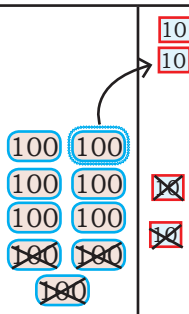
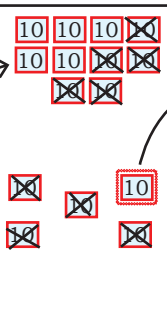
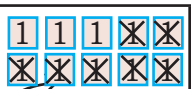
8 9 5 0 - 5 3 9 7				
Difference: ₹ 3 5 5 3	3	5	5	3

Amount in the savings bank account is ₹ 3,553

Example 2 :

An amount of ₹ 9750 was sanctioned to purchase sports items for a school. In that ₹5918 was used to purchase out door sports items like Badminton, throw ball, cricket set etc. In the remaining amount indoor sports items like carom, chess etc was bought. What is the cost of indoor sports items?

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The details

		Th	H	T	U
		8	17	4	10
The amount sanctioned	= ₹	~~9~~	~~7~~	~~5~~	~~0~~
Cost of out door sports items	= ₹ –	5	9	1	8
Cost of indoor sports items	= ₹ ₹	3	8	3	2

The amount spent on indoor sports items = ₹ 3,832

Observe these sums

1) Subtract 3267 from 5074.

Here 5074 is minuend and 3267 is subtrahend.

	Th	H	T	U
	4	10	6	14
	~~5~~	~~0~~	~~7~~	~~4~~
-	3	2	6	7
	1	8	0	7

5 0 7 4 → minuend

-3 2 6 7 → subtrahend

1 8 0 7 → difference

2) Subtract 3928 from 6300.

Here 6300 is minuend and 3928 is subtrahend.

	Th	H	T	U
	5	12	9	10
	~~6~~	~~3~~	~~0~~	~~0~~
-	3	9	2	8
	2	3	7	2

6 3 0 0 → minuend

-3 9 2 8 → subtrahend

2 3 7 2 → difference

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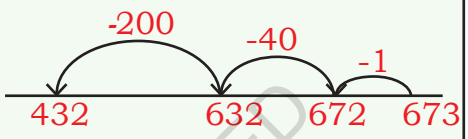
Do it yourself

1) From 9372 subtract 8045. 2) Subtract 7835 from 8402.

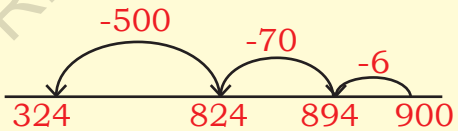
Oral / Mental sums

The process of subtraction takes place in the mind while subtracting numbers. This process may differ from one person to another. Observe these examples.

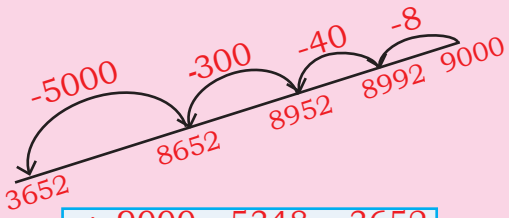
Example 1 : From 673 subtract 241.

Method 1	Method 2
From the given numbers, expand subtrahend end subtract in order. 673 - 241 = ? 673 - (200 + 40 + 1) • 673 - 200 = 473 • 473 - 40 = 433 • 433 - 1 = 432 ∴ 673 - 241 = 432	Expand subtrahend and subtract in order on number line. 673 - 241 = ? 673 - (200 + 40 + 1)  ∴ 673 - 241 = 432

Example 2 : Subtract 576 from 900.

Method 1	Method 2
900 - 576 = ? = 900 - (500 + 70 + 6) • 900 - 500 = 400 • 400 - 70 = 330 • 330 - 6 = 324 ∴ 900 - 576 = 324	900 - 576 = ? = 900 - (500 + 70 + 6)  ∴ 900 - 576 = 324

Example 3 : Subtract 5348 from 9000.

Method 1	Method 2
9000 - 5348 = ? = 9000 - (5000 + 300 + 40 + 8) • 9000 - 5000 = 4000 • 4000 - 300 = 3700 • 3700 - 40 = 3660 • 3660 - 8 = 3652 ∴ 9000 - 5348 = 3652	9000 - 5348 = ? = 9000 - (5000 + 300 + 40+ 8)  ∴ 9000 - 5348 = 3652

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Do it yourself.

In these problems expand subtrahend and find difference. Frame similar problems and try to think of complete solution of the process in the mind.

1) 328 - 125	2) 693 - 258	3) 3690 - 1264	4) 8000 - 3578

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Exercise 4.1

Solve these sums.

I.

1) 3865 − 2430 = _____

2) 8369 − 5043 = _____

3) 9576 − 2345 = _____

4) 5650 − 3970 = _____

II.

1) 5372 − 3859 = _____

2) 6907 − 3245 = _____

3) 8700 − 3297 = _____

4) 9000 − 5382 = _____

5) 8030 − 3867 = _____

6) 6004 − 2345 = _____

7) 3928 − 2593 = _____

8) 8004 − 3108 = _____

III. Solve these problems

1) A farmer grows 3290 kg of jowar. He kept 1376 kg of it for his house hold use and sold the remaining. What is the quantity of jowar sold?

Quantity of jowar grown by farmer	=	kg
Quantity of jowar used for his house	=	kg
Remaining jowar	=	kg

2) In a month a person's earning is ₹ 9500. He spent ₹ 3268 on household expenses. How much money did he save?

Monthly earnings	₹
Monthly expenses	₹
Saving	₹

3) ₹ 8250 was collected from donors for school children's learning programme. After deducting all the expenses ₹ 894 was left. How much money was spent for the programme?

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4) 8000 litre of water is required to fill a water tank completely. Now it has 6398 litre of water, how much, more water is required to fill the tank?

Know this :

Verification in process of subtraction.

1) From 2836 subtract 1329.

		2	16		
2	8	~~3~~	~~6~~	→	minuend
1	3	2	9	→	subtrahend
1	5	0	7	→	difference

Verification

subtrahend+ difference= minuend

```
  1 3 2 9
+ 1 5 0 7
  -------
  2 8 3 6
```

2) Subtract 2593 From 8000.

7	9	9	10		
~~8~~	~~0~~	~~0~~	~~0~~	→	minuend
2	5	9	3	→	subtrahend
5	4	0	7	→	difference

Verification

subtrahend+ difference= minuend

```
  2 5 9 3
+ 5 4 0 7
  -------
  8 0 0 0
```

Verify each subtraction sum that you do.

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CHAPTER-5

MULTIPLICATION

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After studying this chapter you can

- understand that multiplication is a repeated addition,
- understand various terms used in multiplication,
- recognise the basic multiplication facts,
- multiply by lattice method,
- multiply a number by 1- digit and 2- digit number (with out carrying / with carrying the product not exceeding 9999),
- solve multiplication problems arising in our everyday life,
- estimate the multiplication product.

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You have already learnt the multiplication of a number by a single digit in the previous class

Example : 1) $6 \times 8 = 48$ 2) $12 \times 6 = 72$

In the above examples identify and make a list of the multiplicand, multiplier and product.

Example	Multiplicand	Multiplier	Product
1			
2			

Multiplication is a repeated addition :

Activity 3: Rohith has 5 Pencil cups. Each cup contains 6 Pencils. How many pencils does Rohith has?

Observe these figure

Observe the pencil cups in the figure. Count the number of pencils in each cup.

How many pencils are there altogether? Try.

6 + 6 + 6 + 6 + 6 = 30

Recall the process of addition, that you have learnt in your previous class.

Instead of adding 6 five times, it can be written in simplified form using '×' sign in this way

6 × 5 = 30

Thus multiplication is a repeated addition of the same numbers.

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Multiplication without carrying

Example : A box contains 8 erasers. How many erasers are there in 4 such boxes?

Number of boxes = 4

Number of erasers in each box = 8

Total number of erasers = 8 + 8 + 8 + 8 = 32

Here 8 is repeated 4 times

$\therefore$ 8 × 4 = 32

8	×	4	=	32
↓		↓		↓
Multiplicand		Multiplier		Product

Remember

- Multiplication is repeated addition
- The number which is multiplied is called '**multiplicand**'.
- The number by which we multiply is called '**multiplier** '.
- When two numbers are multiplied, the result obtained is called product.

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Some properties of Multiplication

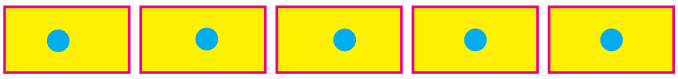
I. Multiplication property of multiplying by 1

Example 1:

- How many flower pots are there in the above figure?
  Three
- How many plants are there in each pot?
  One
- How many plants are there in these pots altogether?

  3 × 1 = 3

Example 2 :



5 × 1 = 5

- How many rectangles are there in the above figure?

  Five

- How many dots are there in each rectangle?

  One

- How many dots are there altogether in all rectangles?

  5 × 1 = 5

When we observe the above examples, we infer that

"When any number is multiplied by 1 the product is the number itself".

Do it youself :

1) 10 × 1 = _____ 2) 1 × 55 = _____

3) 100 × 1 = _____ 4) 8 × 1 = _____

II. The property of multiplication by Zero.

Observe the given example,

7 × 0 = 0

15 × 0 = 0

What is product obtained in the above examples? Observe.

In the above example, the product is 'Zero'

From the above examples, we can conclude that

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When any number is multiplied by zero, the product is always zero.

The order principle of multiplication

In the figures two different ways of arrangement of stars is given.

Arrangement in Vertical column	Arrangement in Horizontal rows
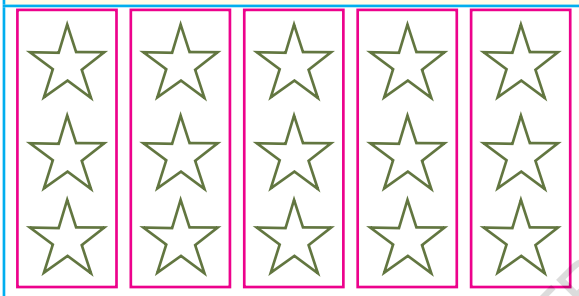	
fig - (i)	fig - (ii)

Observe the arrangement of stars in fig (i) and answer the following questions:

How many columns are there?

How many stars are there in each column?

Find the total number of stars are in all the columns

$5 \times 3 = 15$

Observe the arrangement of stars in fig (ii) and answer the following questions:

How many rows are there?

How many stars are there in each row?

Find the total number of stars are in all the rows

$3 \times 5 = 15$

What do we observe from the above activity?

$5 \times 3 = 3 \times 5 = 15$

The product is the same in both arrangements.

Similarly,

$5 \times 7 = 7 \times 5 = 35$

$20 \times 8 = 8 \times 20 = 160$

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The product of two numbers does not change, if we interchange the order of the multiplicand and the multiplier. This is known as the order property of multiplication.

