MATHEMATICS

STANDARD THREE

MATHEMATICS

STANDARD THREE

Name : _____

School : _____

**MAHARASHTRA STATE BUREAU OF TEXTBOOK PRODUCTION
AND CURRICULUM RESEARCH, PUNE.**

Mathematics Subject Committee

Chairman
Dr Shashikant A. Katre
Members
Dr Smt. Mangala Naralikar
Dr Vinayak M. Solapurkar
Dr Smt. Vaijayanta Patil
Dr K. Subramaniam
Shri. Rajendra Gosavi
Shri. Pramod T. Kharche
Smt. Mangal Pawar
Shri. Vasant N. Shevale
(Member Secretary)

Mathematics Panel

Dr M. M. Shikare
Dr Kailas Bondarde
Dr Jayashri Atre
Dr Anil Vaidya
Shri. Hemant Deshpande
Shri. Nagesh Mone
Shri. Ravindra Yewale
Shri. Purushottam Sharma
Shri. Suresh Shinde
Smt. Bharati Tathe
Shri. Kalyan Shinde
Shri. Pradeep Godase
Shri. Sudhir Nachane
Shri. Rajesh Vairagade
Smt. Vaishali Patil
Shri. Maruti Baraskar

Cover and Illustrations : Anagha Inamdar,
Kejal Mistri,
Crop Marks Design, Pune.
Sandeep Koli, Mumbai

Co-ordination : Vasant N. Shevale
Academic Secretary (Non-Language)
Ujjwala S. Godbole
Subject Assistant, Mathematics

Translation : Smt. Mrinalini Desai

Scrutiny : Dr Mangala Naralikar

Co-ordination : Dhanavanti Hardikar
Academic Secretary (Languages)
Santosh J. Pawar
Subject Assistant, English

B C M Y K
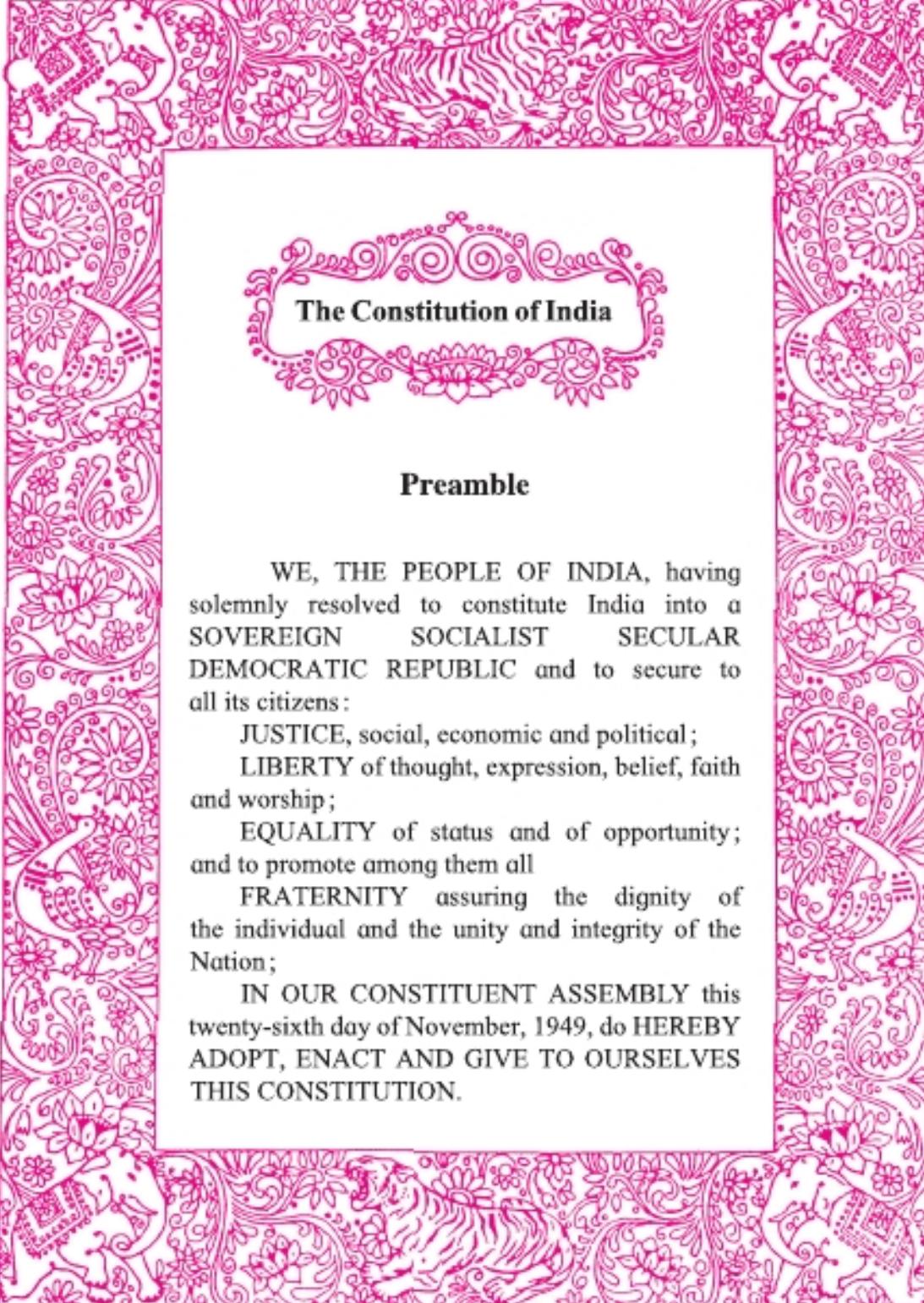
The Constitution of India

Preamble

WE, THE PEOPLE OF INDIA, having solemnly resolved to constitute India into a SOVEREIGN SOCIALIST SECULAR DEMOCRATIC REPUBLIC and to secure to all its citizens :

JUSTICE, social, economic and political ;

LIBERTY of thought, expression, belief, faith and worship ;

EQUALITY of status and of opportunity ; and to promote among them all

FRATERNITY assuring the dignity of the individual and the unity and integrity of the Nation ;

IN OUR CONSTITUENT ASSEMBLY this twenty-sixth day of November, 1949, do HEREBY ADOPT, ENACT AND GIVE TO OURSELVES THIS CONSTITUTION.

NATIONAL ANTHEM

Jana-gana-mana-adhināyaka jaya hē
Bhārata-bhāgya-vidhātā,

Panjāba-Sindhu-Gujarāta-Marāthā
Drāvida-Utkala-Banga

Vindhya-Himāchala-Yamunā-Gangā
uchchala-jaladhi-taranga

Tava subha nāmē jāgē, tava subha āsisa māgē,
gāhē tava jaya-gāthā,

Jana-gana-mangala-dāyaka jaya hē
Bhārata-bhāgya-vidhātā,

Jaya hē, Jaya hē, Jaya hē,
Jaya jaya jaya, jaya hē.

PLEDGE

India is my country. All Indians are my brothers and sisters.

I love my country, and I am proud of its rich and varied heritage. I shall always strive to be worthy of it.

I shall give my parents, teachers and all elders respect, and treat everyone with courtesy.

To my country and my people, I pledge my devotion. In their well-being and prosperity alone lies my happiness.

Preface

The 'Primary Education Curriculum - 2012' was prepared in the State of Maharashtra following the 'Right of Children to Free and Compulsory Education Act, 2009' and the 'National Curriculum Framework 2005'. The Textbook Bureau has launched a new series of Mathematics textbooks based on this syllabus approved by the State Government for Stds I to VIII from the academic year 2013-2014. We are happy to place the textbook of Standard Three in this series in your hands.

Our approach while designing this textbook was that the entire teaching-learning process should be child-centred, emphasis should be given on active learning and constructivism and at the end of Primary Education the students should have attained the desired competencies and that the process of education should become enjoyable and interesting.

Children have a natural liking for pictures and constantly try to 'do' things on their own. Considering these factors, we have tried to make this book pictorial and activity-oriented. As far as possible, expressive illustrations have been used which will lead to a clearer understanding of mathematical concepts.

Graded exercises and conversations have been included in order to ensure revision and reinforcement of mathematical concepts and to facilitate self-learning. It is expected that the children will solve the questions in the exercises on their own. We have tried to provide a variety of exercises to make it interesting for the students.

The language of presentation that the teacher is expected to use has been provided in the textbook. Also, there are some instructions for the teachers themselves. The instructions and the activities aim at making their teaching more activity-oriented.

This book was scrutinized by teachers, educationists and experts in the field of mathematics at all levels and from all parts of the State to make it as flawless and useful as possible. Letters from teachers and parents as also reviews in newspapers have been taken into account while preparing this textbook. The Bureau is grateful to all of them for their co-operation. Their comments and suggestions have been duly considered by the Mathematics Subject Committee while finalising the book.

The Mathematics Subject Committee of the Bureau, the Panel, Shri. V. D. Godbole (Invitee) and the artists have taken great pains to prepare this book. The Bureau is thankful to all of them.

We hope that this book will receive a warm welcome from students, teachers and parents.

(C. R. Borkar)
Director
Maharashtra State Bureau of Textbook
Production and Curriculum Research, Pune.

Pune
Date : December 4, 2013
      Agrahayan 13, 1935

F

✦ To the Teacher ✦

At this stage, the textbook is a very important tool of the teaching-learning process. This textbook has been designed to help teachers base their teaching of mathematics on their own and their pupils' varied experiences and surroundings.

We urge you to make full use of the following special features of this textbook :

❏ The games, conversations, demonstrations, practical work and activities included for explaining mathematical ideas and concepts.

❏ Activities like picture-observation and use of strings of beads to make learning more enjoyable.

❏ Encouraging students to learn on their own, making use of the knowledge they already have. For this purpose, we can use learning aids such as number cards, picture cards, beads and strings.

❏ Practical work of tying objects into groups of ten, untying them to get back the single objects, etc.

❏ Use of beads, stones, seeds, etc. to carry out operations on numbers.

The following are some suggestions for teachers.

❏ Give learning experiences based on the content of one page every day.

❏ Have a question-and-answer session based on the subject-content of the page and give learning experiences using teaching/learning aids.

❏ Tell children to use pencils for written work. Tell them to talk to other students in the group to get help if necessary.

❏ As the children carry out an activity, move amongst the groups to observe what they are doing. Give guidance if necessary.

❏ When the activity has been completed, check each child's work. Discuss any mistakes or errors or gaps you see and get the child to make the correction.

❏ Give practice with the help of supplementary activities as and when it is found to be necessary.

❏ Ask questions based on the content of the previous day's page to ensure that it has been well learnt.

❏ From time to time, ask thought-provoking questions based on previous lessons and encourage the children to find the answers on their own.

❏ Encourage children to ask questions about their difficulties. In fact, help them develop the habit of asking questions.

❏ Make consistent efforts to develop the children's ability to read and write numbers and to add and subtract numbers in their mind.

❏ Also, help children to develop a good hand for writing numbers and the skill of presenting a sum or problem in the proper way.

Contents

Part One

Part Two

H
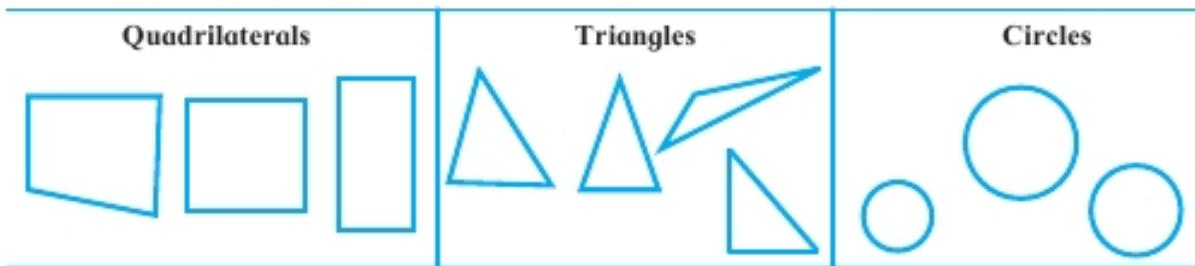
Introduction to Geometrical Figures

Revision

◼ **Quadrilateral, Triangle, Circle**

Quadrilaterals	Triangles	Circles

✦ Look at the pictures below. Identify the geometrical figure.
Draw it and write its name.

Picture					
Figure					
Name of the Figure	Rectangle				

✦ Identify the triangles, circles and quadrilaterals in the picture above. Colour the triangles red, the quadrilaterals blue and the circles yellow.