Exercise 5.1

1. Fill in the blanks with the suitable answers.

1) 9 + 9 + 9 = 9 × ☐ = ☐

2) 3 + 3 + 3 + 3 + 3 + 3 + 3 + 3 = ☐ × 8 = ☐

3) 5 + 5 + 5 + 5 = ☐ × ☐ = ☐

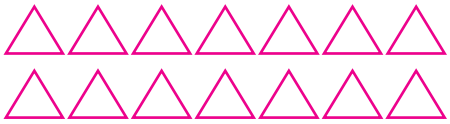
4) 6 + 6 + 6 + 6 + 6 = ☐ × ☐ = ☐

II. Write repeated form of addition and multiplication for each set.

Example :

3 + 3 = 6

2 × 3 = 6

1) 

_____

_____

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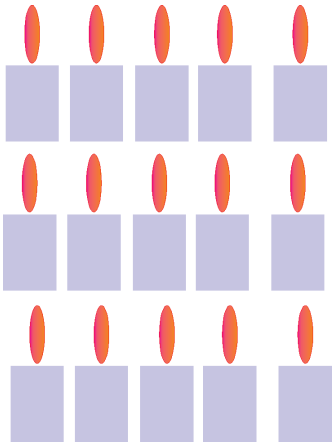
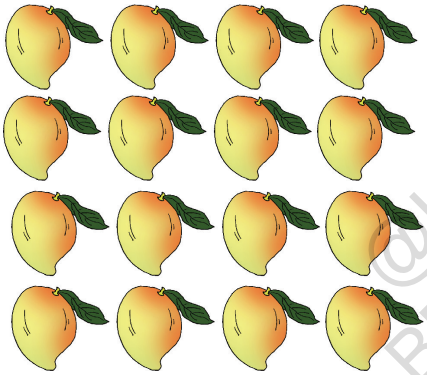
2)



_____

_____

3)



_____

_____

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III. Complete the blanks using the properties of multiplication.

1) 75 × _____ = 75

2) 93 × 0 = _____

3) 37 × 42 = 42 × _____

4) 1 × 555 = _____

5) 15 × _____ = 20 × 15

6) 7623 × _____ = 0

Multiplication tables (0 to 10)

×	0	1	2	3	4	5	6	7	8	9	10
0	0	0	0	0	0	0	0	0	0	0	0
1	0	1	2	3	4	5	6	7	8	9	10
2	0	2	4	6	8	10	12	14	16	18	20
3	0	3	6	9	12	15	18	21	24	27	30
4	0	4	8	12	16	20	24	28	32	36	40
5	0	5	10	15	20	25	30	35	40	45	50
6	0	6	12	18	24	30	36	42	48	54	60
7	0	7	14	21	28	35	42	49	56	63	70
8	0	8	16	24	32	40	48	56	64	72	80
9	0	9	18	27	36	45	54	63	72	81	90
10	0	10	20	30	40	50	60	70	80	90	100

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Observe the above table:

Identify the different properties of multiplication from the above table with the help of your teacher.

Multiplication by 10, 100 and 1000.

You have already learnt to multiply a two digit number by one digit number.

Now let us learn to multiply a number by 10, 100 and 1,000.

Observe these products

Example 1 : 1) 9 × 10 = 9 × 1 ten = 9 tens = 90

2) 12 × 10 = 12 × 1 ten = 12 tens = 120

What is your observation?

When a number is multiplied by 10, the product is obtained by placing one zero to the right of the multiplicand.

Example 2 : 1) 9 × 100 = 9 × 1 hundred = 9 hundred = 900

2) 12 × 100 = 12 × 1 hundred = 12 hundred =1200

What do you observe from the above examples?

When a number is multiplied by 100, the product is obtained by placing two zeros to the right of the multiplicand.

Example 3 : 9 × 1000 = 9 × 1 thousand = 9 thousand = 9000

When a number is multiplied by 1000, the product is obtained by placing three zeros to the right of the multiplicand.

From all the examples above, we can infer that when a number is multiplied by another number ending with zeros, first find the product of multiplicand and non-zero multiplier and write as many zeros at the end of the product that the multiplier has

Examples 4: 1) 8 × 10 = 80 2) 3 × 200 = 600

3) 2 × 4000 =8000 4) 40 × 10 = 400

5) 60 × 30 =1800

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Exercise 5.2

I. Fill up the blanks with suitable answers

1) 3 × 100 = _____
2) 9 × 50 = _____
3) 9 × 500 = _____
4) 7 × 400 = _____
5) 24 × 200 = _____
6) 2 × 3000 = _____
7) _____ × 70 = 350
8) 20 × 60 = _____

Multiplication by one digit and two digit numbers.

Activity 1: Make 15 children stand in a row. Give them cards with a picture of an umbrella on it and its cost price is written as ₹160. Ask the children to hold the card in their hand. Call one child and ask the following questions and get the answer.

Teacher : How many children are standing in a row?
Child : 15 children
Teacher : What is the cost price of an umbrella?
Child : ₹160.
Teacher : How many children are holding a card having ₹160?
Child : 15 children.
Teacher : How many times does the number 160 occur ?
Child : 15 times

Now, we want to find the cost of 15 umbrellas. How do you find?

We can find by multiplying 160 and 15

Observe:

```
 160 × 15
 800  ──────► Multiply 160 by 5.
1600  ──────► Multiply 160 by 10.
2400
```

That means, total price of 15 umbrellas = ₹ 2400.

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Example 1 :

A lorry can carry 142 bags of onions. What is the total number of onion bags that 12 lorries can carry?

Total number of onion bags = 142 × 12

According the method of multiplication

12 is the multiplier. It has 1 ten and 2 ones.

First multiply the multiplicand 142 by 2 one's,

then multiply 142 by 1 ten.

Step 1 : Multiply 142 by 2 ones

$$\begin{array}{r} 142 \text{ X } 2 \\ \hline 284 \end{array}$$

Step 2 : Multiply 142 by 1 ten

$$\begin{array}{r} 142 \text{ X } 10 \\ \hline 1420 \end{array}$$

Step 3 : When we add both the product.

$$\begin{array}{r} 284 \\ 1420 \\ \hline 1704 \end{array}$$

∴ Total number of onion bags that can be transported = 1704

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Example 2 :

There are 24 pens in a packet. A shop keeper has 100 such packets in his shop. Totally how many pens are there in the shop?

Number of pens in one packet = 24

Number of packets in the shop = 100

Total number of pens = 2400

$$\begin{array}{r} 24 \text{ X } 100 \\ \hline 2400 \end{array}$$

Exercise 5.3

I. Multiply these

1) 31 × 4 _____

2) 50 × 3 _____

3) 210 × 40 _____

4) 52 × 22 _____

5) 231 × 31 _____

6) 102 × 43 _____

II. Solve these Problems.

1) The cost of one metre cloth is ₹ 32. What is the cost of 4 metre of cloth?

_____

_____

_____

_____

_____

2) One kilogram of rice costs ₹ 40. What is the cost of 5 kilogram of rice ?

_____

_____

_____

_____

_____

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3) A cinema hall has 32 rows and each row has 42 seats. Find the number of seats in the cinema hall.

4) Somanna manufactures 122 bricks in a day in his factory. How many bricks can he make in 24 days?

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Multiplication with carrying

Activity 1: *Rama went to a shop with her father. She purchases 3 soaps. The cost of each soap is ₹18. How much has she to pay for the shopkeeper? Think.*

Rama explains the calculation to her father in this way,

Dad I have taken 3 soaps. Each soap costs ₹18, So I have to pay ₹54 to the shopkeeper. Is it correct dad?

Father asked,

How did you calculate this my child?

By multiplying ₹18 by 3

Step 1 : Multiply 8 by 3

$8 \times 3 = 24$

Write 4 in ones place and carry 2 to tens place

②
1 8 × 3
4

Step 2 : Multiply 1 by 3

$1 \times 3 = 3$ ten

Add 2 carry to the product $3 + 2 = 5$

Write 5 in tens column.

②
1 8 × 3
54

Cost of 3 soaps is ₹ 54.

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Example 1 : There are 47 coconuts in a bag. Find the total number of coconuts in 8 such bags.

Total number of coconuts is 47×8

Step 1 : Multiply 7 by 8

$7 \times 8 = 56$

⑤
4 7×8
6

Write 6 in ones place and carry 5 to tens place

Step 2 : Multiply 4 by 8

$4 \times 8 = 32$ tens

Add 5 to the product

⑤
4 7×8
376

Therefore $32 + 5 = 37$

Write 7 in tens place and 3 in hundred's place.

Total number of coconuts = 376

Example 2 : If one electric fan costs ₹ 655, what is the total cost of 15 such fans?

Cost of 1 fan = ₹ 655

∴ Total cost of 15 fans = ₹ 9825

```
₹ 655 × 15
  3275
  655
₹  9825
```

Exercise 5.4

I. Multiply the following.

1) 75 × 8 _____

2) 627 × 7 _____

3) 445 × 6 _____

4) 83 × 26 _____

5) 75 × 48 _____

6) 395 × 24 _____

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II. Solve the following problems.

1) A school boy saves ₹ 25 every month. How much does he save in 1 year?

_____

_____

_____

_____

2) There are 75 chocolates in a packet. How many chocolates are there in 7 such packets?

3) A bag contains 25 kg rice. Find the total weight of rice in 68 such bags.

4) A note book has 96 pages. Find the total number of pages in 45 such note books.

5) The expenditure for a school programme is ₹ 900. Find the total expenditure of 11 such programmes.

6) Neeta prepares 200 toys in a month. How many such toys she prepares in 3 years?

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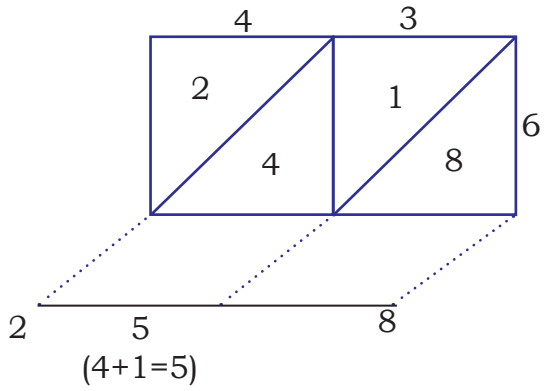
John Napier has discovered another method of multiplication. Let us learn that .



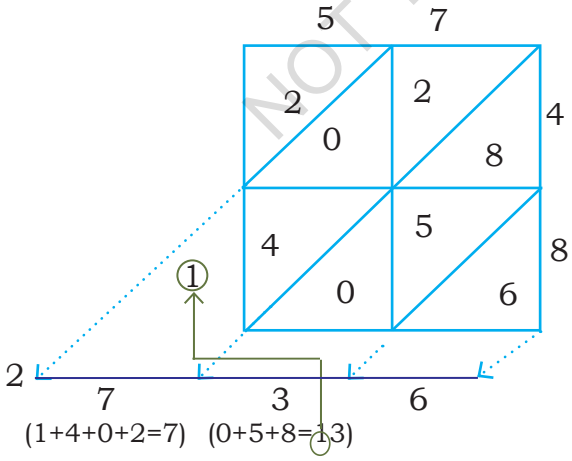
Steps

* Draw two boxes
* Write multiplicand above the boxes.
* Write multiplier on the right side.
* Multiply the tens digit and write the product in the first box. 4 × 6 = 24
* Multiply the ones digit and write the product in the second box. 3 × 6 = 18
* Add as shown in the example.

∴ 43 × 6 = 258

By using the above method we can find the product of very big numbers.

Example 1 : Multiply 57 and 48



∴ 57 × 48 = 2736

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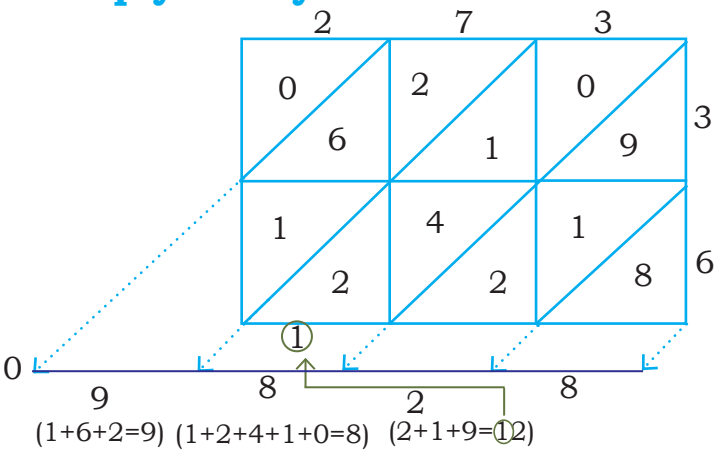
Example 2 :

Multiply 273 by 36



$\therefore$ 273 × 36 = 9828

This method of multiplication is known as Napier or Lattice method or diagonal method.

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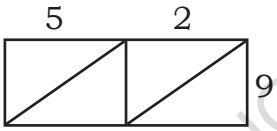
Exercise 5.5

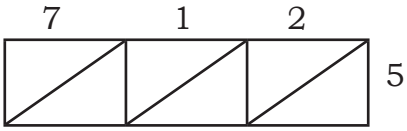
I. Find the product by Lattice method.

1) 52× 9



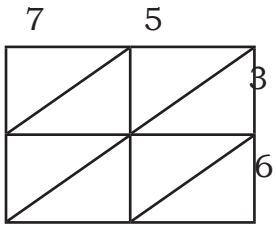
$\therefore$ 52 × 9 =

2) 712 × 5



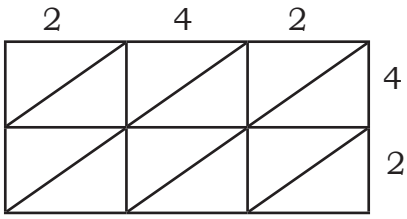
$\therefore$ 712 × 5 =

3) 75 × 36



$\therefore$ 75 × 36 =

4) 242 × 42



$\therefore$ 242 × 42 =

Estimation in Multiplication.

fig (1)	fig (2)
₹ 99	₹ 102

Observe the pictures:

What is the cost of T-shirt in fig(1)

₹ 99

What is the cost of T-shirt in fig(2)

₹ 102

While saying the prices of these some times we say ₹ 99 as ₹ 100 and ₹ 102 as ₹ 100.

Generally we say the price of T-shirt is ₹ 100 this value is called the estimated value.

In this way of estimating the value of a number to its nearer value in terms of 10,100,1000 is called estimated value

Note : 64 when estimated to tens places it becomes 60

68 when estimated to tens places it becomes 70

65 when estimated to tens places it becomes 70

observe this ≥ 5 is estimated to the next whole number.

< 5 is estimated to the previous whole number.

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Example 1 :

By estimating the multiplicand and multiplier to the nearest ten, find the product of 76 × 34.

Estimating to the nearest 10 we get

76 → 80.

34 → 30.

$$\begin{array}{r} 80 \times 30 \\ \hline 2400 \end{array}$$

By actual multiplication, the product is

$$\begin{array}{r} 76 \times 34 \\ \hline 304 \\ 2280 \\ \hline 2584 \end{array}$$

Example 2 :

Estimate the product of 286 × 32 by estimating the first number to nearest hundred and second number to the nearest ten.

Estimating to the nearest 10 and 100 we get 286 → 300

32 → 30

$$\begin{array}{r} 300 \times 30 \\ \hline 9000 \end{array}$$

The actual product is

$$\begin{array}{r} 286 \times 32 \\ \hline 572 \\ 8580 \\ \hline 9152 \end{array}$$

Activity:

Recall any three situations in our daily life where we tell approximate values and list them below.

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Exercise 5.6

I. Find the product by estimating multiplicand and multiplier nearest to 10.

1) 44 × 39

2) 19 × 21

3) 23 × 28

4) 86 × 53

5) 77 × 62

II. Find the product by estimating multiplicand to the nearest hundred and the multiplier to the nearest ten.

1) 308 × 17

2) 240 × 42

3) 195 × 34

4) 335 × 23

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CHAPTER-6

D2M2J7

DIVISION

After studying this chapter you can

- divide numbers by grouping,
- divide by using dots,
- understand that division is repeated subtraction,
- compare multiplication and division,
- divide the dividend by one digit number without remainder,
- divide the dividend by one digit number with remainder,
- solve statement problems related to our daily life situations.

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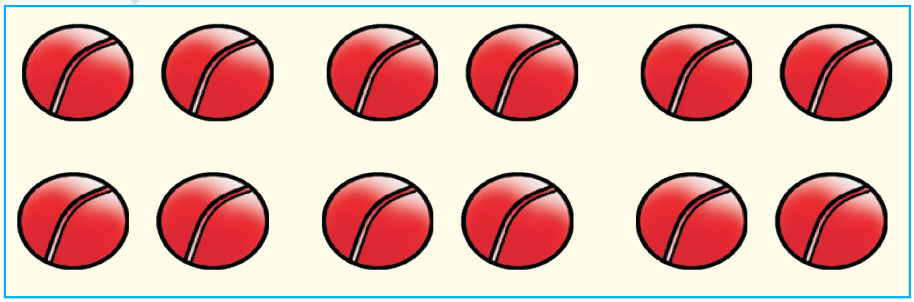
Division by grouping equally

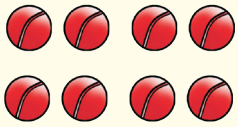
Activity : Karan has 12 balls, he distributes these equally to his four friends Ram, Gopal, Ashok and Raju. Now how many balls each one get?

Observe the numbers of balls that karan has.



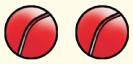
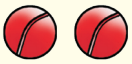
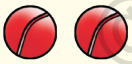
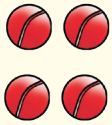
Can you help him to distribute balls equally among four friends?

He distributes one ball to each of his friends. Now how many balls are left with him after distribution?

Ram	Gopal	Ashok	Raju	Remaining balls with Karan
				

Can he distribute one ball to each friend in the second time?

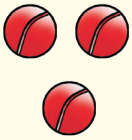
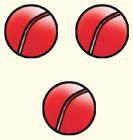
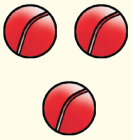
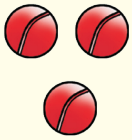
Now how many balls are left with Karan?

Ram	Gopal	Ashok	Raju	Remaining balls with Karan
				

He can distribute one ball each to his friends another time, isn't it?

Now,

Are there any balls remaining with Karan? Think

Ram	Gopal	Ashok	Raju	Remaining balls with Karan
				Nil

Each friends of Karan has 3 balls.

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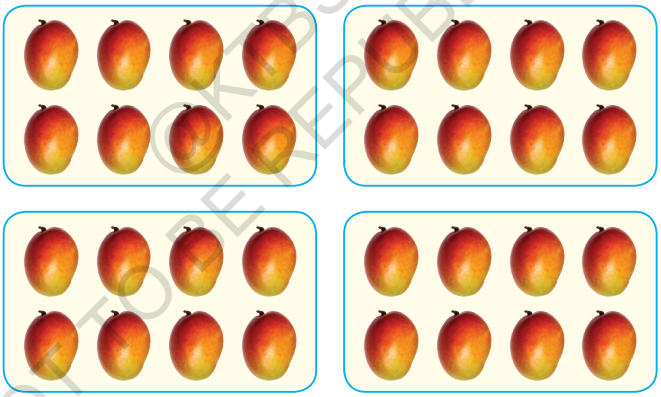
So 12 balls can be distributed into 4 groups of 3 balls in each group

Using '÷' sign the above process can also be written as 12÷4=3

The process classifying or distributing the things equally is called division.

Example 1: 4 friends had been to a mango orchard and plucked 32 mangoes. These mangoes were shared equally among them. How many of mangoes will each one get?



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Number of friends = 4

Number of Mangoes to be distributed = 32

∴ Number of Mangoes each friend will get = 32 ÷ 4

= 8

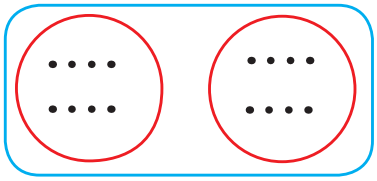
Division by using dots

Activity 1 : *There are 16 flowers in a basket. Distribute the flowers into two equal groups.*

In the above example each flower is taken as a dot.

Now, How many dots have we to take?

Can you arrange these dots equally in two groups? Try.



Each group contains 8 dots. doesn't it?

How do you write this arrangement according to division?

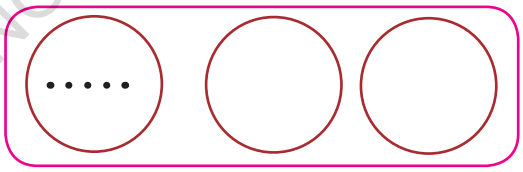
Thus, 16 ÷ 2 = 8

Example 1 :

There are 15 chocolates in a box. Distribute it into three equal groups. Find the number of chocolates in each group?

15 chocolates are considered 15 dots

Can these dots be distributed into three equal groups? Try.



Number of chocolates in each group is _____.

How do you write this according to division?

"Division is the repeated subtraction" or simplest form of subtraction is division.

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Activity 1 : Radha's father bought 20 story books. If she reads 5 books per day, in how many days will she complete reading all the books?

Can you help Radha to find number of days required to read 20 books?

She reads 5 books per day.

After completion of one day number of books yet to read by her

20 - 5 = 15

After completion of second day number of books yet to read by her.

15 - 5 = 10

Number of books yet to read by her after completion of third day.

10 - 5 = 5

Number of books left with her to read after fourth day

5- 5 = 0

Are there any books left with her to read after fourth day? Think!

From the above example, try to relate the relationship between subtraction and division.

Division is repeated subtraction of the same number from the given number.

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Exercise 6.1

I. Divide the following by repeated subtraction :

Example

20 ÷ 4 = ☐

20 - 4 = 16

16 - 4 = 12

12 - 4 = 8

8 - 4 = 4

4 - 4 = 0

∴ 20 ÷ 4 = 5

1)

18 ÷ 3 = ☐

18 - 3 = ☐

☐ - 3 = ☐

☐ - 3 = ☐

☐ - 3 = ☐

☐ - 3 = ☐

☐ - 3 = ☐

∴ 18 ÷ 3 = ☐

2)

25 ÷ 5 = ☐

25 - 5 = ☐

☐ - 5 = ☐

☐ - 5 = ☐

☐ - 5 = ☐

☐ - 5 = 0

∴ 25 ÷ 5 = ☐

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3)	4)
40 ÷ 10 = ☐	35 ÷ 7 = ☐
40 - 10 = ☐	35 - 7 = ☐
☐ - 10 = ☐	☐ - 7 = ☐
☐ - 10 = ☐	☐ - 7 = ☐
☐ - 10 = ☐	☐ - 7 = ☐
∴ 40 ÷10= ☐	☐ - 7 = ☐
	∴ 35 ÷ 7= ☐

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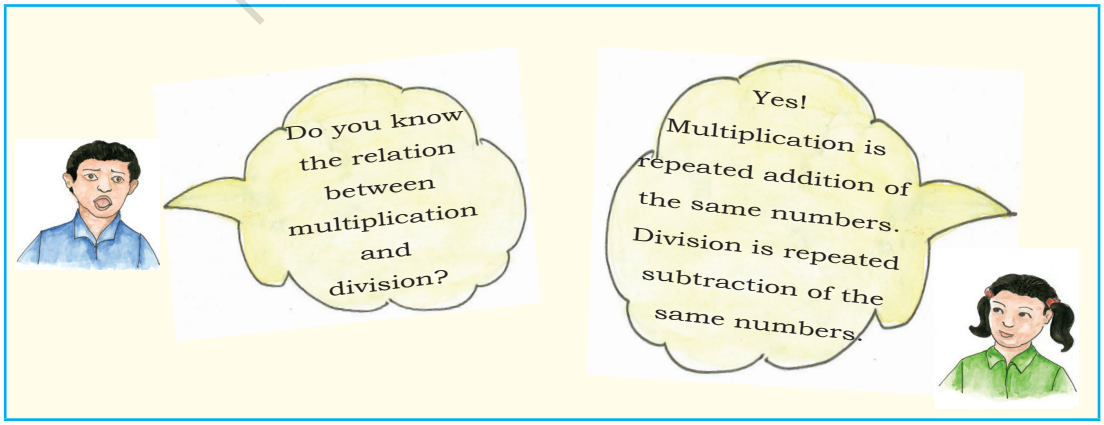
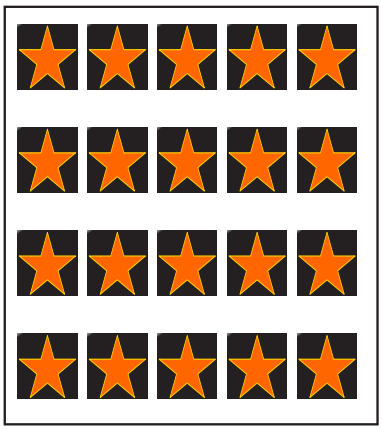
II. Can you compare the relation between multiplication and division.