✎ **For teachers :** Cut cardboard into the shapes given above and various other shapes too, and place them on the table. Have the children classify them into triangles, rectangles, squares and circles. Point out that some of the shapes cannot be classified into any of the given categories.

Edges and Corners

Look at this piece of *barfi*.
It is a quadrilateral.
A quadrilateral has four edges and four corners.
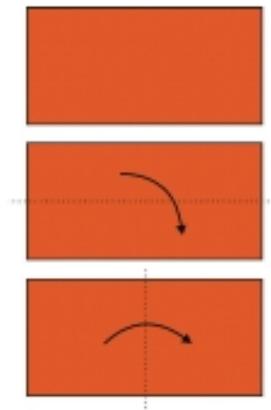
Observe the surface of a table.
- ◆ How many edges does the surface have ?
- ◆ How many corners does the surface have ?
- ◆ What is the shape of the surface of the table ?

■ Rectangle

Take a rectangular sheet of paper as shown below.

◆ How many edges and how many corners does a rectangle have ?

Now, let us fold the paper in the middle to bring the opposite edges together.

What do we see ?
The longer side falls exactly on the opposite side.

The shorter side falls exactly on the side opposite, too.

The opposite sides of a rectangle are of equal length.

■ Square

Take a look at a handkerchief. It is a square.

◆ How many edges and corners does a square have ?

Fold the handkerchief in the middle from top to bottom as well as from side to side to see if the opposite sides are of equal length.
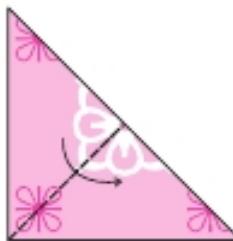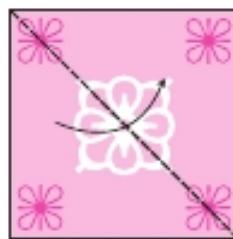
Now, we shall fold the handkerchief as shown alongside to find out if each corner falls exactly on the one opposite.

The corners match and so do the edges that make them up.

Now fold the handkerchief over again.

All the edges match in length.

All the edges of a square are of equal length.

Note that we got a triangle when we folded the handkerchief.

■ **Triangle**

✦ **How many edges does a triangle have ? How many corners ?**
   Find this shape in your surroundings.

✦ **Use sticks to make the following shapes.**
   Quadrilateral, rectangle, square, triangle
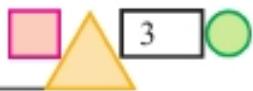
✦ **Complete the table below.**

Figure	Name of the figure	Number of edges	Number of corners

✎ **For teachers :** Cut out shapes of rectangles, squares, triangles and circles from coloured paper. Tell the children to examine them for their properties. Point out that the edge of a circle is curved and that the circle has no corners.

How to make a five-piece Tangram
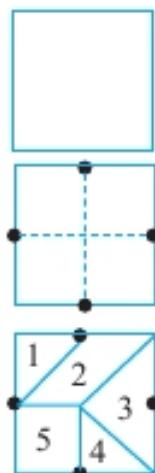
Take a square piece of paper.

Find the centre of the paper by folding it twice.

Also, mark the centres of all the four edges.
Draw lines to join the centres of the sides and the centre of the square as shown in the picture.
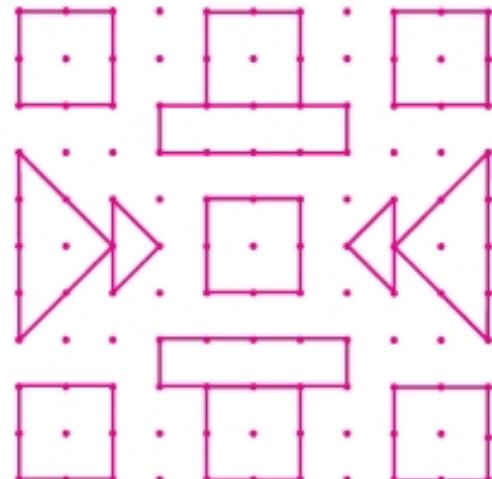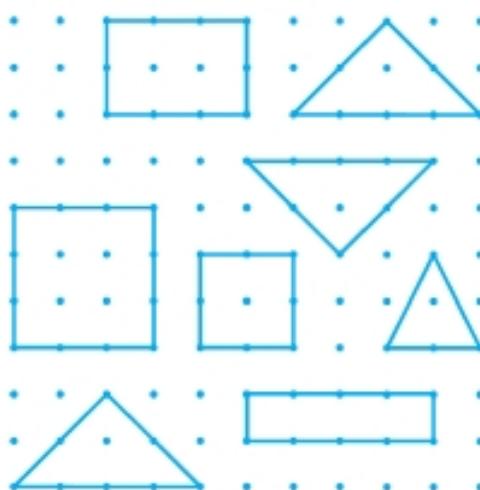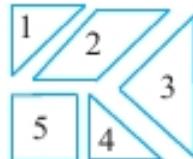
Now, make five pieces of the square by cutting along the lines as shown in the picture.

Using the tangram here, answer the following questions.

◆ How many triangles are there in your tangram ?

◆ Are all the triangles alike ?

◆ Can we join two of the triangles to make a square ?

◆ Can we join two of the triangles to make a big triangle ?

◆ How many squares are there in this tangram ? How many quadrilaterals ?

◆ In the picture below, identify the figures drawn on the dotted paper.
Colour the triangles red, squares blue and the rectangles green.

Number Work

✦ **In the table below, colour the boxes of the numbers from 1 to 10, red; the boxes of the numbers 11 to 20, green; ..... . Thus colour all the boxes, using different colours.**

99	19	78	45	59	80	67	98	46	47
18	82	79	8	40	39	97	5	68	26
51	4	58	88	13	75	17	95	52	16
83	81	71	34	87	1	96	38	25	27
32	77	2	76	12	63	53	60	9	37
65	10	100	14	64	24	11	94	93	36
31	72	41	55	29	54	22	35	3	48
84	30	15	6	86	23	62	61	70	69
57	66	56	73	33	89	7	42	92	49
44	85	28	74	20	50	90	91	21	43

■ **Writing the numbers from 26 to 99 in words.**

26 twenty-six	27 twenty-seven	28 twenty-eight	29 twenty-nine	30 thirty
31 thirty-one	32 thirty-two	33 thirty-three	34 thirty-four	35 thirty-five
36 thirty-six	37 thirty-seven	38 thirty-eight	39 thirty-nine	40 forty
41 forty-one	42 forty-two	43 forty-three	44 forty-four	45 forty-five
46 forty-six	47 forty-seven	48 forty-eight	49 forty-nine	50 fifty
51 fifty-one	52 fifty-two	53 fifty-three	54 fifty-four	55 fifty-five
56 fifty-six	57 fifty-seven	58 fifty-eight	59 fifty-nine	60 sixty
61 sixty-one	62 sixty-two	63 sixty-three	64 sixty-four	65 sixty-five
66 sixty-six	67 sixty-seven	68 sixty-eight	69 sixty-nine	70 seventy
71 seventy-one	72 seventy-two	73 seventy-three	74 seventy-four	75 seventy-five
76 seventy-six	77 seventy-seven	78 seventy-eight	79 seventy-nine	80 eighty
81 eighty-one	82 eighty-two	83 eighty-three	84 eighty-four	85 eighty-five
86 eighty-six	87 eighty-seven	88 eighty-eight	89 eighty-nine	90 ninety
91 ninety-one	92 ninety-two	93 ninety-three	94 ninety-four	95 ninety-five
96 ninety-six	97 ninety-seven	98 ninety-eight	99 ninety-nine	

✎ **For teachers :** Write all the numbers on the floor or place number cards instead. Have the children stand around them and play the game of looking for numbers in the proper sequence.
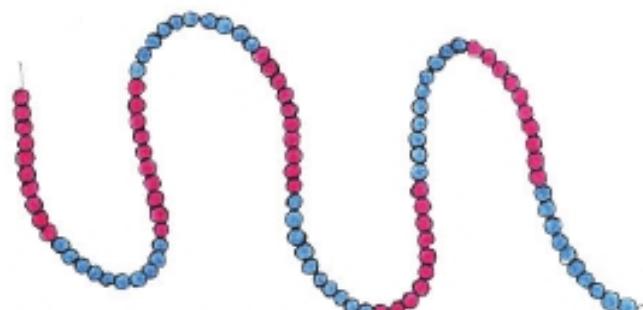
Tony : Here are one hundred candies.

Nandu : I scored a century !

Salma : I counted these bangles.
They are 10 tens.

Sonu : I bought a hundred oranges.
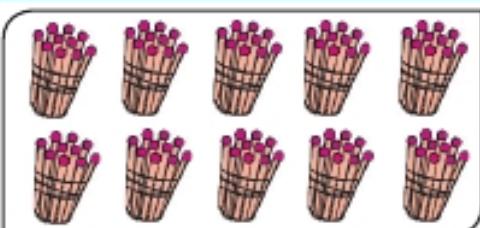
Tai : All of you have the same number of things. But each of you said it in a different way. A century has a hundred units. Or simply, it's one hundred. Ten tens are also one hundred.

Sonu put a hundred beads from this string into a purse.

Here is a purse of 'a hundred'.

☐ 'tens' of sticks makes one hundred sticks.

5 notes of 20 rupees each makes
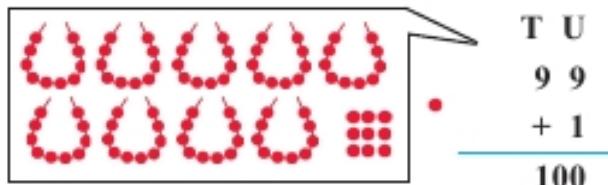
☐ rupees.

That is, 1 hundred rupees.

Whole hundreds / Hundreds

9 beads and 1 bead together make 10 beads.
A group of 10 things is called a ten.

T U
9 9
+ 1
100

99 is the biggest two-digit number.
When we add 1 to it, we get the
three-digit number 100.

The new place on the left in the three-digit number 100 is the place of 'Hundreds'.

100 means

H T U
1 0 0

100 is a three-digit number.

Two hundred		Three hundred
Four hundred		Five hundred
	Nine hundred	

10 tens make a hundred.
That is, one hundred (100).

20 tens make 2 hundreds.
That is, two hundred (200).

40 tens make 4 hundreds.
That is, four hundred (400).

50 tens means 5 hundreds.
That is, five hundred (500).

7

Three-digit numbers : Introduction

✦ **In the empty boxes, write the number in words.**

Crayons	Hundreds	Tens	Units	Number In figures	Number In words
	1	0	1	101	A hundred and one
	1	0	2	102	A hundred and two
	1	0	3	103	
	1	0	4	104	
	1	0	5	105	
	1	0	6	106	
	1	0	7	107	
	1	0	8	108	
	1	0	9	109	
	1	1	0	110	

✎ **For teachers :** Get the children to write the numbers using a box of a hundred crayons, a packet of ten crayons and single crayons.

Three-digit numbers : Introduction

✦ As shown in the table, string the right number of beads on the wires.
Write the number in figures and in words.

	H T U	254	Two hundred and fifty-four
	H T U	617	Six hundred and seventeen
	H T U		
	H T U		
	H T U		
	H T U		
	H T U		
	H T U		

Three-digit numbers : Writing and Reading
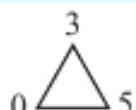
✦ Write the correct number in the box and read it aloud.

101	211	321	431	541	651	761	871	981
102	212		432		652	762	872	982
103	213	323		543				
104	214		434	544		764	874	
105		325	435		655		875	985
	216					766		
107	217	327	437	547	657		877	
		328	438			768		988
109	219				659			
110	220	330	440	550		770	880	990

✦ Make three-digit numbers using each of the given digits only once.

1
2 △ 3

123, 132, 213, 231, 312, 321

3
0 △ 5

305, 350, 530, 503

Note that 035, 053 are not three-digit numbers because these numbers are written as 35 and 53 using only two digits.

6
7 △ 8

1
6 ▷ 2

4
9 ▷ 5

3
0 △ 7

Take any three-digit number. Change the digit in its hundreds place and make a new number. Likewise, change the digits in the tens and units places to make new numbers.

✎ **For teachers :** Make many different numbers using a tap for hundreds, a clap for tens and a snap of your fingers for units.

The number before; the number after

◆ Read the numbers in the number strips below.

99	100	101	102	103	104	105	106	107	108	109	110

215	216	217	218	219	220	221	222	223	224	225	226

399	400	401	402	403	404	405	406	407	408	409	410

◆ With the help of the number strips above, write the next number –

❖ 105, ☐   ❖ 220, ☐   ❖ 409, ☐   ❖ 219, ☐

◆ With the help of the number strips above, write the number just before –

❖ ☐ , 400   ❖ ☐ , 107   ❖ ☐ , 218   ❖ ☐ , 110

◆ With the help of the number strips above, write the numbers just before and just after –

❖ ☐ , 217 , ☐   ❖ ☐ , 100 , ☐   ❖ ☐ , 409 , ☐

◆ By how much is the next number bigger than the given number ? ☐

◆ By how much is the number just before a given number smaller than the given number ? ☐

◆ What is the number we get by adding 1 to 435 ? ☐

◆ What is the number we get by taking away 1 from 435 ? ☐

◆ Write the number just before and the number just after.

❖ 118 , 119 , 120   ❖ ☐ , 200 , ☐   ❖ ☐ , 391 , ☐

❖ ☐ , 599 , ☐   ❖ ☐ , 800 , ☐   ❖ ☐ , 707 , ☐

◆ Write any three numbers that come after the given number.

❖ 555, 600 , 650 , 977   ❖ 399, ☐ , ☐ , ☐

◆ Write any three numbers that come before the given number.

❖ 99 , 312 , 407 , 500   ❖ ☐ , ☐ , ☐ , 601

✍ **For teachers :** Give practice in telling the numbers that come before and after numbers like 100, 199, 300, 499, 201, 590.

◆ **Say which number is bigger and which, smaller.**

Number	8, 2	77, 59	39, 9	14, 35	67, 32
Smaller Number					
Bigger Number					

■ **Using the symbols**

5 > 2 is read as : 5 is bigger than 2.   2 < 5 is read as : 2 is smaller than 5.

27 ◁ **40**   **91** ▷ **49**

27 < 40 is read as : 27 is less than 40.   91 > 49 is read as : 91 is greater than 49.

◆ **Write the correct symbol in the box.**

10 > 9	9 ☐ 10	5 ☐ 3	3 ☐ 5
50 ☐ 49	49 ☐ 50	23 ☐ 25	73 ☐ 75
500 ☐ 499	499 ☐ 500	500 ☐ 300	600 ☐ 400

Tony : We can tell the smaller number and bigger number if the two given numbers have two digits. But, what if one is a two-digit number and the other is a three-digit number ?

Tai : First tell me the biggest two-digit number.

Tony : That's easy ! 99 is the biggest of all the two-digit numbers. The next number after 99 is 100. And that's a three-digit number.

Tai : Then you know that a two-digit number may be 99 or a number smaller than 99. Hence, any two-digit number is smaller than 100. A three-digit number can be 100 or bigger than 100.

Tony : This tells us that a three-digit number is always bigger than a two-digit number.

Salma : Just as we know that a two-digit number is always bigger than a one-digit number, isn't it ?

Tai : Absolutely right !

Smaller and bigger numbers (continued)

Nandu : If we have two three-digit numbers, how do we tell which is bigger and which is smaller ?

Tai : Let's take some easy examples. Take the numbers 500 and 300. Which of these is the bigger number ?

Salma : 5 hundreds are bigger than 3 hundreds. So 500 > 300.

Tai : Now let's look at 325 and 625. Here the units and the tens of the two numbers are equal. But 6 hundreds are bigger than 3 hundreds.
So 625 > 325.

Tony : What to do if the units, tens and hundreds digits in two numbers are all different ?

Nandu : Let's take 495 and 812.

Tai : In 495, the number in the hundreds place is 4. It is smaller than the hundreds in 812. This is important. What is the next whole hundred number after 495 ?

Tony : That's 500. And 495 < 500.

Tai : 812 has 8 hundreds. We know that 500 < 800 and 800 < 812. So, 495 < 812. Got it ?

Tony : Yes. Not too difficult if we work it out like this.

Nandu : It means that if two three-digit numbers are given, the one with the bigger digit in the hundreds place is the bigger number.

✦ **Which is the bigger and which the smaller number ?**

721 ☐ 589   423 ☐ 723   600 ☐ 497

Salma : But, what if the digits in the hundreds place of both the numbers are the same ? Let's take 718 and 720.

Tai : That's easy, too. If the hundreds are the same, look at the numbers made by the tens and units.

Sonu : So we must compare 20 and 18 in 720 and 718, right ? 20 >18.
So, 720 > 718.

Tai : Correct ! If the hundreds in two numbers are the same, then the number with the bigger tens is the bigger number. And, if the hundreds as well as the tens are equal, then look at the units to decide which is the bigger number.

✦ **Put the right symbol <, > between the numbers in each pair.**

427 ☐ 267,   150 ☐ 501,   813 ☐ 79,   300 ☐ 624

13

Ascending and descending order

These are the marks that Tony, Sonu, Salma and Nandu got in Maths :

Tony 70, Salma 87, Sonu 79, Nandu 85.

Write their marks in ascending and descending order.

Ascending Order : 70, 79, 85, 87   Descending Order : 87, 85, 79, 70

✦ **Write the following numbers in ascending and descending order.**

Numbers	Ascending Order	Descending Order
55, 63, 40, 80		
69, 9, 59, 70		
14, 29, 47, 39		

✦ **Write the numbers 122, 360, 325 in ascending and descending order.**

Smallest number : 122
Biggest number : 360
Ascending Order : 122, 325, 360
It can also be written as
        $122 < 325 < 360$
Descending Order : 360, 325, 122
It can also be written as
        $360 > 325 > 122$

✦ **Write the numbers 801, 617, 847, 799 in ascending and in descending order.**

Smallest number : 617
Remaining numbers 801, 847, 799.
The smallest of these numbers : 799.
Remaining numbers, now : 801, 847.
The smaller of these two numbers : 801
and the last one 847.
Ascending Order : 617, 799, 801, 847
Descending Order : 847, 801, 799, 617

✦ **Ascending and descending order of numbers.**

Given Numbers	Ascending Order	Descending Order
217, 211, 215	211, 215, 217	217, 215, 211
500, 400, 100, 600	100, 400, 500, 600	600, 500, 400, 100
519, 419, 619	419, 519, 619	619, 519, 419
785, 757, 8, 81	8, 81, 757, 785	785, 757, 81, 8
15, 100, 81, 167	15, 81, 100, 167	167, 100, 81, 15

✦ **Write the following numbers in ascending and descending order.**

❖ 117, 69, 50, 8   ❖ 217, 271, 270   ❖ 365, 73, 12, 116
❖ 912, 27, 356   ❖ 315, 215, 515   ❖ 527, 8, 324, 63
❖ 88, 78, 75   ❖ 500, 501, 499   ❖ 285, 407, 589, 360
❖ 888, 788, 688   ❖ 105, 107, 101, 102 ❖ 909, 990, 999

Biggest and smallest numbers from given digits

Tai : Let's make three-digit numbers using the digits 2, 3 and 5.

Sonu : Do we use one digit only once ?

Tony : Yes ! Otherwise, we'll get too many numbers. 222, 232, 233, 323, 333, 235, 253.... so many numbers like these.

Salma : But if we use each digit only once, then, of course, we get only these numbers : 235, 253, 325, 352, 532, 523.

Tai : Ok. Now compare these numbers and decide which ones are smaller and which ones, bigger.

Tony : 532 and 523 have the biggest hundreds digits. If we compare these two, 32 is bigger than 23, so 532 > 523. So 532 is the biggest of all the numbers we can make from the digits 2, 3 and 5.

Salma : Of the numbers we made here, take those with 2 in the hundreds place. That is, 235 and 253. Now, 35 < 53. So 235 < 253.

Tai : Very good !

Nandu : Instead of making all the numbers from the given digits, couldn't we make the biggest and the smallest numbers straightaway ?

Tony : Yes, of course ! The biggest number will have the biggest digit in the hundreds place. Then, to make the bigger number from the remaining two digits, we put the bigger digit in the tens place.

Sonu : So, to make the biggest number, write the digits in the descending order. In our example, the biggest number is 532.

Salma : I'll say how to make the smallest number from three given digits. Write the smallest digit in the hundreds place and the biggest digit in the units place. The remaining digit goes in the tens place. It means that if we write the given digits in the ascending order we get the smallest three-digit number. Here, it's 235.

Sonu : Suppose there's a zero given. Do we still do the same ?

Tai : No. If we do that we'll get a two-digit number and not a three-digit number. Let's take 5, 0 and 2. If there's zero in the hundreds place, we get the numbers 025 or 052. But these can be written as 25 and 52 in two digits. So they are really two-digit numbers.

Nandu : So if a zero is given, let's put the smaller non-zero number in the hundreds place.

Salma : Then we'll write zero in the tens place and the remaining digit in the units place.

Tai : Yes. So the smallest three-digit number from the digits 5, 0 and 2 is 205.

✦ **Make the biggest and the smallest three-digit numbers using the given digits.**

❖ 9, 4, 6   ❖ 7, 0, 4   ❖ 3, 9, 5   ❖ 8, 5, 9

The expanded form of a number

Tai : How many hundreds, how many tens and how many units are there in 824 ?

Sonu : 824 means 8 hundreds, 2 tens and 4 units.

Tony : This means that 824 = 800 + 20 + 4.

Nandu : By the same method, how to write 203 ?

Salma : 203 = 200 + 3.

Tai : That is right, of course. But it is better to write the expanded form as 203 = 200 + 0 + 3 because it tells us clearly the digits in the hundreds, tens and units places. In the same way, the expanded form of 80 will be 80 + 0. And if we take the single-digit number 9, its expanded form can only be 9 !

✦ **Write the expanded form of the following numbers.**

  ❖ 998   ❖ 34   ❖ 287   ❖ 534   ❖ 76   ❖ 301   ❖ 90   ❖ 45   ❖ 13

Tai : Now, can you write the number from its expanded form ?

       Take 500 + 30 + 7. This is the expanded form of a number.

Salma : I'll try. 500 + 30 + 7 = 537

Tai : Very good !

✦ **Write the number from its expanded form.**

  ❖ 700 + 0 + 5   ❖ 400 + 60 + 7   ❖ 800 + 0 + 0

  ❖ 30 + 9   ❖ 200 + 10 + 1   ❖ 100 + 50 + 0

  ❖ 40 + 4   ❖ 300 + 0 + 6
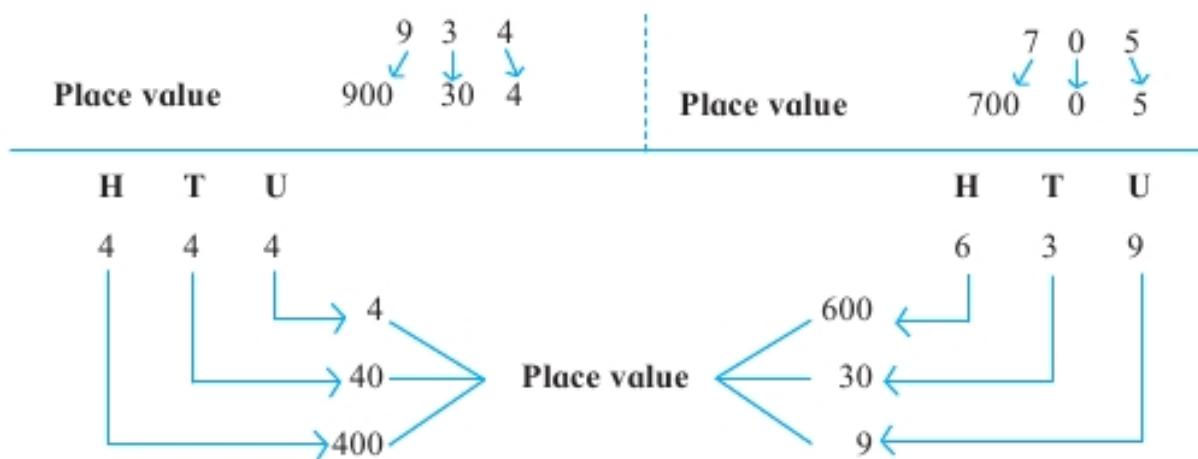
Place value

Tai : Tell me, of which number is this the expanded form : 400 + 40 + 7 ?

Nandu : Easy ! 447.

Salma : That's funny. First we used the digit 4 for 400 and then we used it for 40.

Tai : You must remember that the place of a digit determines its value. The value of the 4 in the hundreds place is 400, but the value of 4 in the tens place is 40. The 7 in the units place is equal to just 7. The value that a digit has according to its place in a number is called its place value.

Tai : In the number 576, the place value of 5 is 500, the place value of 7 is 70 and that of 6 is 6. Now, let's look at some other examples.