Relation between multiplication and division

Example 1 : Observe the figure,



fig(a)

Count the number of stars in fig(a).

Observe the number of rows and number of stars in each row.

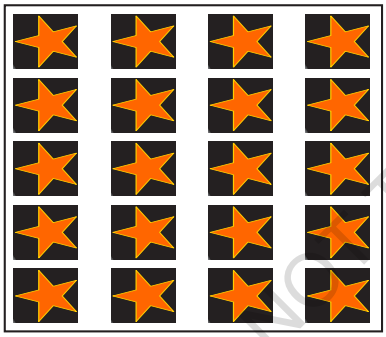
20 stars are equally distributed in 4 rows in such a way that there are 5 stars in each row,

Can this be expressed in the following way using multiplication and division?

$4 \times 5 = 20$ by multiplication fact

$20 \div 4 = 5$ by division fact

Observe the fig(b)



20 stars are equally distributed in 5 rows and 4 stars in each row.

Can you express this in multiplication and division in the following way?

$5 \times 4 = 20$ Multiplication fact

$20 \div 5 = 4$ Division fact

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Note: In multiplication we find the product of two numbers. In division we can find the missing number, if the other number and the product are known.

Example 2 : Find the division facts for $6 \times 8 = 48$

The two division facts are : $48 \div 6 = 8$ and $48 \div 8 = 6$

Write the division facts for each of these.

Example : 8×5= 40 → 40 ÷ 8 = 5 ; 40 ÷ 5 = 8

1) 7 × 3 = ☐ → ☐ ; ☐

2) 6 × 9 = ☐ → ☐ ; ☐

3) 5 × 4 = ☐ → ☐ ; ☐

4) 8 × 9 = ☐ → ☐ ; ☐

5) 3 × 6 = ☐ → ☐ ; ☐

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Dividing by one digit number without remainder :

You have already learnt division. Recall 28 ÷ 4 = 7

Can you divide greater number in the same manner?

Students are asked to prepare square using 4 ice-cream sticks. How many squares can be made, using 148 ice-cream sticks?

dividend

divisor ← 4)148(37 → quotient

12

28

28

0 → remainder

Step 1: 1<4, therefore take 2 digits Divide 14 tens by 4.

$4 \times 3 = 12$

Write 3 as quotient and subtract 14 - 12 = 2 write 2 as remainder.

Step 2 : Bring down 8 ones next to 2 Divide 28 ones by 4.

$4 \times 7 = 28$

write 7 as the quotient next to 3 and subtract 28 from 28 then the remainder is 0.

Know it

- The number which is to be divided is called the dividend.
- The number by which the dividend is divided is called the divisor.
- The result of the division is called the quotient.
- What remains after the division is called the remainder.
- The remainder is always less than the divisor.

Example 1: Divide 7434 ÷ 6

Here 6 Divisor,

7434 Dividend,

1239 Quotient

0 Remainder

```
6) 7 4 3 4 (1239
   6
   14
   12
    23
    18
     54
     54
      0
```

Example 2 : Divide 8428 by 7

```
7) 8 4 2 8 (1204
   7
   14
   14
   002
     0
     28
     28
     00
```

Step 1: Divide 8 thousands by 7. 7×1=7 Write 1 as the first digit of the quotient. Subtract 8-7=1. Write remainder as 1.

Step 2: Bring down 4 hundreds next to 1. Divide 14 hundreds by 7. 7×2=14,

Write 2 as second digit of the quotient.

Subtract 14-14=00

Write remainder as 0.

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Step 3: Bring down 2 tens next to 0. Now verify.

7 is greater than 2. 7×0=0. 0 is less than 2. It is possible to subtract. Write 0 as the third digit of the quotient, next to 2

2-0=2. Write remainder as 2.

Step 4: Bring down 8 ones next to 2.

Divide 28 ones by 7. 7×4=28 Write 4 as next digit of quotient besides '0' Subtract 28 from 28 (28-28=0)

Write remainder as 0.

Example 3 : 1735 books are distributed equally among 5 schools. Find the number of books each school gets?

Number of books = 1735

Number of schools = 5

∴ Number of books each school get s = 347 books

```
5)1 7 3 5 (347
  15
   23
   20
   035
    35
    00
```

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Exercise 6.2

I. Fill in the blanks with suitable answer.

1) 42 ÷ 6 = ...

2) In 24 ÷ 8 = 3, the dividend is .....

3) In 45 ÷ 9 = 5, 9 indicates .....

4) In 72 ÷ 8, the quotient is ..... and the remainder. is .....

II. Divide.

a) 2) 88 (

b) 7) 91 (

c) 5) 850 (

d) 6) 792 (

e) 4)8464 (

f) 9) 9567 (

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III. Solve.

1) 4 students can sit on a bench. How many benches are needed for 64 children to sit?

2) 240 candles are arranged equally in 8 boxes. How many candles are there in each box?

3) 255 children went on a picnic. They travelled in 5 buses. How many children travelled in each bus?

4) A train covers a distance of 672 km in 6 hour. What is the average distance it covered in one hour?

5) A worker earns ₹ 952 per week. What is his daily income?

6) On Independence day 3 chocolates were distributed to each child. If 246 chocolates were distributed, then how many children have received the chocolates?

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Dividend is divided by one digit number to get the remainder

You have learnt the operation of division of a number.

Can Ravi distribute 9 laddus equally among his 4 friends?

```
4)9(2
  8
  1 ──→ Remainder
```

How many laddus will each of Ravi's friends get?

How many laddus are left undistributed with Ravi?

The Number of laddus left with Ravi after equal distribution is the remainder.

Observe :- The remainder is always less than the divisor.
We can verify the answer by using formula
(Quotient × Divisor) + Remainder = Dividend.
In the above example
(2 × 4) +1 = 9

Example 1 : 1) Divide 86 by 5.Find quotient and Remainder.

```
5)86(17
  5
  36
  35
  01 ──→ Remainder
```

Step 1: Divide 8 tens by 5. 5 × 1 = 5 Write 1 as the first digit of the quotient. 8 - 5 = 3. Write 3 as remainder.

Step 2 : Bring down 6 ones next to 30 ones. Divide 36 ones by 5. 5 × 7 =35. Write 7 as the second digit of the quotient. Subtract 36 - 35 = 1. Write remainder as 1.

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Exercise 6.3

I. Find the quotient and remainder in these.

1) 6) 76 (

Quotient =

Remainder =

2) 8) 93 (

Quotient =

Remainder =

3) 5) 345 (

Quotient =

Remainder =

4) 6) 911 (

Quotient =

Remainder =

5) 8) 9254 (

Quotient =

Remainder =

6) 5) 8374 (

Quotient =

Remainder =

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7) 5) 2437 (

Quotient =

Remainder =

8) 7) 6218 (

Quotient =

Remainder =

9) 6) 3452 (

Quotient =

Remainder =

10) 8) 5715 (

Quotient =

Remainder =

11) 4) 2375 (

Quotient =

Remainder =

12) 7) 4238 (

Quotient =

Remainder =

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Solving problems, involving more than one mathematical operation

Remember : Addition (+) subtraction (-), multiplication (×) and division (÷) are the fundamental operations of mathematics.

You know how to solve problems using the four fundamental operations of mathematics separately. Now try to solve some problems where two or more of these operations are given simultaneously.

Example 1 :

Raghu earns ₹ 8000 per month. He spends ₹ 2000 for house rent, ₹ 3500 for food and ₹ 1000 for clothes. He saves the remaining amount. What is his savings ?

His expenditure :	Raghu's earning
expenditure for rent ₹ 2000	per month = ₹ 8000
expenditure for food ₹ 3500	Total expenditure = ₹ 6500
expenditure for cloth ₹ 1000	∴ His savings = ₹ 1500
∴ Total expenditure ₹ 6500	

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Example 2 :

Savitha sold 25 kg of mangoes at ₹ 12 per kg. From this money she bought 10 kg. of rice. Find the cost price of rice per kg.

Cost of 1 kg. mango is ₹12

∴ Total cost of 25 kg mangoes = $\frac{25 \times 12}{300}$

Cost of 10 kg rice is ₹ 300

∴ Cost 1 kg rice = 300 ÷10

= ₹30

```
10)300(30
   30
   000
    00
    00
```

Exercise 6.4

1) Pooja wants to buy a mixer which costs ₹ 2300 and a cooker that costs ₹ 1750. If she has ₹ 3500, how much more money does she need to buy them ?

2) The cost of 9 bags of wheat is ₹ 4050. What is the cost of 21 bags of wheat?

3) 520 books are arranged in 4 shelves. How many books are arranged in 32 such shelves ?

4) A book costs ₹ 15 and a pencil costs ₹ 4. Mohan buys 2 books and 3 pencils. How much money should he pay altogether ?

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CHAPTER- 7

CIRCLES

G1S9Q6

After studying this chapter you can

- draw a circle without using any instrument,
- draw a circle using the compasses,
- identify the centre, radius and diameter of a circle.

In the previous class you learnt about the things which resemble a circle in shape.

Make a list of some objects which resemble a circle in shape which you observe in your daily life.

Example 1 : Glass Bangle

1) .....
2) .....
3) .....
4) .....

Activity: Drop a small stone in a pond containing calm water. Observe the waves formed. What shape do they resemble?

Now you know the shape of a circle. Then how to draw a circle? Think.

Construction of circles

Take a bangle. Is it possible to draw a circle with its help? Try.

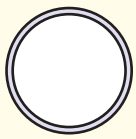

fig- 1

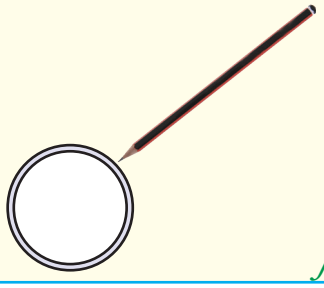

fig- 2

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Place the bangle on a sheet of paper as shown in the figure.

By using a pencil mark around the bangle as shown in the figure (2)

Then remove the bangle. What is the shape obtained now?

This is a circle

List out any four different objects by which you can draw a circle.

1) .....

2) .....

3) .....

4) .....

Draw a circle in the blank space given by the objects which you have listed above.

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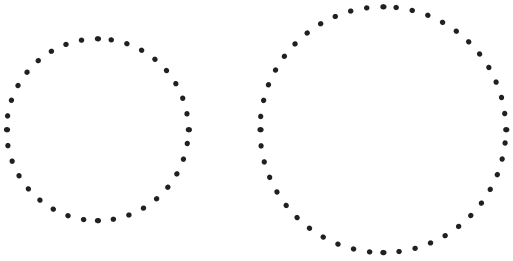
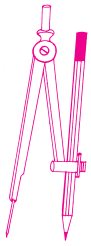
Join the points given. Which is the shape obtained? Observe.