9 3 4

Place value   900   30   4

7 0 5

Place value   700   0   5

H T U

4 4 4

→ 4

→ 40 → **Place value** ← 600

→ 400 ← 30

← 9

H T U

6 3 9

✦ **Write the place values of the underlined digits.**

9̲19 , 13̲5 , 2̲0 , 30̲5 , 4̲80 , 3̲2

■ **A number and its expanded form : Folding Fun**

Tai : Let's make a folding card to show a three-digit number and its expanded form.
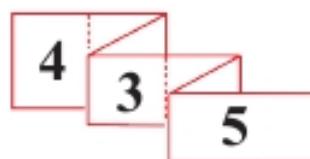
4	00	+	3	0	+	5

Take a strip of paper and fold it into seven equal parts as shown alongside. Think of a three-digit number. Say, 435.

Write the expanded form of this number on the paper strip as shown above.

Now fold the paper along the bold lines as shown in the figure alongside. By folding the paper, '00+' and '0+' are hidden and only the number 435 can be seen.
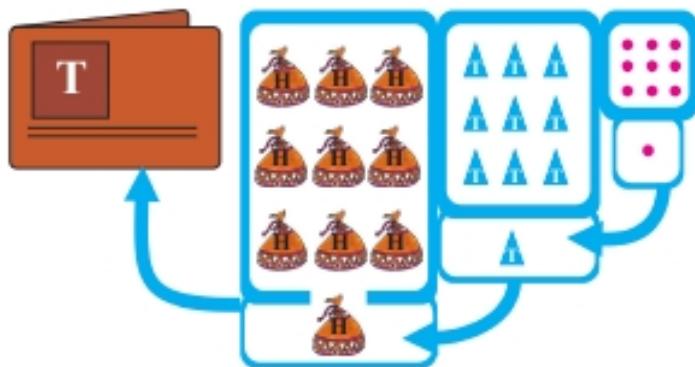
4	3	5

Thus, we can show the number when the paper strip is folded and its expanded form when it is unfolded.
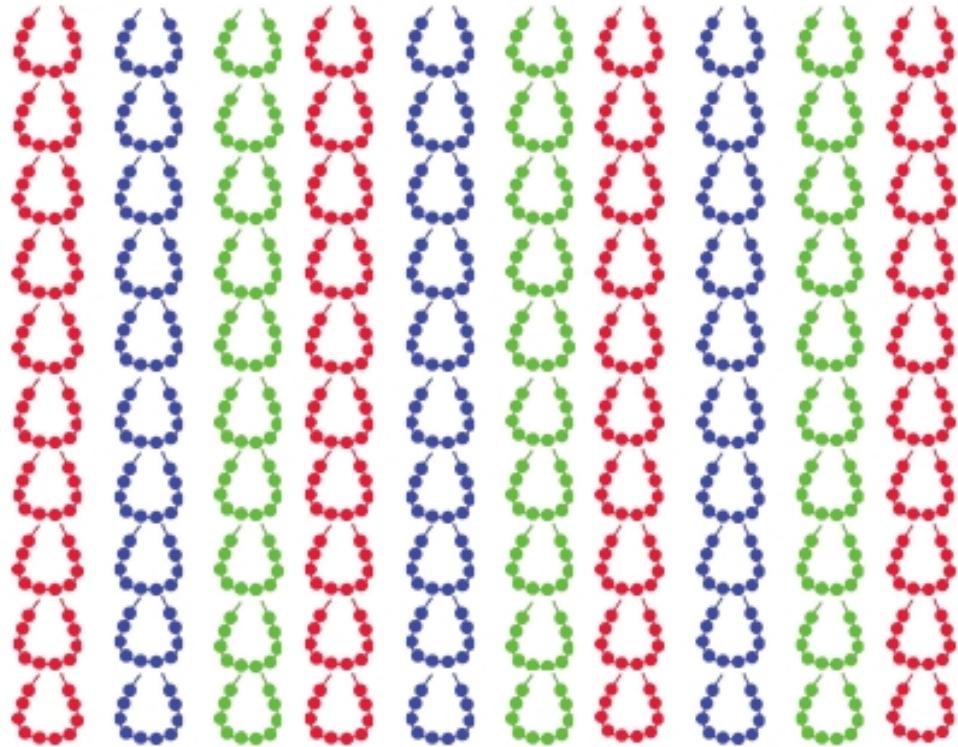
✍ **For teachers :** Give children the opportunity to grasp well the meaning of 'the expanded form' of a number and the 'place value' of a digit by making paper strips for many different three-digit numbers.

TH	H	T	U
1	1	1	
	9	9	9
	+		1
	10	10	10
1	0	0	0

We get 100 when we add 99 and 1 (99 + 1 = 100). Now let us add 1 to 999 in vertical arrangement. 9 units + 1 unit make 10 units. That makes 1 ten, which is carried over. Now, 9 tens and 1 ten make 10 tens which is 1 hundred. 9 hundreds and 1 hundred make 10 hundreds. This again gives us a 1 which has to be carried over. So, we make a new place for this carried over 1. This is the 'Thousands' place. In the number 1000, there is 1 in the thousands place and there are zeros in all other places. This number is read as 'one thousand'.

10 beads in 1 string, then, 1000 beads in 100 such strings.
Hence, 100 tens also make 1000.

Addition without Carrying Over

Tony has 3 purses each containing 100 beads.

Sonu has 5 such purses. How many purses altogether ? 8 purses.

How many beads altogether in the purses with Tony and Sonu ? 800 beads.

✦ If Tony has 2 hundred-rupee notes, 1 ten-rupee note and 5 one-rupee coins and Sonu has 1 hundred-rupee note, 3 ten-rupee notes and 2 one-rupee coins, how many hundred-rupee notes do they have altogether ? How many ten-rupee notes and how many 1 rupee coins do they have altogether ?

✦ Observe the examples based on the pictures. Complete them by adding units to units, tens to tens and hundreds to hundreds.

	1H	2T	1U
+	2H	1T	3U

H	T	U
1	2	1
+ 2	1	3

✦ Look at the pictures and write the numbers. Add the numbers.

+		H		T		U
		H		T		U
		H		T		U

H	T	U
+		

✦ **Carry out and observe the following additions.**

$$\begin{array}{r} 54 \\ +\ 20 \\ \hline \end{array}$$ **74**

$$\begin{array}{r} 20 \\ +\ 54 \\ \hline \end{array}$$ **74**

$$\begin{array}{r} 70 \\ +\ 8 \\ \hline \end{array}$$ ☐

$$\begin{array}{r} 8 \\ +\ 70 \\ \hline \end{array}$$ ☐

$$\begin{array}{r} 75 \\ +\ 13 \\ \hline \end{array}$$ ☐

$$\begin{array}{r} 13 \\ +\ 75 \\ \hline \end{array}$$ ☐

> **Even when the order of the numbers is changed, they add up to the same number.**

✦ **Add.**

❖ 376 + 2

H	T	U
3	7	6
+		2
3	7	8

❖ 403 + 64

H	T	U

❖ 125 + 144

H	T	U

❖ 513 + 365

H	T	U

❖ 142 + 6

❖ 205 + 4

❖ 540 + 35
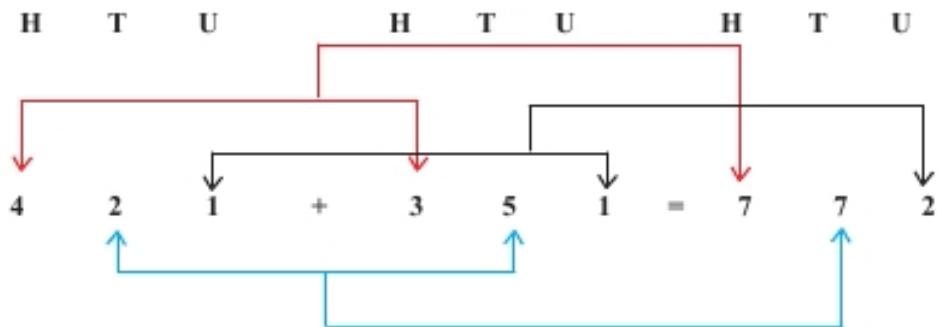
❖ 20 + 436

✦ **Arrange vertically and add.**

❖ 664 + 220 ❖ 421 + 351 ❖ 713 + 205 ❖ 122 + 324 ❖ 207 + 102

❖ 270 + 312 ❖ 450 + 230 ❖ 541 + 320 ❖ 400 + 300 ❖ 22 + 342

✦ **Study the following addition carried out in the horizontal arrangement.**

H	T	U		H	T	U		H	T	U
4	2	1	+	3	5	1	=	7	7	2

✦ **Add in horizontal arrangement.** ❖ 527 + 261 ❖ 623 + 215 ❖ 203 + 302

✦ Add.

Maya bought an eraser for 2 rupees, a pencil for 3 rupees and some coloured chalks for 4 rupees. How much should she pay the shopkeeper altogether ?

$2 + 3 = 5$

₹ 2 for the eraser and ₹ 3 for the pencil together make ₹ 5. When we add the ₹ 4 for the chalks to these ₹ 5, we will get ₹ 9.

Thus, ₹ 2 + ₹ 3 + ₹ 4 = ₹ 9. So, Maya should give the shopkeeper 9 rupees.

	U	
+	2	2 and 3 make 5.
+	3	
	4	5 and 4 make 9.
	9	

✦ In the cupboard, there are 3 song books, 21 story-books and 14 picture books. How many books are there in the cupboard altogether ?

21 + 14 + 3 = 38

There are 38 books in the cupboard.

	T	U
	2	1
+	1	4
+		3
	3	8

✦ Add.

❖
T	U
2	5
+ 3	0
+ 3	2

❖
T	U
2	1
+ 1	5
+ 1	2

❖
T	U
5	0
+	2
+	3

❖
T	U
2	5
+ 1	2
+	1

❖ 453 + 104 + 112   ❖ 105 + 3 + 20   ❖ 202 + 34 + 11

H	T	U
4	5	3
+ 1	0	4
+ 1	1	2

❖ 200 + 10 + 1
❖ 352 + 313 + 21
❖ 303 + 444 + 122

❖ 143 + 2 + 2
❖ 451 + 224 + 112
❖ 5 + 12 + 372

❖ 3 + 42 + 233
❖ 104 + 2 + 3
❖ 400 + 40 + 4

21
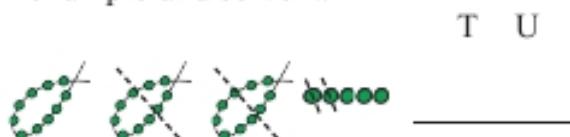
Subtraction without Borrowing

✦ Look at the picture.
Study the example.

```
    T  U
    2  3
 -  1  2
 ────────
    1  1
```

✦ Look at the picture, arrange the
example and solve it.

```
T  U

_____
```

✦

```
   H  T  U
   2  1  3    First subtract the units from the units.
 - 1  1  1    Then subtract the tens from the tens.
 ──────────
   1  0  2    Last, the hundreds from the hundreds.
```

✦ Ajit has 257 rupees. Use the picture below and work out how much money he
had left over after he gave 150 rupees to Manoj.

✦ In a cricket match, England scored 245 runs. India scored 123. How many more
runs must India make to equal England's score ?

In order to equal England's score, India must score
a total of 245 runs. So, we have to find out how many
runs they must score after 123 to make a total of 245.

That is, 123 + ☐ = 245. We must find out the missing
number in this. We shall get it by subtracting 123 from
245.

	H	T	U
	2	4	5
−	1	2	3
	1	2	2

✦ **Subtract.**

❖

H	T	U
5	4	5
−		2
5	4	3

❖

H	T	U
7	4	9
− 4	3	8

❖

H	T	U
8	5	3
− 2	0	2

❖

H	T	U
2	3	7
− 1	1	4

❖

H	T	U
3	6	6
−		3

❖

H	T	U
4	5	5
−	3	5

❖

H	T	U
4	5	8
−	4	4

❖

H	T	U
8	9	9
− 5	2	3

❖

H	T	U
9	5	5
− 4	1	5

✦ **Arrange vertically and subtract.**

❖ 654 − 200

H	T	U
6	5	4
− 2	0	0

❖ 674 − 242

❖ 772 − 341

✦ **Subtract the smaller number from the bigger number.**

❖ 315, 517

❖ 470, 340

❖ 300, 700

Subtraction in horizontal arrangement.

H T U   H T U
3 4 5 − 2 4 3 = 102

Subtract the units from the units, the tens from the tens and the hundreds from the hundreds.

✦ **Subtract in horizontal arrangement.**

417 − 305,   504 − 201,   779 − 250,   420 − 220

Multiplication

The children made a bunch of flowers to give to Tai on Teachers' Day. Tony, Sonu, Salma, John and Nandu each brought 2 flowers and Sonu tied them together.

Tai : Lovely ! What a big bunch of flowers ! And so pretty !
How many flowers are there in it altogether ?
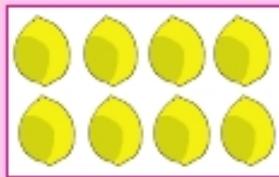
Tony : Two flowers from each of the five of us makes a total of ten flowers.

John : 2 flowers each from 5 of us means taking 2, 5 times and adding them together. That is, **2 + 2 + 2 + 2 + 2 = 10.**
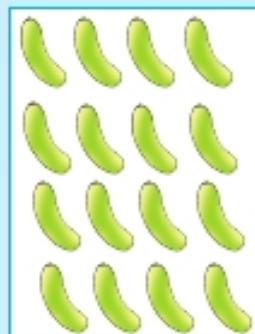
Tai : 2 + 2 + 2 + 2 + 2 is written as 2 × 5.
10 is called the product of 2 and 5.
Now, here are some pictures. Let us count the number of fruits in them.

Sonu : 4 lemons in each row and two such rows.
Twice 4 is 8 lemons.
Twice 4 is taking 4, 2 times and adding them.
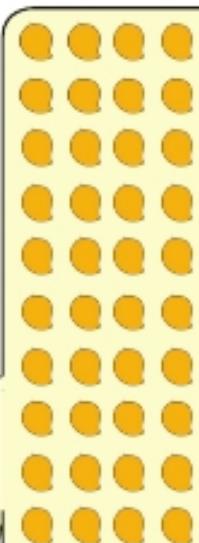
Tony : 4 cucumbers in a row and four such rows.
4 times 4, so, 16 cucumbers.

Salma : 4 guavas in a row and three such rows is 3 times 4 which is 12.

John : 4 mangoes in a row and 10 such rows.
10 times 4, or 40 mangoes.

❖

Tony   **Sonu**   **Nandu**   **Salma**

If each of them has 3 balls, how many balls altogether ?

$3 + 3 + 3 + 3 = 12$

An addition of 3 taken 4 times, is 4 times 3,

That is, $4 \times 3 = 12$ (4 threes are 12).

❖ In the same way, fill in the boxes in the example below.

Six mangoes in each basket. How many mangoes in 3 baskets ?

$6 + 6 + 6 =$ means ☐ times 6. In other words, $6 \times$ ☐ $=$ ☐

❖ Children are standing in 7 groups of 3 children each. How many children are there altogether ?

☐ times three, three sevens $=$ ☐ , $3 \times$ ☐ $=$ ☐

◆ Look at the picture and prepare an example like the one given above.

❖ One notebook costs ₹ 5. How much will 9 such notebooks cost ?

An addition of 5 taken 9 times means 5×9.
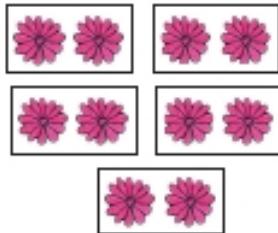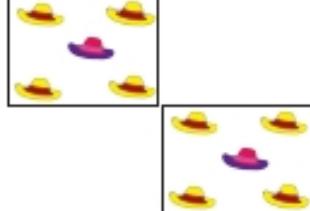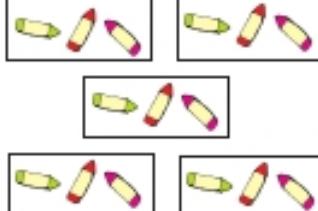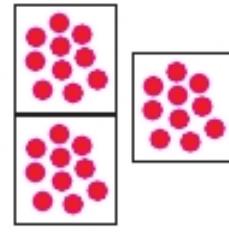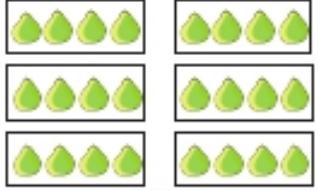
$5 \times 9 = 45$.

Hence, the cost of 9 notebooks is ₹ 45.

Tai : Tables are nothing but series of multiplications. Later on, we shall use tables to carry out multiplications of large numbers.

Let us recite the 2, 3, 4, 5 and 10 times tables.

Multiplication

In the form of objects	As an addition	How many times	As a multi-plication	Total number of objects
	2 + 2 + 2 + 2 + 2	2, five times	5 × 2	10
	5 + 5	... , twice	... × ...	
	... + ... + ... + ... + ...	..., five times	... × ...	
	....	ten, three times	... × ...	....
	....	four, six times	... × ...	....
	....	....	... × ...	....

6 times table

	6, once	$6 \times 1 = 6$ 6 ones are 6
	6, twice	$6 \times 2 = 12$ 6 twos are 12
	6, thrice	$6 \times 3 = 18$ 6 threes are 18
	6, four times	$6 \times 4 = 24$ 6 fours are 24
	6, five times	$6 \times 5 = 30$ 6 fives are 30
	6, six times	$6 \times 6 = 36$ 6 sixes are 36
	6, seven times	$6 \times 7 = 42$ 6 sevens are 42
	6, eight times	$6 \times 8 = 48$ 6 eights are 48
	6, nine times	$6 \times 9 = 54$ 6 nines are 54
	6, ten times	$6 \times 10 = 60$ 6 tens are 60

Multiplication tables of 7, 8 and 9

Let us make the 7, 8 and 9 times tables like the 6 times table.

7 × 1 =	7		8 × 1 =	8		9 × 1 =	9	
7 × 2 =	14		8 × 2 =	16		9 × 2 =	18	
7 × 3 =	21		8 × 3 =	24		9 × 3 =	27	
7 × 4 =	28		8 × 4 =	32		9 × 4 =	36	
7 × 5 =	35		8 × 5 =	40		9 × 5 =	45	
7 × 6 =	42		8 × 6 =	48		9 × 6 =	54	
7 × 7 =	49		8 × 7 =	56		9 × 7 =	63	
7 × 8 =	56		8 × 8 =	64		9 × 8 =	72	
7 × 9 =	63		8 × 9 =	72		9 × 9 =	81	
7 × 10 =	70		8 × 10 =	80		9 × 10 =	90	

Making a multiplication table with the help of addition

Tai : To make the 6 times table, we take 6 in two parts. As, 6 = 4 + 2. Now we take the 4 and 2 times tables and add them to get the 6 times table.

Tony : Just as we can make the 6 times table using the tables of 4 and 2, we can make it using the tables of 5 and 1, too.

Tai : That's right. We can make a new table using two tables that we already know.

Tony : So we can make the 7 times table with the help of the 4 and 3 times tables.

4 times table	2 times table	Addition	6 times table
4	2	4 + 2 = 6	6 × 1 = 6
8	4	8 + 4 = 12	6 × 2 = 12
12	6	12 + 6 = 18	6 × 3 = 18
16	8	16 + 8 = 24	6 × 4 = 24
20	10	20 + 10 = 30	6 × 5 = 30
24	12	24 + 12 = 36	6 × 6 = 36
28	14	28 + 14 = 42	6 × 7 = 42
32	16	32 + 16 = 48	6 × 8 = 48
36	18	36 + 18 = 54	6 × 9 = 54
40	20	40 + 20 = 60	6 × 10 = 60

✍ **For teachers :** Have the children make the 8 and 9 times tables with the help of two other tables. Point out that tables can also be made by subtracting one table from the other.

09
18
27
36
45
54
63
72
81
90

Tai : Come, I'll tell you something about the 9 times table.
Write the numbers in reverse order – 9, 8, 7 ... up to 0 in the units place. Now, in the tens place before them, write 0, 1, 2, ... 9 in serial order. And look, we have the 9 times table all ready !
Isn't that wonderful ?

Sonu : Wow ! I can see something else. If we add the digits in the units and tens places in each number, we always get nine ! Now, that's interesting, too.

◆ **The multiplication 5 × 3 = 15 has been shown in the table below.**
Fill in the right numbers in the empty boxes.

×	1	2	③	4	5	6	7	8	9	10
1	1	2	3	4	5	6	7	8	9	10
2	2	4	6	8	10					
3	3	6	9							
4	4	8		16						
⑤	5	10	15	20	25					
6						36				
7							49			
8								64		
9									81	
10	10									100

✎ **For teachers** : Get each child to prepare his/her own table of the numbers 1 to 100. Ask each child to choose one multiplication table between 2 and 10, then colour the numbers which appear in that table, and observe the pattern that is formed.

✦ **Carry out the following multiplications.**

$$\times \begin{matrix} 3 \\ 6 \end{matrix} \qquad \times \begin{matrix} 5 \\ 3 \end{matrix} \qquad \times \begin{matrix} 7 \\ 5 \end{matrix} \qquad \times \begin{matrix} 8 \\ 3 \end{matrix} \qquad \times \begin{matrix} 6 \\ 4 \end{matrix} \qquad \times \begin{matrix} 7 \\ 8 \end{matrix}$$

☐ ☐ ☐ ☐ ☐ ☐
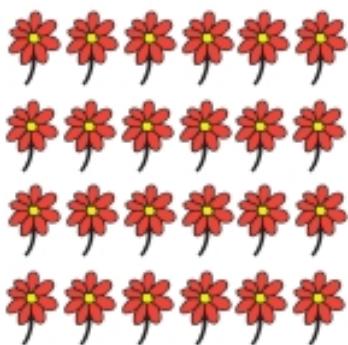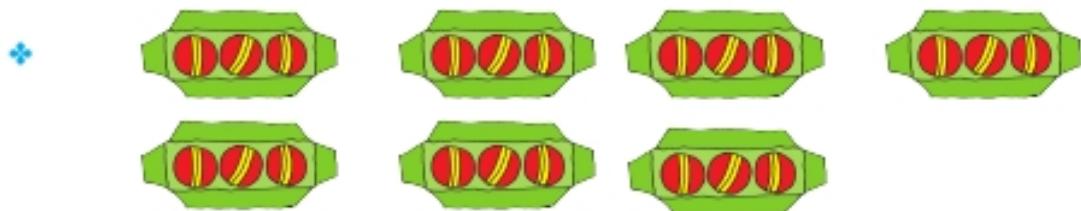
✦ From the pictures given below, make examples of multiplication and solve them.

❖ The example made from the following picture :
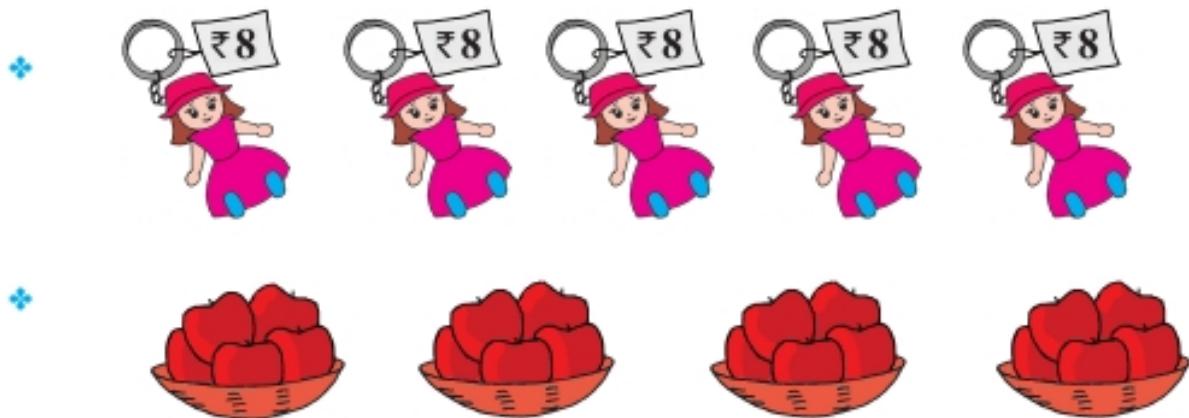
There are 6 flowers in each row.
How many flowers in 4 such rows ?

☐ Flowers in one row

× ☐ Number of rows

☐ Total number of flowers

❖

☐ balls in one box. Then in ☐ boxes, ☐ balls in all.

❖

❖

✎ **For teachers** : Get the children to prepare new examples using 2 one-digit numbers and to solve them.

30

❖ On his birthday, Chintu bought 6 pens at ₹ 5 per pen. How much must he pay the shopkeeper for them ?

⟶ To find out the total cost, we must say the 5 times table up to 5 sixes.