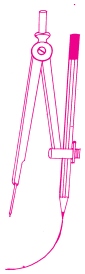
Open the geometry box that you have. By which instrument can you draw a circle?

Procedure to draw a circle using compasses :

- Fix a pencil to the compasses as shown in the figure. Take a little distance between the metal needle (compasses needle) and the pencil.



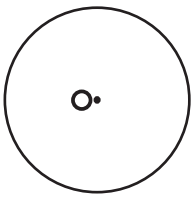
- Keep the metal needle on a sheet of paper.



- With the pencil touching the paper, rotate the compasses completely to get one full turn.

Now which is the shape obtained?

This is the circle.



In this way a circle can be drawn by using a compasses.

What do you call the place where the metal needle of compasses is placed? Think.

It is the centre of the circle. In the figure 'O' is the centre of the circle.

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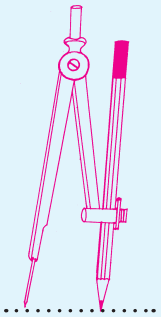
Note :

- Since the metallic end of the compasses is sharp handle it carefully.
- After fixing the pencil to the compasses, bring the needle and the pencil edge closer and verify whether both lie on the same line.
- By keeping the metal needle and pencil constant, do not rotate the book to get one complete turn.



Activity : Without using the compasses, by which other instrument from your geometry box can be used to draw a circle? Try. Discuss with your teacher and know about it.

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Exercise 7.1

I. By considering 'A' as the centre of the circle, draw a circle.

. **A**

II. **Draw 2 circles with centres 'C' and 'D' such that they do not intersect each other.**

•C •D

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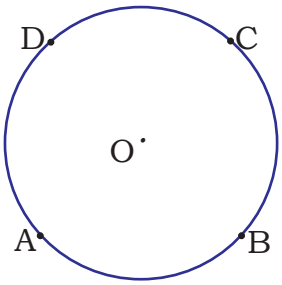
III. **Within the space limits given below, draw the biggest circle.**

Activity : How many circles can be drawn with a point as centre? Think.

Radius of a Circle

Draw a circle



Mark the points A, B, C and D on the circle as shown in the figure.

Measure the distance of the points A, B, C and D from O.

OA = ... cm

OB = ... cm

OC = ... cm

OD = ... cm

In the same way mark some more points on the circle. Find their distance from 'O'. What is your conclusion?

All the points on the circle are equidistant from the centre.

What are OA, OB, OC and OD called?

These are called the radius of the circle.

Activity : Draw a circle. How many radii can be drawn to this circle? Draw them. What do you know by this? What is your conclusion?

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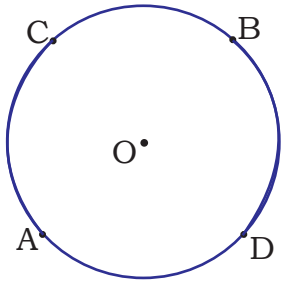
Diameter of a circle

Observe the next figure



The points A, B, C and D are located on the circle.

Join A and B. In the same way join C and D.

Through which point do AB and CD pass? Observe.

They pass through the centre of the circle.

What are AB and CD called?

These are called diameters of the circle.

AB and CD are the diameters of the circle.

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Activity : Draw a circle. How many diameters can be drawn in this? Draw it. Measure all the diameters which you have drawn. What do you know by this? What is your conclusion?

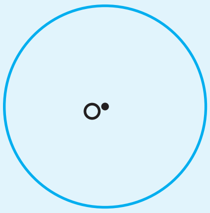
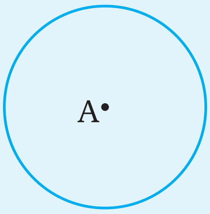
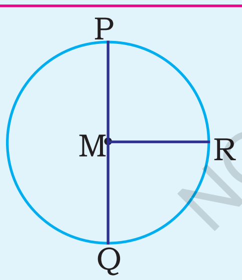
Know it :

- Diameter divides the circle into two equal parts.
- The point of intersection of any two diameters of a circle is the centre of the circle.

Activity : When a circle is drawn without using a compass, then how do you locate (identify) the centre, radius and diameter? Think.

Understand it by paper folding method under the guidance of your teacher.

Exercise 7.2

1)		Draw a radius to this circle.
2)		Draw a diameter to this circle.
3)		Observe the figure and fill in the blanks. a) centre of the circle............................ b) radius .... c) diameter .... d) Total number of radii in the circle ....

Activity : To draw a big circle on the play ground, which method will you follow ? Discuss with your teacher.

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CHAPTER-8

MENTAL ARITHMETIC

X6C8K2

After studying this chapter you can

- add multiples of 10 and 100 mentally,
- subtract multiples of 10 and 100 mentally.
- Find the product of two numbers by using partial products.

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In our daily life situations many a times we work out mathematical calculations mentally. For example (i) While calculating the amount to be paid for the milk man for a mont (ii) While collecting the change from the vendor (iii) While distributing the amount equally for a group etc.

Think any such three circumstances and write.

1) .....

.....

2) .....

.....

While calculating mentally we follow different methods.

Example 1 : Add 50 to 60

method 1 : write 60 as 50+10

Add 50 to 50+10

There fore 50+50+10=110

method 2 : split 60 as 30+30

Then add 50+30+30

80+30=110

method 3 : Add the ten's place digits as 5+6=11

Then keep the unit place zero as it is

Then 50+60=110

What are the advantages of doing oral problems like this?

Discuss with your teacher and make a list of advantages .

.....

.....

.....

.....

If you know any other type of mental calculation share with your friends and teachers .

Mental mathematics is used in addition multiplication and division. Think and write a few more situations.

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Example 2 :

Teacher : Suresh, solve this sum

40+20

Vidya : I will do it

Teacher : Let me see, who will do it first

H	T	O
	4	0
	2	0
	6	0

Vidya told the answer quickly

Answer: 60

Teacher: Vidya how you did you do it ?

Vidya : I did it in my mind

Later suresh told the answer as 60

I wrote the sum in the book and added according to place value chart.

First I split 20 as 10+10 then added 40 to 10 to get 50. Then I added the remaining 10 to 50 to get 60.

Since the sums are solved in mind, these are called mental sums.

This sum can be done in another way.

40 + 20

(4+2) (0+0)

60

1) Add the digits in ten's place mentally.

2) Keep the zero as it is in unit's place.

3) Then 60 is obtained as answer.

Mental Calculation

To add 10,100 mentally

Example 3: Ravi has 40 mangoes and Raki has 30 mangoes. How many mangoes are there in total?

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Type 1:

To add 40 + 30

T	U
4	0
3	0
7	0

1) 4 tens and 3 tens give 7 tens

2) It can be written as 70

The digits in the units place is zero, then just add digits in tens place and write zero in units place as it is.

Total mangoes = 70

Type 2: Ravi has 40 mangoes, Rakhi has 30 mangoes. Mentally split 30 as 10 + 10 +10.

First Add 10 to 40 to obtain 50.

Add 10 to 50 to obtain 60.

Add 10 to 60 to obtain 70.

The answer is 70 mangoes.

40 + 10 + 10 + 10 = 70

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Try to do mentally.

1)

50 ml

20 ml

50 + 20,

_____ ml

2) Ramesh went to the weekly bazaar and brought the vegetables shown belown.

Ladies finger

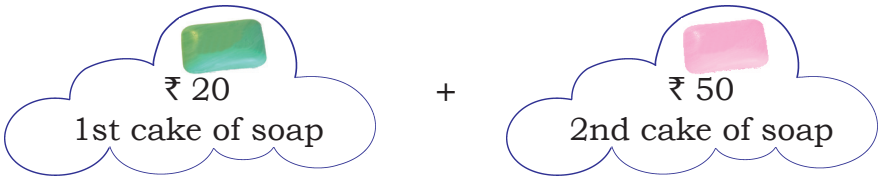
1 kg = ₹ 30

Tomato

1 kg = ₹ 50

How much money did Ramesh pay to the shop keeper in total? ₹_____

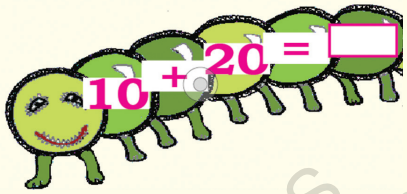
3) Reena purchased 2 cakes of soap from a shop



Amount to be given by Reena to the shop keeper is ₹ _____.

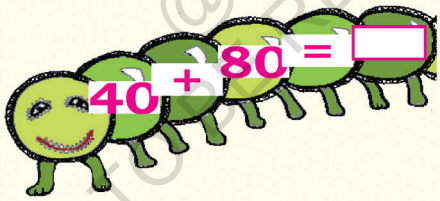
4) Do the next sums.

a)



b)

c)



d)

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5) Use the given numbers. Fill the blank spaces so that if you add in any direction the answer should be same.

10		
	20	
		30

6) Venu took a rangoli mesh for ₹ 30 and Bhaskar took another one for ₹ 40. How much did they pay in total?

7) Sheela took a toy rabbit for ₹ 50 and a toy drum for ₹ 30 in a fair. How much did she spend for the toys in total?

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Example 4 : 1) Add 23 + 20

Type 1 : Split 20 as 10 + 10 [Make it two tens]

Then add 23 +10

23 + 10 = 33

Add 10 to 33 to get 33 + 10 = 43

Type 2 : Split 23 as 20 + 3

20 + 3 + 20

40 + 3 = 43

2) Add 47 + 30

Type 1 : Split 47 as 40 + 7 [4 tens + 7 units]

40 + 7 + 30

70 + 7 = 77

Type 2 : Split 30 into 3 tens [Mentally]

47+30

47+10+10+10

57+10+10

67+10

=77

3) Reeta and Peter took an activity book for ₹ 75 and a pen for ₹10 from a book stall. How much money was spent in total?

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Example 5 : Add 32 + 45

Type 1 : (30 + 2) + (40 + 5)

30 +40 + 2 + 5

70 + 7

= 77

H	T	U
	3	2
	4	5

1) Split 32 as 30 + 2

2) Split 45 as 40 + 5

3) First add 3 tens and 4 tens to get 7 tens Similarly add 2 units to 5 units to get 7 units

4) Add 7 units to 7 tens to get 77

Type 2 : 32 + 45 (Mentally split 45 = 10+10+10+10+5)

32+10+10+10+10+5
42+10+10+10+5
52+10+10+5
62+10+5
72+5
77

Example 6 : 1) Add 53 + 37

Type 1 : 53 has 5 tens and 3 units
37 has 3 tens and 7 units
8 tens and 10 units

53+37 → 80+10 → = 90

Type 2 :

5 3 + 3 7

(5 + 3) tens + (3 + 7) units
8 tens + 10 units

= 80 + 10 = 90

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2) Add 62 + 26

Type 1 :

62 → 60 + 2 26 → 20 + 6

First add tens 60 + 20 = 80

Next add units 2 + 6 = 8

80 + 8 = 88

Type 2 : Addition of 26 to 62

Split 26 as 10 + 10 + 6 now add this to 62 in the following manner

$\underbrace{62 + 10}$ + 10 + 6

72 $\underbrace{+ 10}$ + 6

$\underbrace{82 + 6}$

88

10) Kaveramma has domesticated 40 goats, 20 cows and 10 bulls. How many animals has she domesticated in total?

There are many instances of this type you will come across in your daily life. Write any two of such instances.

How did you find answer in these circumstance? Explain.

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Example : Rahim delivers 30*l* of milk to a dairy on Monday and 20*l* on Tuesday. What is the total quantity of milk delivered by him?

_____

_____

_____

_____

_____

_____

_____

_____

I Complete the blanks with suitable answers

1) 26 + 40 = _____

2) 20 + 33 = _____

3) 53 + 30 = _____

4) 72 + 10 = _____

II Work out the following sums mentally and write the answer in the space provided.

1) 45 + 23 = _____

2) 33 + 25 = _____

3) 45 + 43 = _____

4) 85 + 22 = _____

5) 68 + 21 = _____

6) 55 + 45 = _____

7) 33 + 45 = _____

8) 46 + 51 = _____

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III. Do it mentally

1) 10 + 20 + 30 = _____

2) 20 + 20 + 10 = _____

3) 50 + 30 + 10 = _____

4) 40 + 30 + 20 = _____

2) To add 300 + 200

h	t	u
3	0	0
2	0	0
5	0	0

Type 1 : 1) Add 3 hundreds to 2 hundreds to get 5 hundreds.

Type 2 : 2) Since the digit in the unit and tens place is zero, Add the hundreds place number and put zero in unit's and ten's place.

After an eye check up, Reeta took a spectacle for ₹ 500. To prevent sunrays, she took another sunglass for ₹ 400. How much did she pay in total?

₹ 500

₹ 400

Answer _____

Naseer Begum bought 2 buckets. The cost of one bucket is ₹ 200 and the cost of the other is ₹ 300. How much did she pay in total for both the buckets?

₹ 200

₹ 300

Answer _____

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1) Sunil could accommodate 500 different articles in his shop. After extension, he could keep another 200 articles. How many articles could he accommodate totally?

2) 200 students enrolled for a school trip. Another 100 students enrolled in the last 3 days. Totally, how many students enrolled for the trip?

3) Pranathi deposited ₹ 200 in January and ₹ 700 in February. How much money did she deposit totally?

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Mental Subtraction

Rani bought 25 chocolates for her birthday celebration. She distributed 10 chocolates among her friends. How many chocolates are remaining with her? Let us learn now to solve this mentally.

Type 1 : 25 -10

Split 25 as 20 + 5

= 20 + 5 - 10 (Then 20-10=10)

= 10+5

= No. of chocolates remaining with Rani = 15

Type 2 : 25 -10

Split 25 as 10+10+5

~~10~~ + 10 + 5 -~~10~~

∴ No. of chocolates remaining with Rani = 15

2) Subtract :

=50-10

=40-10

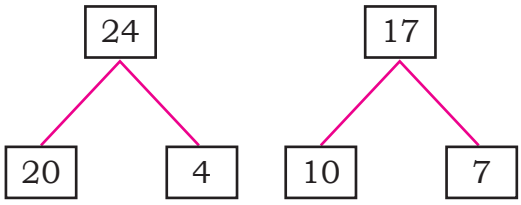
=30-10

=20

30=10+10+10

3) Subtract 17 from 24 :

24 - 17



20 + 4 - 10 - 7

20 - 10 - 7 + 4

10 - 7 + 4

3 + 4

= 7

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Type 2 : Split 24 and 17 into tens and ones. Now subtract tens. While doing so, subtract a smaller number from a bigger number.

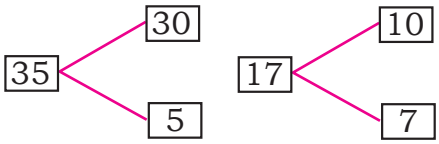
4) 35 — 35 has 3 tens and 5 units

-17 — 17 has 1 ten and 7 units

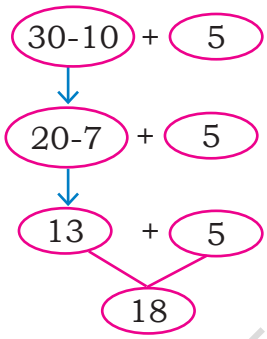
★ Subtract one ten from 3 tens to get 2 tens (30 - 10 = 20)

★ Subtract 7 from 20 to get 13 (20-7=13)

★ Add 5 to 13 to get 18



4)



Method of subtracting 64-34

64 has 6 tens and 4 units = 60 + 4

34 has 3 tens and 4 units = 30 + 4

= 30 + 0

Now 30 is obtained by subtracting 34 from 64

That means 3 tens are subtracted from six tens to get 30 --------①

4 units are subtracted from 4 units we get 0 --------②

Adding ① and ② 30 + 0 = 30

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Type 2 : 64 - 34 Subtract 10 from 64

64 -10 = 54 [First ten]

54 -10 = 44 [Second ten]

44 -10 = 34 [Third ten]

34 - 4 = 30

34 is split as 10+10+10+4

Shekarappa planted 600 saplings in his nursery. 300 of them wilted due to rain. How many saplings were remaining with him?

600 - 300 = ?

1) The unit's and ten's place has zero therefore subtract the numbers in the hundred place

6 - 3 = 3 keep zeros as they are. Now the answer is 300

You can also try.

2) Answer is as 300.

What are the uses of solving problems mentally? Think and write.

1)
2)
3)

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Solve the following problems mentally and write the answer.

1) Rekha had ₹40 with her. She went to a book shop and bought a book for ₹25. How much amount was left with Rekha?

2) Megha brought 400 tender coconuts. She found that 100 out of the coconuts she bought were ripened. How many tender coconuts are left with Megha?

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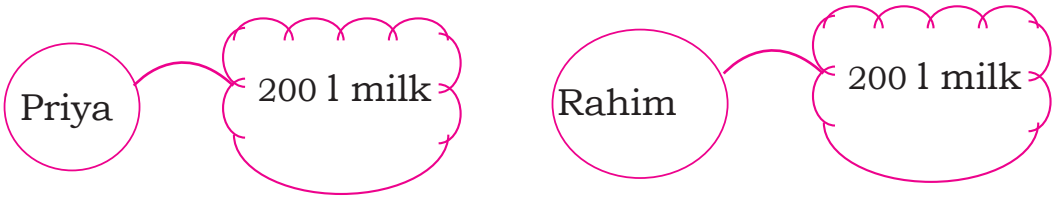
Multiples of 10 (Mental sums)

Nagaveni sells 10 litres of milk daily to a milk dairy. How much milk does she sell in 20 days?

Mother asked this question to the children." I will give a prize to the one, who answers first.

(Priya and Rahim answers)



Priya told first and then, Rahim

Then which is the method that they have followed

Priya :- Mother, I did multiplication in mind? Mother :- How? Priya :- 10 l ×20 Since zero is there in unit's place of given numbers, I multiplied 2 and 1 2×1=2 Then put two zeroes next to 2 200 l of milk was sold by her. Thus I answered as 200	Rahim :- I did in general multiplication method Wrote in the book as10x20 $\begin{array}{r} 10 \times 20 \\ \hline 00 \\ 20 \\ \hline 200 \end{array}$ Rahim :- 200 l

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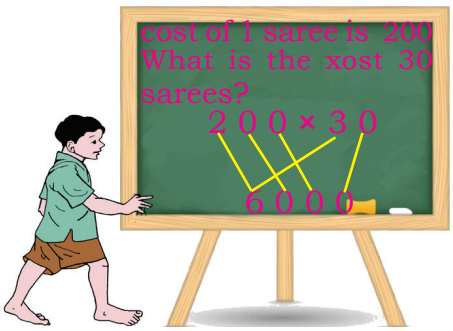
Let us solve a few more sums on this.

2) Raju purchased sarees to his sister's marriage. Cost of each saree is ₹ 200. Find the cost of 30 sarees?

Teacher : Now who will tell first,

Johny : Sir, I will tell first?

Teacher : Johny tell me how to solve this problem.



Step 1: First I imagined 200×30 in mind

Step 2: I multiplied 2 in the hundred's place of multiplicand with 3 in tens place of multiplier

Answer is 6

200 × 30

multiplicand multiplier

Step 3: I Wrote three zeroes as it is after 6.

Step 4: 6000

Teacher : In mathematics if it is done according to multiplication then it is solved as.

200 X 30

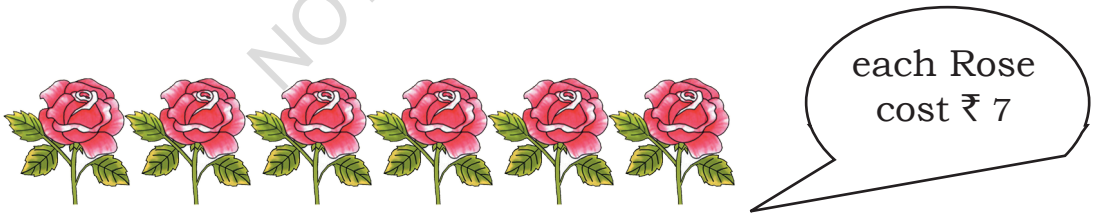
6000

Do it your self

Cost of a chair is ₹ 600 Santhosh bought 3 chairs. What is the cost of 3 chairs?

2) There are ten rows in a field. Find the total number of saplings that can be planted if each row contains 100 saplings?

3) Cost of a rose is ₹ 7. 6 girls purchased a rose each. How much money did they pay to rose seller?



How to do sums mentally.

Example :

Cost of one chocolate bar is ₹25. What is the cost of 5 such chocolate bars?

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$25 \times 5 = (20 + 5) \times 5$ Think mentally

1) Multiply 20 by 5 Answer is 100

2) Then multiply 5 by 5 Answer is 25

$100 + 25$

3) Now add 100 and 25. Answer obtained is 125

I. Work out mentally and fill in the blanks.

1) $6 \times 5 = 2 \times 5 + \square \times 5$

2) $5 \times 9 = 5 \times 3 + 5 \times \square$

3) $35 \times 6 = 30 \times 6 + 5 \times \square$

II. Do mentally. Write the following sum of partial products as product of 2 numbers.

1) $3 \times 6 + 3 \times 2 = \square + \square$

2) $20 \times 4 + 5 \times 4 = \square + \square$

3) $400 \times 2 + 4 \times 2 = \square + \square$

III. Solve the following mentally the product in mind.

1) In a school for midday meals 5 kg of rice is required daily. What is the quantity of rice required in a month of 30 days for that school ?

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2) There are 9 benches in a class. Each bench has 4 legs. What is the total numbers of legs in all the benches?

3) A railway bogie has 8 wheels. What is the total number of wheels in 15 railway bogies ?

4) Shubha bought 16 bouquets. Each bouquet has 9 flowers. What is the total number of flowers in the bouquets?

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CHAPTER-9

FRACTIONS AND DECIMALS

H8H4B1

After studying this chapter you can

- know the meaning of fraction,
- identify numerator and denominator of a fraction,
- find equivalent fractions for given fractions,
- know the meaning of the decimals 0.1, 0.2, 0.3

You have already learnt the meaning of $\frac{1}{2}, \frac{1}{4}, \frac{3}{4}$ in the previous class. Let us observe a few examples.

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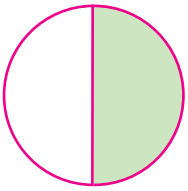
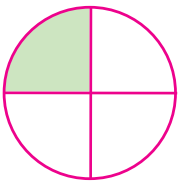
Observe the following figures:



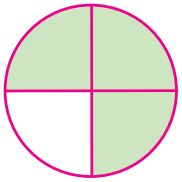
$\frac{1}{2}$

The fraction which represents the shaded part of the figure is $\frac{1}{2}$. This is read as one divided by two or one by two.



$\frac{1}{4}$

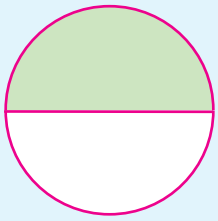
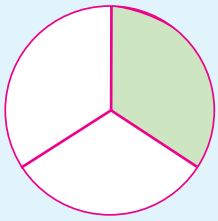
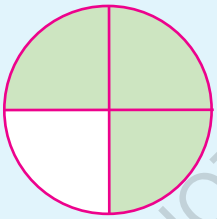
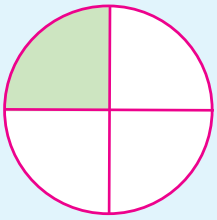
The fraction which represents the shaded part of the figure is $\frac{1}{4}$. This is read as one divided by four.