5 sixes are thirty, that is   5 × 6 = 30

So Chintu must pay ₹ 30 altogether.

6	Pens
× 5	Cost of one pen
30	Total cost

❖ How many trees in 5 rows if there are 8 trees in one row ?

⟶ Rows 5, trees in each row 8
Operation : Multiplication
We shall use the 8 times table.
Eight fives are forty .
Total trees = 40.

5	Rows
× 8	Trees in each row
40	Total number of trees

❖ If 9 laddoos can be put in one box, how many can be put in 7 such boxes ?

Operation : Multiplication
We shall say the 9 times table.
Nine sevens are ☐

7	Boxes
× 9	Laddoos in one box
☐	Total number of laddoos

❖ 7 days in one week, so how many days in 4 weeks ?

⟶ Say the 7 times table.
Seven fours ☐

4	Weeks
× 7	Days in one week
☐	Total days

❖ 8 tiles in one row, how many in 3 rows ?

8	Tiles in a row
× 3	Rows
☐	Total number of tiles

3	Rows
× 8	Tiles in a row
☐	Total number of tiles

❖ One guava costs ₹ 6.
How much money will be needed to buy one guava for each of the four friends Tony, Sonu, Nandu and Salma ?
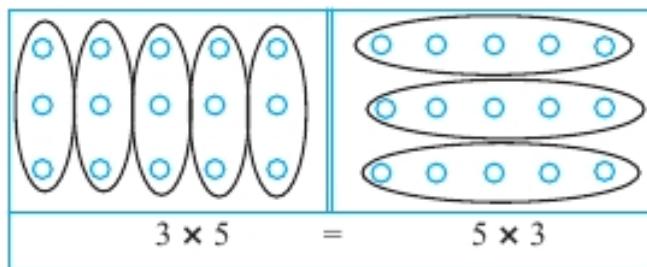
6	Cost of one guava
× 4	Number of children
☐	Rupees in all

Properties of Multiplication

$$3 \times 5 \quad = \quad 5 \times 3$$

$$\begin{array}{r} 3 \\ \times\ 5 \\ \hline \end{array} \qquad \begin{array}{r} 5 \\ \times\ 3 \\ \hline \end{array}$$

✦ **Carry out the following multiplications and observe.**

$6 \times 5 =$ ☐ $\quad$ $8 \times 3 =$ ☐ $\quad$ $7 \times 6 =$ ☐ $\quad$ $9 \times 2 =$ ☐
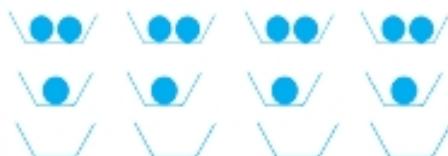
$5 \times 6 =$ ☐ $\quad$ $3 \times 8 =$ ☐ $\quad$ $6 \times 7 =$ ☐ $\quad$ $2 \times 9 =$ ☐

The product of two numbers remains the same even if their order is changed.

For example : $6 \times 5 = 5 \times 6$; $8 \times 3 = 3 \times 8$; $7 \times 6 = 6 \times 7$; $9 \times 2 = 2 \times 9$

✦ **The multiplicative property of zero**

$2 + 2 + 2 + 2$ is the same as $2 \times 4 = 8$

$1 + 1 + 1 + 1$ is the same as $1 \times 4 = 4$

$0 + 0 + 0 + 0$ is the same as $0 \times 4 = 0$

When we multiply 'zero' by any number or when we multiply any number by 'zero', the product is always 'zero'. $0 \times 4 = 4 \times 0 = 0$

✦ **Carry out the following multiplications.**

$2 \times 4 =$ ☐ $= 4 \times 2$ $\quad$ $7 \times 0 =$ ☐ $= 0 \times 7$ $\quad$ $9 \times 8 =$ ☐ $= 8 \times 9$

$7 \times 3 =$ ☐ $= 3 \times 7$ $\quad$ $8 \times 0 =$ ☐ $= 0 \times 8$ $\quad$ $6 \times 3 =$ ☐ $= 3 \times 6$

◼ **Multiplicand, multiplier, product**

6	Multiplicand	
× 5	Multiplier	
30	Product	

5	Multiplicand
× 6	Multiplier
30	Product

Tai : In the multiplication 6×5 we multiply the first number 6. It is the multiplicand. We multiply by the second number, 5. It is the multiplier. The answer is 30. It is known as the product.

Similarly, in the multiplication 5×6, 5 is the multiplicand, 6 is the multiplier and 30 is the product.

Coins and Currency Notes

✦ **Look at the pictures of the currency notes given below. Write their values in the boxes.**

The value of this note is [   ] rupees.   The value of this note is [   ] rupees.

This note has a value of ₹ [   ].

The value of this coin is ₹ [   ].

This coin has a value of ₹ [   ].

✦ **Write the total amount (value) in the empty boxes.**

❖   **650** rupees

❖   [   ] rupees

❖   [   ] rupees

Tony : I have 3 notes. Their total value is 75 rupees.

Salma : I, too, have 75 rupees. But I have 5 notes.

Tony : How can that be ?

Tony has these notes.

Total

☐ rupees

And Salma has these notes.

Total

☐ rupees

It means that both Tony and Salma are right.

Sanju : I have a hundred-rupee note, 4 notes of 20 rupees, 6 coins of 1 rupee each. How much money do I have ?

Raju : You have 186 rupees altogether.

Anita : I have 4 notes. They are worth 170 rupees altogether. Can you guess which notes I have ?

| ₹ 100 | ₹ 50 | ₹ 10 | ₹ 10 |

✦ Can we give ₹ 170 using 4 notes in any other way ?

| ☐ | ☐ | ☐ | ☐ |
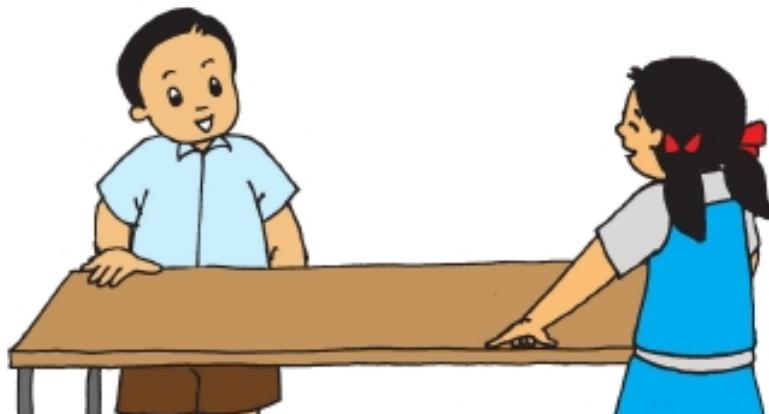
✎ **For teachers :** Get the children to make mock currency notes by writing numbers on cards and use them to conduct games.

Length

Tai told Nandu and Sonu to measure the length of the table.

Nandu : The length of this table is 11 spans of my hand.

Sonu : The length of the table measures 12 spans of my hand.

Salma : Both of you used your hand spans. Then why is there a difference in your measurement ?

Tony : Are their hand spans equal ?

Nandu : Mine is bigger than Sonu's. That's what caused the problem.

Tai : All right. I'll give paper strips of equal length to both of you. Use them to measure this length.

Nandu : The length of the table is 9 of these strips.

Sonu : When I measured it, it was 9 strips, too.
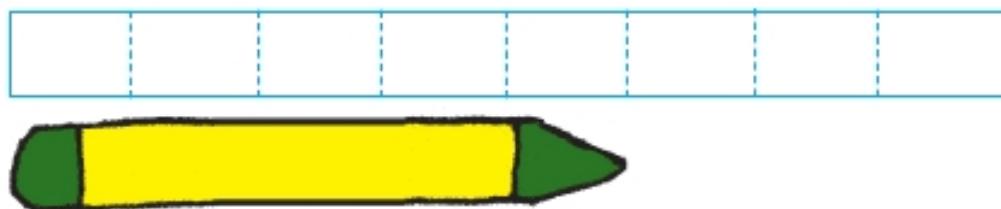
Nandu : The strips you gave us were of equal length. That's why the length of the table measured the same.

Salma : So, if we measure the length of something using similar means, it measures the same.

Sonu : If I have to measure a chalkstick, can I use this strip ? This strip is longer than the chalkstick.

Tai : We will fold this paper strip to make equal parts. These small parts will be useful for measuring the piece of chalk.

Tony : Let's fold the strip three times and get 8 equal parts.

Salma : I'll place the chalk along the paper strip.
This chalk is equal in length to five of these small parts.

Nandu : Now, shall we use this strip to measure the distance between the two posts of the main gate ?

Salma : No, this strip is too short.
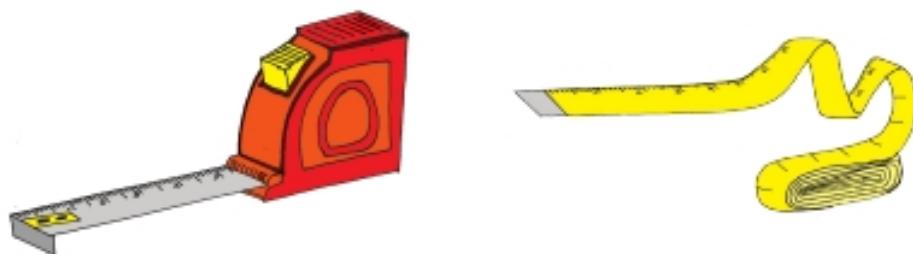
Tai : I have a long string. Let's use that.

Nandu : Yes, let's use the string to measure the distance between the gate posts.

Tony : The distance between the gate posts is equal to three strings.

Tai : It's easier to measure a great distance using something of greater length. And, to measure shorter lengths, it is easier to use a shorter thing. You have seen that for yourselves, haven't you ?

Tai : A sheet of cloth must measure the same, no matter who measures it. That is why a long metal scale is used to measure cloth in a cloth shop.

This scale is one metre long. The metre is a standard unit which is used for measuring length. If we divide a metre into 100 equal parts, each part is called a centimetre.

<div style="text-align:center">

1 metre = 100 centimetres

</div>

Salma : We measured the distance between the gate posts with a string. Now let's use this metre scale and measure it again in metres and centimetres.

Nandu : The distance between the posts is 3 metres and 80 centimetres.

Tony : My big brother uses a small ruler from his compass box to measure short distances.

Tai : The numbers 1, 2, 3, 4, ... written beside the bigger markings on this ruler show centimetres. Between two big markings there are smaller markings. They show units of length smaller than centimetres.
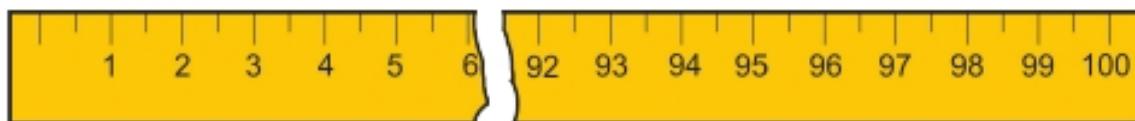
Nandu : Let's use this standard scale to measure the chalkstick again.

Salma : The chalk is 8 centimetres long.

A metre is hundred times as long as a centimetre. We use the standard unit metre to measure bigger distances.

A metre scale

✦ In the table, write whether you will measure the following lengths/distances in centimetres or metres.

Length of a pencil		Length of your notebook	
Distance between two buildings		Length of a mobile phone	
Width of a road		Distance between two poles	

✦ Measure the following distances in standard units. Get your friends to do so too. Compare your observations. And measure again if there is a difference.

  ❖ Length of the school compound wall   ❖ Length of a book
  ❖ Length of a newspaper   ❖ Length of a table
  ❖ Length of the verandah   ❖ Height of a table above the floor

✦ **Find out the lengths of the following.**

  ❖ A sari   ❖ Cloth required to make Father's shirt
  ❖ A dupatta   ❖ A towel   ❖ A handkerchief

✦ Make an estimate of the measures of the following things. Then check your estimate against an actual measurement.
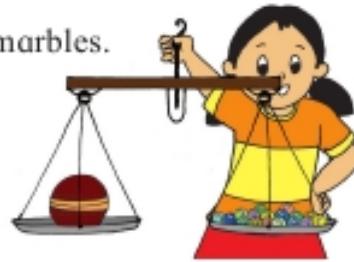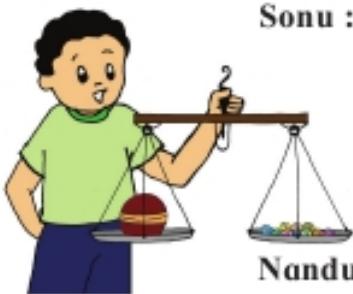
Name	Estimate	Actual measurement using tape/scale
Length of a ladyfinger		
Length of a cluster bean (guar) pod		
Height of a jowar plant		
The girth of a banyan tree trunk		
Distance between two trees in your school		

✎ **For teachers :** Fix a strip showing metres and centimetres on a wall of the classroom. Let the children measure each other's height against it.