$\frac{3}{4}$

The fraction which represents the shaded part of the figure is $\frac{3}{4}$. This is read as there divided by four.

I. Identify the fraction represented by the figures on the left side and write it in the space provided.

a) 	(Model) : 1) Example : $\frac{1}{2}$ One by two
b) 	2)
c) 	3)
d) 	4)

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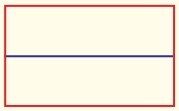
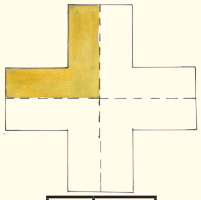
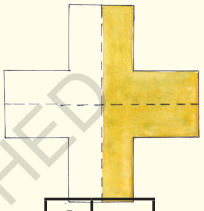
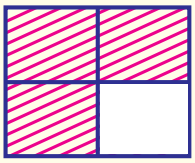
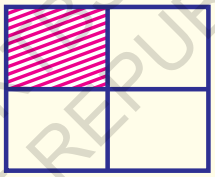
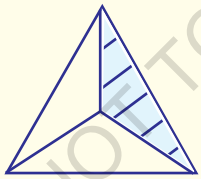
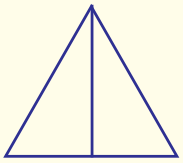
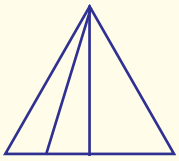
II. Identify the pictures that represent the fraction by a ✓ mark

Example.	a) $\frac{1}{2}$	A ☐	 B ✓	C ☐
b) $\frac{1}{4}$	 A ☐	B ☐	 C ☐	
c) $\frac{3}{4}$	 A ☐	 B ☐	C ☐	
d) $\frac{1}{3}$	 A A ☐	 B B ☐	 C C ☐	
e) $\frac{2}{3}$	A ☐	B ☐	C ☐	

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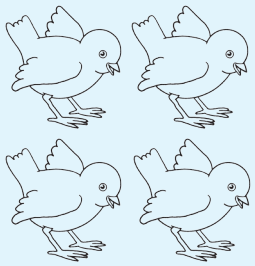
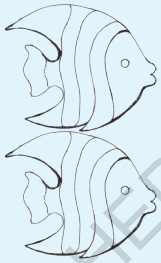
Exercise 9.1

I. Complete the followings:

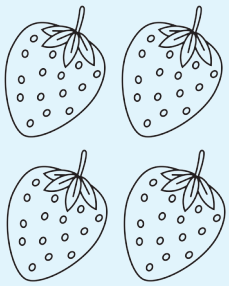
a) Colour for $\frac{1}{4}$.



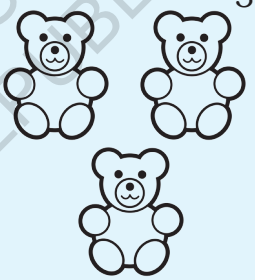
b) Colour for $\frac{1}{2}$.



c) Colour for $\frac{3}{4}$.



d) Colour for $\frac{2}{3}$.



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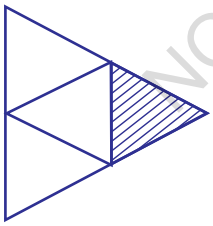
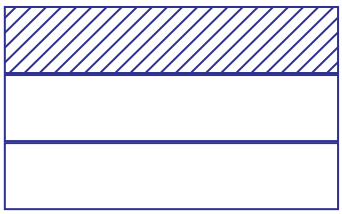
II. Encircle the fraction that represents the given picture.

a)



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

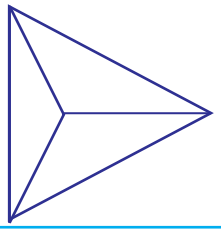
b)



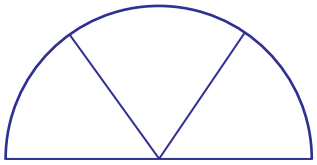
$\frac{1}{2}$ $\frac{1}{3}$ $\frac{1}{4}$

III. Shade the next pictures to represent the fraction $\frac{1}{3}$.

a)



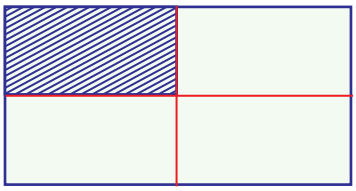
b)



Fraction

You have already learnt to fold a piece of paper into four equal parts.

Take a sheet of paper and fold it into four equal parts. Shade for one fourth of it.



The fraction represented by the shaded portion in the figure is written as _____, and it is read as _____

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What does 4 indicate here ?

4 represents the total equal parts in the sheet. What does 1 represent?

It represents the shaded part. As you know, the fraction here is $\frac{1}{4}$ read as, one by four.

Here 4 is called the denominator, 1 is called the numerator.

Think.

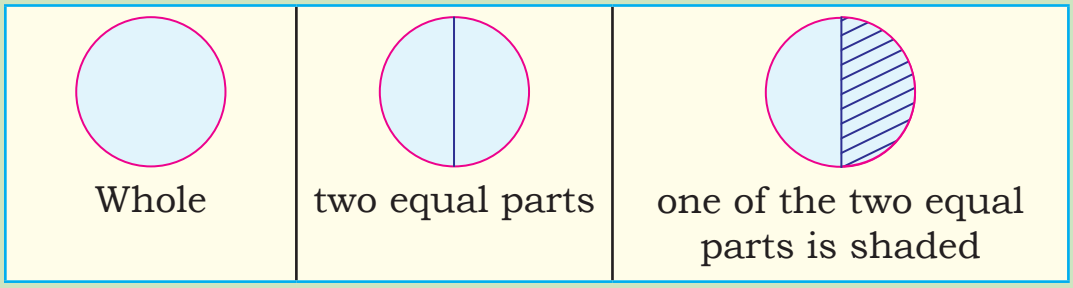
$\frac{1}{4}$ 1 → Numerator, 4 → Denominator

In any fraction, what does the numerator and denominator represent?

$$\frac{1}{4} = \frac{\text{Represents number of equal parts selected}}{\text{Total number of equal parts in to which a whole object is divided.}}$$

Remember. Equal parts of a whole object is called fraction.

Example :-



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

Numerator :- It is the number of equal parts of fraction that is selected.

Denominator:- It is the number of equal parts into which the whole is divided.

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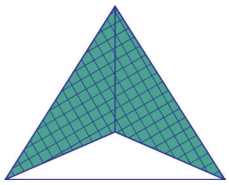
Example :

a)



Which is the fraction that represents the shaded portion in the figure?

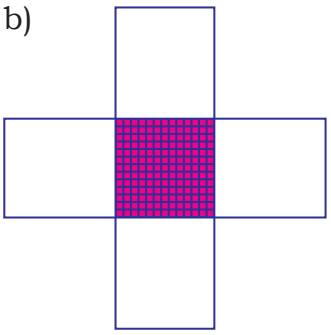
It is $\frac{2}{3}$,

What does 2 and 3 represent? Write.

2 is _____

3 is _____

b)



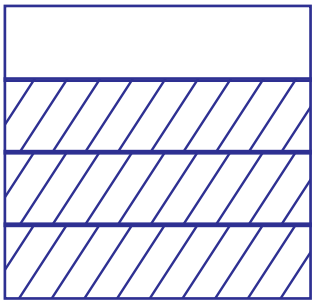
b) Represent the shaded portion as fraction

It is $\frac{1}{5}$, What does 1 and 5 represent here? Write

_____

_____

c)

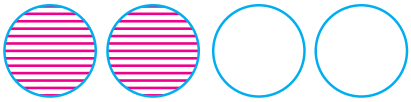


c) Represent the shaded portion as fraction _____

Numerator _____

Denominator _____

d)



d) Represent the shaded portion as fraction _____

Numerator _____

Denominator _____

e)

e) Represent the water filled glass in fraction _____

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Complete the next activity by suitable answer

John's father bought a small cake for his birth day. It was cut into 8 equal parts

One part of it, is given to John

Two parts was given to Revathi

Rahim took **Three** parts

Number of equal parts into which the cake was divided by John's father _____.

Part of cake taken by John _____

Part of cake taken by Revathi _____

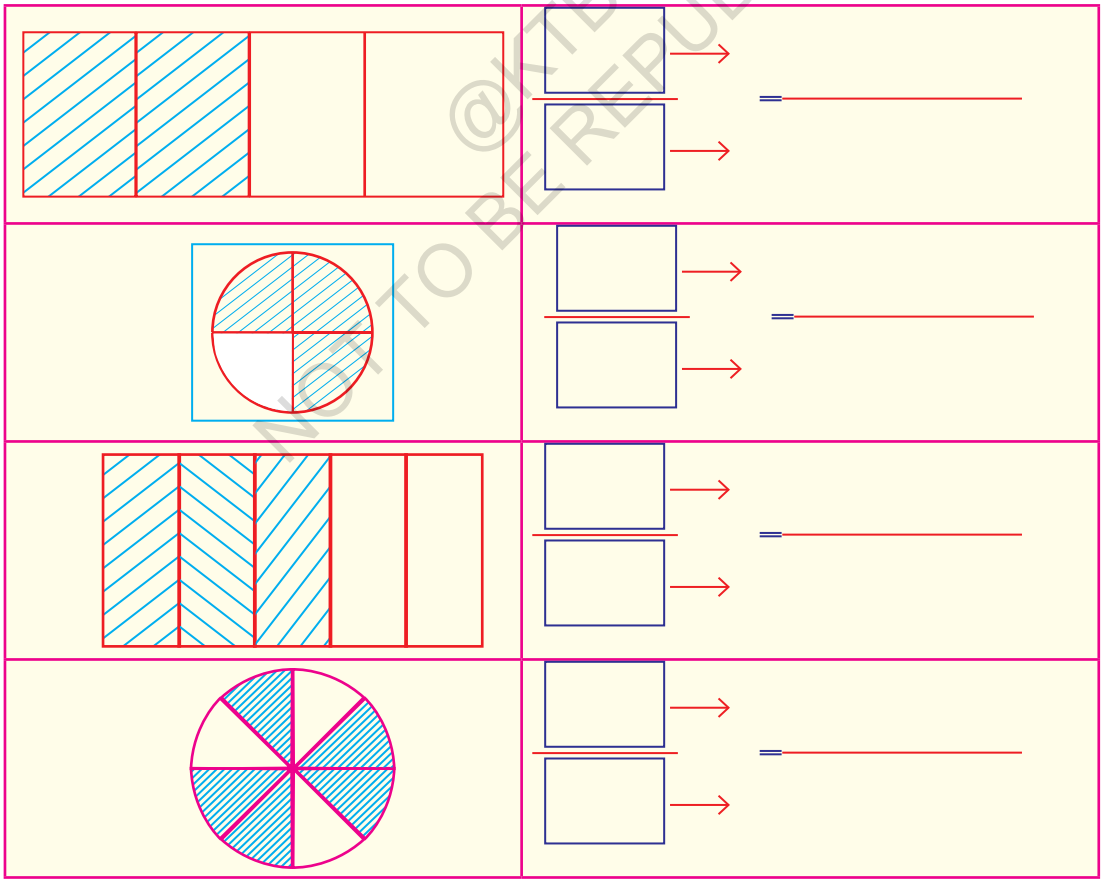
Part of cake taken by Rahim _____

Here what does 1, 2, 3, represent? _____

What do 8 represents _____

Represent the part of cake taken by each pictorially.

Represent the next figures in fraction. Identify the numerator and denominator.