Sonu : The weight of this ball is 17 marbles.

Nandu : The same ball weighs 10 of my marbles.

Salma : How is that possible ? How can the same ball have different weights ?

Tony : The marbles that Sonu brought were smaller than the marbles that Nandu brought. That's the reason for this confusion.

Tai : That's the reason why shops keep weights which are the standard units for measuring weight.

> **If something is weighed using standard weights, it measures the same no matter who does the weighing.**
> **The kilogram is a standard unit for measuring weight.**

I want 1 kilogram of sugar.

I want 5 kilograms wheat.

Please give me 2 kilograms of jowar.

Make a guess about the weight of the given things : Is it greater than or less than 1 kilogram ? Then go to a shop and check if you guessed right.

Things	Estimated weight : 1 kg/ more than 1 kg/less than 1 kg	Actual weight
A packet of salt		
One big lump of jaggery		
50 biscuits		
5 cups of sugar		

Tony : My mother wanted half a kilogram of sugar to make some *halwa*. And we had a bag of one kilogram of sugar.

Salma : Then what did you do ?

Tony : Little by little, I put all the 1 kg sugar in the two pans of the balance and brought them at the same level. In this way, I separated the sugar into two equal parts. Thus, each pan held half a kilogram of sugar. This is how I gave my mother half a kilogram of sugar.

Salma : My mother also often needs half a kilogram of something or the other.

Tony : I'll make a half-kilogram measure for your mother. I'll put the left over half a kilogram of sugar in one pan and some small stones in the other to balance the sugar. I'll tie those stones in a handkerchief and that'll be a half-kilogram measure.

Salma : We could even make a quarter kilogram measure in the same way !

✦ **Use a 1 kilogram weight and a balance to measure out the following weights of rice/wheat/jowar.**
   ❖ 2 kilograms   ❖ 5 kilograms   ❖ 3 kilograms   ❖ Half a kilogram

✦ **Find out your own weight. Also find out by how much it is more or less than the weight of one of your classmates.**

✦ **Find out about various kinds of balances and use them yourself.**
   For example :
   ❖ The spring balance   ❖ Electronic balance/scales   ❖ The common balance
   ❖ Scales for body weight.

Measurement - Volume and Capacity

These are some vessels full of water. Observe them and tell which ones can hold more water and which ones, less.

The bucket will hold the most water and the bowl the least.

This bucket became full when 40 glasses of water were poured into it.

This bucket became full with 10 pitchers of water.

The same amount of water measures different because different means were used to measure it.

No matter who fills water in the bucket, it should measure the same. For that, we must use a standard measure.

This is a measure of 1 litre. The milkman keeps this.

It is used to measure out liquids such as milk and oil.

We can easily get a one-litre water bottle.

1 *l*

1 *l*

The picture alongside shows a measure used especially for kerosene.

The litre is a standard unit for measuring liquids.

❖ Take various vessels such as a pitcher, a box, a pan, etc. and make an estimate of how much water they can hold —1 litre / less than 1 litre / more than 1 litre. Verify your guess by actually using a one-litre bottle.

Pour 3 litres of water into each of the above containers. The water will take a different shape in each container because each container is of a different shape. But the volume of water in each container is 3 litres.

Five 1-litre bottles of water were poured into this bucket. The volume of the water in the bucket is 5 litres.

Find out how much more water can be added to fill this bucket completely.

This bucket can hold 12 litres of water. It means that the capacity of this bucket is 12 litres.

> **The amount of water that is needed to fill any container such as a pot, a bucket, a drum, or a pan is called the capacity of the container.**

✦ Take a bottle with a quarter-litre capacity. Using this as a measure, mark the following measures on a container.
  - ❖ 2 litres
  - ❖ Half a litre
  - ❖ One and a half litre
  - ❖ A quarter litre

✦ Note how many litres of water you use for the following purposes in your house.
  - ❖ Bathing
  - ❖ Washing kitchen utensils
  - ❖ Brushing teeth
  - ❖ Mopping the floors
  - ❖ Drinking
  - ❖ Watering the garden
  - ❖ Cooking
  - ❖ Making 10 cups of tea
  - ❖ Washing vehicles

✦ Make a list of all those places where water is wasted. Make an estimate of how much water is wasted and suggest ways of reducing the wastage.

No.	Place	Approximate amount of wastage	Remedy

Patterns

✦ **Note the pattern in the sequence of letters below.**

A	B	A	B	A	B	A	B	A	B

A	A	B	A	A	B	A	A	B

✦ **Look at the patterns below. Which one is like ABAB, which one like AAB AAB and which one like ABC ABC ?**

✦ **In the boxes below, make a pattern of your own like AAB AAB.**
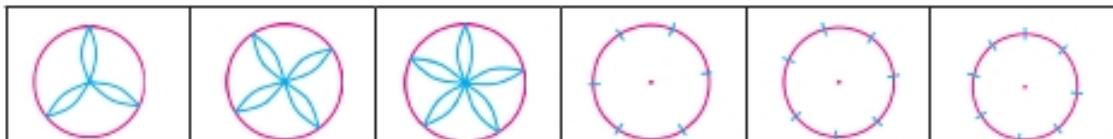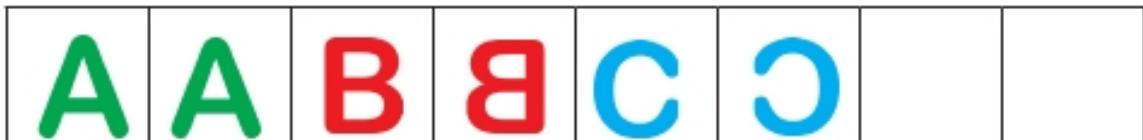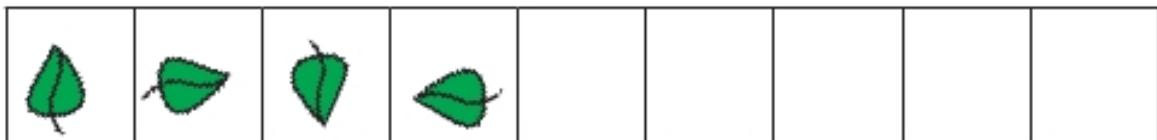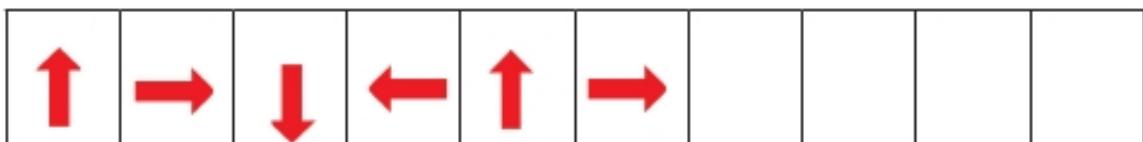
✦ **In the patterns given below, draw the pictures which follow.**

✤ * * * # * * # * * # ....

✤ * * * # # * * # # * * # # ....
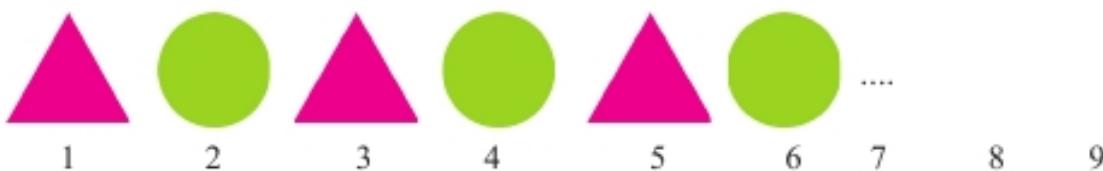
| 1×1= 1 | 2×2= 4 | 3×3= 9 | .... | .... | 6×6=36 | | |

| 5 | 10 | 15 | | 30 | | | | |

| 2 | 9 | 16 | | 30 | | 44 | | |

Make a pattern of your own.

44

✦ In the pattern given below, each figure has been given a number.

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

In the pattern above, at which serial numbers are the triangles ?

At which serial numbers are the circles ?

The third figure is a triangle. The sixth figure is a .... The eighth will be a .... The eleventh will be a ...., the fifteenth will be a ...., the twentieth will be a .... and the twenty-fifth will be a ....

✦ In the sequence of figures in the table below, draw the next figure and write the number of marbles.

The serial number of the figure	1	2	3	4	5	6
Arrangement of marbles	•	⣿	⣿	⣿		
Number of marbles	1	3				

There are ..... marbles in the third figure. There are ..... marbles in the fourth figure.

✦ Can you tell how many marbles there will be in the seventh figure without drawing it ? Write down your answer. Now draw the figure and check your answer.

How many marbles will there be in the tenth figure ?

Tony : Hey, look what I found in this calendar! Another pattern. If we add these three numbers in a row, we get 27. And the sum of these three numbers in the middle column is 27 too.
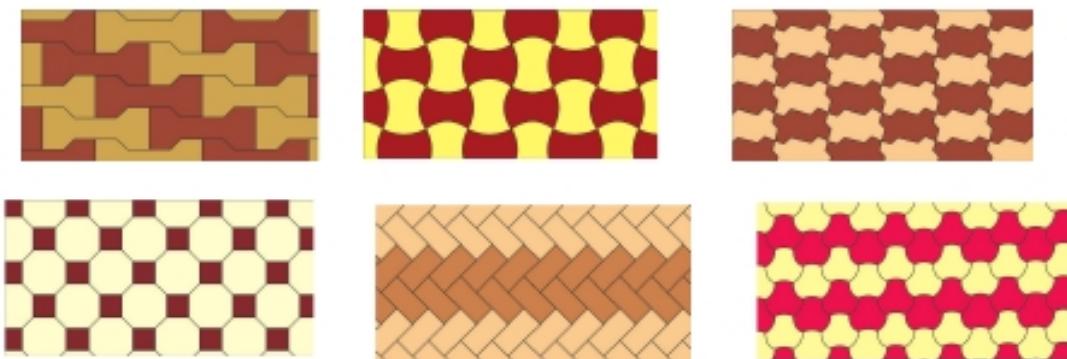
Sonu : These three numbers, crosswise, also add up to 27 !

Salma: Look at the 3 numbers in the three rows in the box on the left. In it, the three numbers in the middle column, those in the middle row and the crosswise ones all add up to the same number.
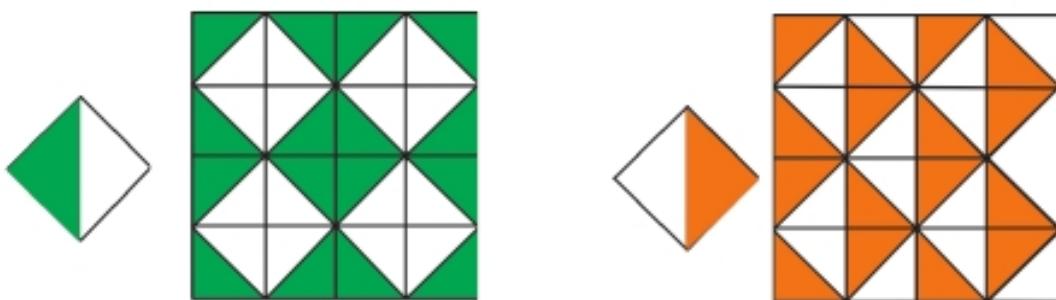
SUN	MON	TUE	WED	THU	FRI	SAT
			1	2	3	4
5	6	7	8	9	10	11
12	13	14	15	16	17	18
19	20	21	22	23	24	25
26	27	28	29	30	31	

✎ **For teachers :** Encourage the children to find more patterns in the numbers on one page of the calendar.