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Activity :- Shilpa, Hussain and Naveen wished to have dilpasand. So they went to a bakery.

Shilpa : Let us have a dilpasand!

Husssin : One each! wav!

Naveen : For me one dilpasand

The quantity of dilpasand eaten by them is listed below. Observe.

Name	Full Dilpasand	Number of parts	Part of it eaten by them	
Shilpa				Out of 2 equal parts she ate 1 part. That means she ate $\frac{1}{2}$
Hussain				Out of 4 equal parts he ate 2 parts. That means he ate $\frac{2}{4}$
Naveen				Out of 8 equal parts, he ate 4 parts. That means he ate $\frac{4}{8}$

Write the parts of the dilpasand eaten by each of them in fractions.

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Shilpa took $\frac{1}{2}$ part.

Hussain took $\frac{2}{4}$ part.

Naveen took $\frac{4}{8}$ part.

Observe the share each of them has taken in the next picture.

Shilpa		$\frac{1}{2}$
Hussain		$\frac{2}{4}$
Naveen		$\frac{4}{8}$

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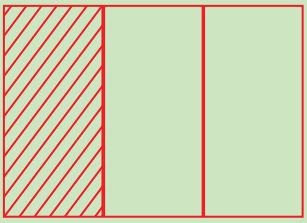
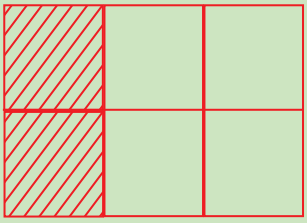
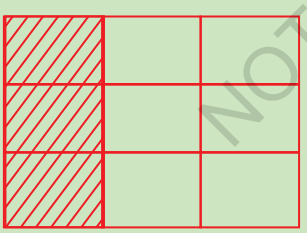
What do $\frac{1}{2}$, $\frac{2}{4}$, $\frac{4}{8}$ represent with respect to a whole dilpasand ? Think.

Observe the above picture.

$\frac{1}{2}$, $\frac{2}{4}$, $\frac{4}{8}$ Each represent half of the whole? These are called equal fractions.

Fractions showing the same quantity are called equal fractions.

Activity :

	**1) Take 3 sheet of papers of the same size. Fold one sheet into three equal parts.** Colour one part with red. Write the fraction that represents _____
	**2) Fold the second paper into 6 equal parts colour 2 parts with orange.** Write the fraction that represents _____
	**3) Fold the third paper into 9 equal parts as shown in the figure. Colour 3 parts with yellow.** Write the fraction that represents._____ Observe the above figure what do you know by this? These three fractions represent the part $\frac{1}{3}$. What type of fractions are these?

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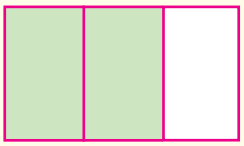
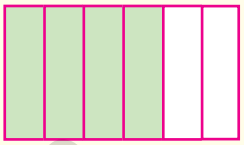
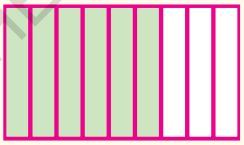
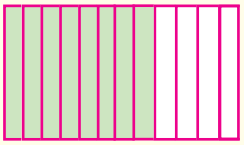
To find equivalent fractions for a given fraction.

Observe this example.

$\frac{2}{3}$ Let us multiply the numerator and the denominator of this fraction by the same number.	
$\frac{2}{3} = \frac{2 \times 2}{3 \times 2} = \frac{4}{6}$ (Multiplied by 2)	
In the same way multiply the fraction by 3 and 4.	
$\frac{2}{3} = \frac{2 \times 3}{3 \times 3} = \frac{6}{9}$	
$\frac{2}{3} = \frac{2 \times 4}{3 \times 4} = \frac{8}{12}$	

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Now from the fraction $\frac{2}{3}$ the fractions $\frac{4}{6}, \frac{6}{9}, \frac{8}{12}$ are obtained. These are equivalent fractions.

To get equivalent fractions both the numerator and denominator are multiplied by the same number.

Example 2 : Write three equivalent fractions for $\frac{4}{5}$ Multiply numerator and denominator by 2.

$\frac{4}{5} = \frac{4 \times 2}{5 \times 2} = \frac{8}{10}$

$\frac{4}{5} = \frac{4 \times 3}{5 \times 3} = \frac{12}{15}$ Multiply the numerator and denominator by 3.

$\frac{4}{5} = \frac{4 \times 4}{5 \times 4} = \frac{16}{20}$ Multiply the numerator and denominator by 4.

Here $\frac{4}{5} = \frac{8}{10}, \frac{12}{15}, \frac{16}{20}$ These are equivalent fractions

Exercise 9.2

I. Fill in the blanks with the equivalent fractions.

1) $\frac{3}{8}, \frac{6}{16}, \_\_\_\_$

2) $\frac{1}{5}$ _____ $\frac{3}{15}$

3) $\frac{2}{3}, \frac{4}{6}$ _____

4) _____ $\frac{4}{6}, \frac{6}{9}$

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II. Write two equivalent fractions for the given fractions.

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

2) $\frac{1}{16}$

3) $\frac{1}{3}$

4) $\frac{2}{3}$

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

Decimals

Observe these examples

Domestic cooking gas (gas fuel14.6 kg)	

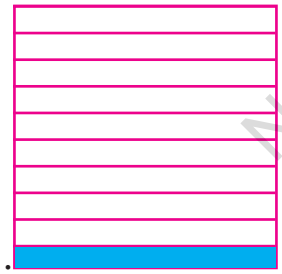
Cloth required to stitch a shirt is 2.5m

How is the quantity expressed in these examples? Write

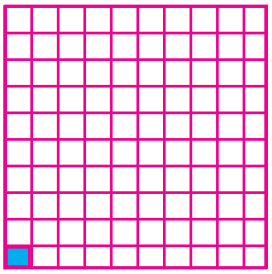
To know about such numbers, observe the next examples.

Example:

Square



Divide the square into 10 equal parts and colour one part of it. This is written as $\frac{1}{10}$ in fraction. This denotes one out of ten. This is written in another form as 0.1. This method of writing is called decimal system. We read it as "zero point one" $\frac{1}{10}$ =0.1



Divide the above square into 100 equal parts. If a part of it is coloured, Then how do you represent it in fraction? It is written as $\frac{1}{100}$, in decimal system it is 0.01 and read it as "zero point zero one". $\frac{1}{10}$ =0.01

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Example: A rectangle with ten equal parts is given next. Colour a part with red.

Observe the denominator to write it in decimal form. In fraction it is $\frac{1}{10}$ (one by ten) in decimals it is 0.1 (read as zero point one).

1) Rectangle with 10 equal parts is given below. Colour 2 parts with green.

2) To represent it in decimal form observe the numbers in denominator in the fraction $\frac{2}{10}$ (two by ten). In decimals it is 0.2 (zero point two).

If the three parts of a given rectangle is colourd with blue it is represented as 0.3 (zero point three)

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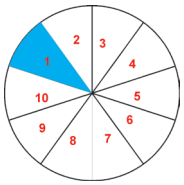
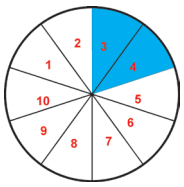
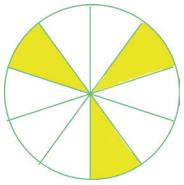
IV. Observe the next circles.



1. How many parts are shaded? _____ .
2. In fraction it is written as _____.

In decimals $\frac{1}{10}$ is written as _____ and it is read as _____

	$\frac{2}{10}$ is written is decimals _____.
	$\frac{3}{10}$ is written in decimals as _____.

Think : What does 0.1, 0.2, 0.3 indicate?

By observing the above examples, know how the decimal fractions are related to one another

Note: To express a number in decimal, whole part must be divided into ten equal parts.

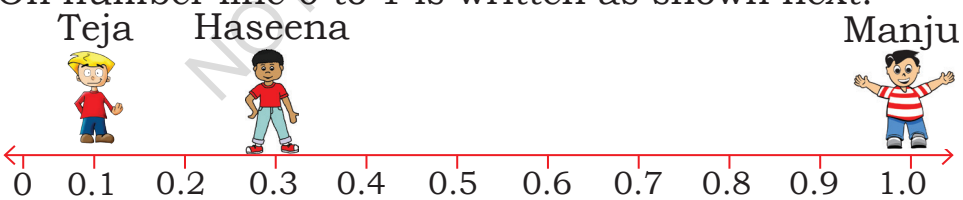
Let us learn how to represent decimals on number line.

Let us represent number from 1 to 10 on number line known to us

Observe this situation.

Between 1 and 2 there are 10 lines by measurement.

On number line 0 to 1 is written as shown next.



On which point on the number line is Teja standing?

We call it as 0.1. We know this is a decimal.

Where is Haseena?

on 0.3

Where is Manju?

on 1.0

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Note : On the number line between 0 and 1 there are 10 equal parts. That $\frac{1}{10} \times 1 = \frac{1}{10}$.

Know this

One tenth
$\frac{1}{10} = 0.1$

Denotes the number of parts considered out of 10.

One hundredth
$\frac{1}{100} = 0.01$

Denotes the number of parts considered out of 100.

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How can we write decimal fractions in place value chart?

Recall what you have learnt about place value chart

Thousands	Hundreds	Tens	Zero
1000	100	10	1

You have learnt how to write 10 and 100 in place value chart. Think how to represent $\frac{1}{10}$.

Thousand	Hundred	Ten	Zero	.	One tenth	One hundredth
100	100	10	1	.	$\frac{1}{10}$	$\frac{1}{100}$
			0	.	2	

integers ← decimal point → decimal numbers

Observe the place value chart. You find the digits to the left of the decimal point and also to the right of decimal point.

Observe that the place value of a digit to the left of decimal point increases as we move from right to let.

Observe the place value of the digits towards the right of the decimal point. Is it increasing or decreasing? Find out.

Observe the next chart.

Fraction	Numerator	Denominator	Decimal form
1) $\frac{1}{10}$	1	10	0.1
2) $\frac{2}{10}$	2	10	0.2
3) $\frac{3}{10}$	3	10	0.3
4) $\frac{1}{100}$	1	100	0.01
5) $\frac{2}{100}$	2	100	0.02
6) $\frac{3}{100}$	3	100	0.03

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Observe the point between unit and tenth's place. It is called decimal point. This separates from the whole part and decimal fraction.

Note :

- In a number if there is a decimal point, it is called decimal number.
- Decimal is another form of expressing fractions.
- Decimal means the denominator in fraction is 10, 100, 1000..... and so on.

***Activity:* Observe the next figure let the child to do this activity.**

Peter is measuring the length of a small pencil using a scale.

Mary : Peter, What is the length of the pencil?

Peter : The length of pencil is more than 3cm but less then 4cm.

Mary : How to read this ? I will help you to know how to read the measurements which are not whole numbers

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Observe the scale.

- In this 1 cm is divided into 10 equal parts. Therefore each part represents one tenth.
- One tenth is called 0.1.
- It is read as point one centimetre or zero point one centimetre.

Peter now tell me what is the correct length of the pencil.

It is 3 cm and eight tenth of a cm. It means 3.8 cm. It is read as three point eight centimetre .

The number with point is called a decimal. Observe the above activity by representing on the number line.

Exercise 9.3

1) Read the next decimals given below and write them in words.

1) 0.2 2) 0.5 3) 0.7

4) 0.21 5) 0.02 6) 0.15

2) Write the decimals given below.

1) Zero point three

2) Zero point six

3) Zero point seven

4) Zero point four

5) Zero point zero five

3) Write the next fractions in decimals.

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

2) $\frac{2}{10}$

3) $\frac{3}{10}$

4) $\frac{5}{10}$

5) $\frac{2}{100}$

6) $\frac{5}{100}$

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