45
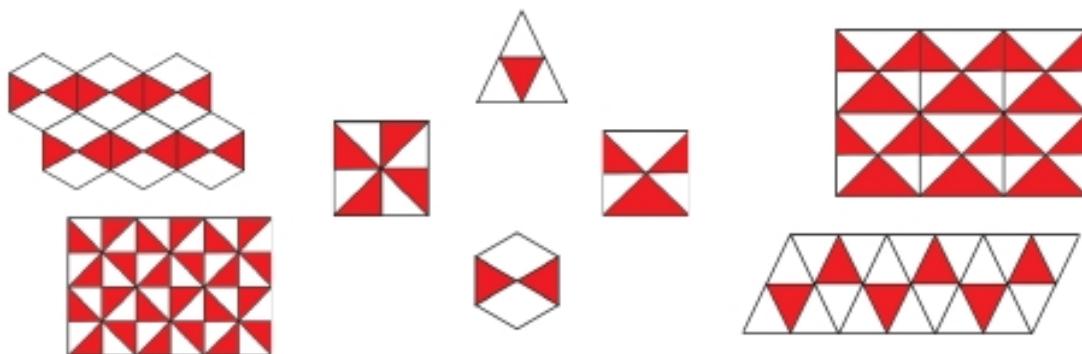
✦ Observe the patterns in the arrangements of tiles shown below. The tiles have been arranged in a particular manner. Note that there is no empty space between any two tiles. In other words, no part of the ground is left uncovered.

✦ Observe the patterns below, which have been made using tiles of only one kind. Try to make another pattern using the same tiles.

✦ Observe the patterns carefully. Match the tiles and the patterns they make.

✎ **For teachers :** Tell the children to observe the patterns made from tiles in their surroundings. Discuss their special features. Visit an agricultural field and try to spot a pattern in which the crops have been planted.

46

Observe the leaf shown alongside.

Take another leaf like this one, which has many veins.

In the middle, there is a vein that runs the full length of the leaf.

Fold the leaf along that vein.

What do you see?

One part of the leaf falls exactly on the other.

Fold the leaf in different ways along other veins. What do you see?
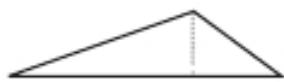
One part of the leaf does not fall exactly on the other.

Take a triangular piece of paper as shown alongside.
Fold it along the dotted line.
Does one part of the triangular piece of paper fall exactly on the other?
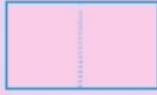
Take another triangle, as shown in the second figure, and fold it along the dotted line. Does one part of the triangle fall exactly on the other?

If the two parts of a figure made by a line fall exactly on one another, then the figure is said to be symmetrical about that line. And, if the two parts do not fall exactly on one another, then the figure is not symmetrical about that line.

✦ **Some of the following figures are symmetrical about the given dotted line, and some are not. Observe them carefully.**

Symmetrical	Not symmetrical	Symmetrical	Not symmetrical
Not symmetrical	Not symmetrical	Symmetrical	Not symmetrical
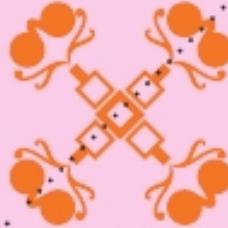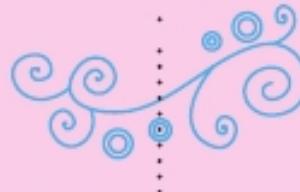
47

O A G Y Z
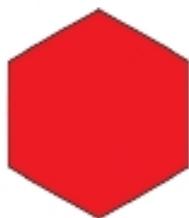
Symmetrical   Symmetrical   Not symmetrical   Symmetrical   Not symmetrical

✦ **Determine whether the figures given below are symmetrical about any line or not. Put a tick below the picture if it is symmetrical and a cross if it is not.**

2 ⬡ L X H

✦ **For each of the figures below, draw a line along which you would fold the figure to show that it is symmetrical.**

8

✦ **In each of the symmetrical figures given below, colour the two symmetrical parts in different colours.**
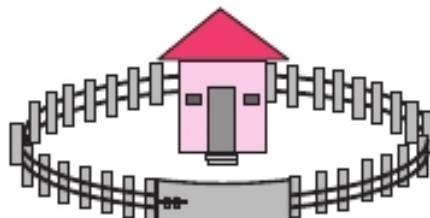
✦ **Take a square piece of paper. Examine its symmetry by folding it in different ways.**

✎ **For teachers :** Conduct an activity to let the children check the symmetry of different shapes such as an equilateral triangle, an isosceles triangle, a parallelogram, a circle.
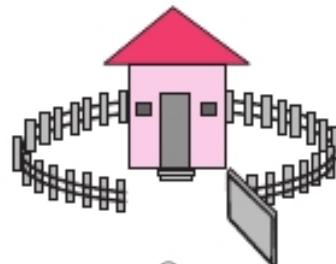
Get them also to make a collection of symmetrical pictures of animals, birds, leaves, flowers, etc.

Closed figures and open figures

Closed

Open

Some closed figures

Some open figures

Think !

◆ C ◆ A ◆ B

F

◆ P

◆ M
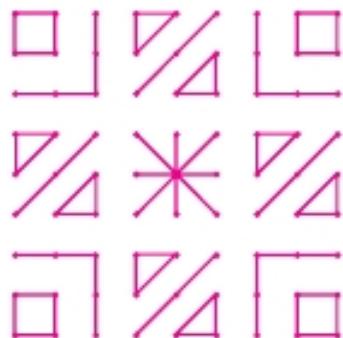
Can we join points 'A' and 'B' with a line that does not touch the given figure?

Can we join points 'B' and 'C' in the same way?
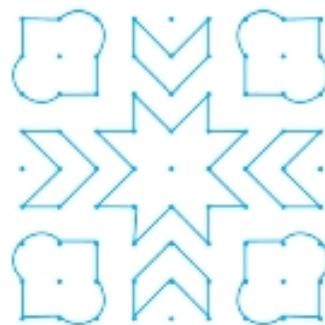
Can we join points 'P' and 'F' with a line that does not touch the given figure?

Can we join points 'P' and 'M' in the same way?

✦ **Find the open and closed figures from those given below.**

D M

✦ **Observe the closed and open figures in the *rangolis* shown here.**
Colour the *rangolis*.

49

Part Two
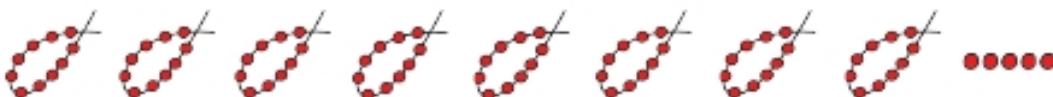
Addition by Carrying Over

Salma has 7 strings of ten and 7 single beads which make 77 beads.
Sonu has 8 strings of ten and 5 single beads. That makes 85 beads.

Salma
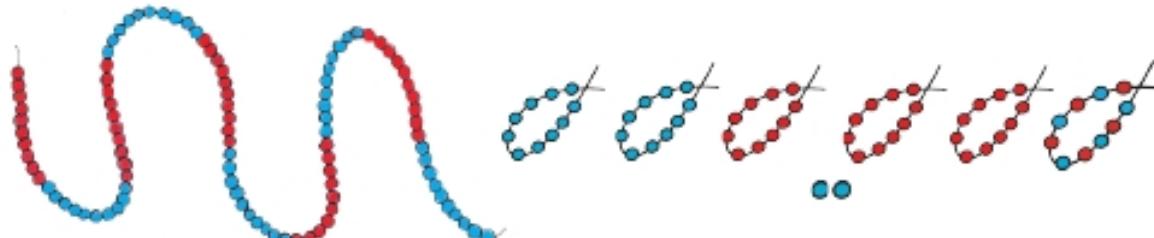
Sonu

When they put together the strings and beads that the two of them have, they got 15 strings of ten and 12 single beads.

Now, 10 units is one ten. So, they made one string of ten using 10 of the 12 single beads. So, they had two single beads left. Now, they had 16 strings of ten altogether.

10 tens make a hundred. So, they strung together 10 strings of ten and got 1 string of hundred. Then they had 6 strings of 10 left over.

Thus, on bringing together all their beads, they got 1 string of hundred, 6 strings of ten and 2 single beads. That is, they have 162 beads.

✦ **Write the proper numbers in the empty boxes.**

12 T means	1 H 2 T		1 H 2 T =	12 T
15 T means	☐ H ☐ T		1 H 4 T =	☐ T
17 T means	☐ H ☐ T		3 H 2 T =	☐ T
18 T means	☐ H ☐ T		4 H 3 T =	☐ T
21 T means	☐ H ☐ T		5 H 9 T =	☐ T
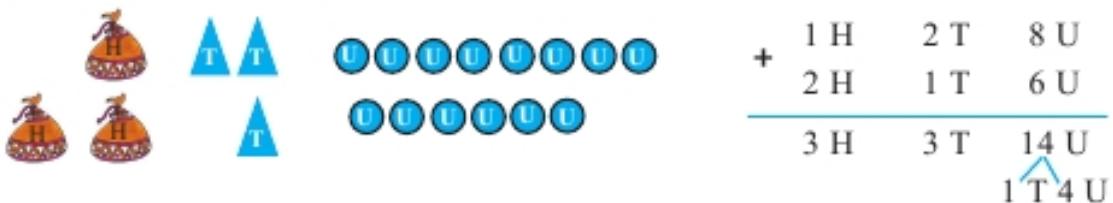
50

■ Addition by carrying over

	1 H	2 T	8 U
+	2 H	1 T	6 U
	3 H	3 T	14 U
		1 T	4 U

On adding the units, we get 14 units. 14 units make 1 ten and 4 units.
Let's take this ten to the tens place. Look at the addition now.

Carried over

	H	T	U
		1	
	1	2	8
+	2	1	6
	3	4	1 4

4 units left in the units place.
In the tens place, we add this new ten to the 2 tens and 1 ten already there. Thus, we get 4 tens. We write these under the line in the tens place. The digits in the hundreds place add up to 3. We write that in the hundreds place under the line.
Thus, the addition of the two numbers gives 3H 4T 4U that is, 344.

✦

	1 H		
	1 H	5 T	2 U
+	1 H	7 T	3 U
	3 H	1 2 T	5 U

Carried over

	H	T	U
	1		
	1	5	2
+	1	7	3
	3	1 2	5

12 tens make 1 hundred and 2 tens. We write this new 1 hundred in the hundreds place. So we have 2 left in the tens place. We add the hundreds. The earlier 2 hundreds and 1 new hundred together make 3 hundreds. So the total is 325.

✦ Study the example of addition given below.

	H	T	U
	2	6	7
+	5	3	9

	H	T	U
	1	1	
	2	6	7
+	5	3	9
	1 0	1 6	

1 H 0 T 1 T 6 U

Carried over

	H	T	U
	1	1	
	2	6	7
+	5	3	9
	8	0	6

Addition

✦ **Carry out the additions below.**

H	T	U
+1	3	5
4	7	6

H	T	U
+2	4	7
5	1	7

H	T	U
+3	4	9
2	1	9

H	T	U
+4	6	5
3	3	5

H	T	U
+3	5	6
	6	5

H	T	U
+5	4	9
	1	9

H	T	U
+7	4	2
	2	8

H	T	U
+8	5	0
	6	0

■ Look at the following examples.

H	T	U
1	1	
2	1	7
+1	6	5
+	9	4
4	7	6

Now, let us add three numbers. The method is the same.

Start with the units. The units add up to 16.

16 units is 1 ten and 6 units. Write 1 at the top of the tens place and 6 under the line in the units place. Now add the digits in the tens place. We get 17 tens. 10 tens make 1 hundred. Write the hundred at the top of the hundreds place and the 7 under the line in the tens place. Finally, add the digits in the hundreds place. The hundreds add up to 4. Write this under the line in the hundreds place. The total is 476.

✦ **Carry out the additions given below.**

H	T	U
+4	3	2
	9	4
+		5

H	T	U
+3	9	5
	6	2
+	8	4

H	T	U
+4	7	2
2	0	9
+1	4	2

H	T	U
+2	5	0
3	4	5
+	2	4

✦ **Add.**

❖
```
  1 7 2
+ 3 9 4
+ 2 3 8
-------
```

❖
```
  5 0 0
+ 2 8 0
+ 1 2 0
-------
```

❖
```
  6 4 3
+   5 7
+     6
-------
```

❖
```
  4 3 7
+ 1 2 3
+ 2 4 5
-------
```

✦ **Arrange vertically and add.**

❖ 235 + 146   ❖ 346 + 129   ❖ 536 + 236 + 19   ❖ 749 + 128

H	T	U

❖ 275 + 246   ❖ 382 + 199   ❖ 455 + 267   ❖ 545 + 165

❖ 270 + 196 + 58   ❖ 370 + 195   ❖ 307 + 245   ❖ 162 + 375

✦ **Add in horizontal arrangement.** (If you have to carry over a number, keep it in your mind.)

❖ 396 + 45   ❖ 575 + 31   ❖ 644 + 308   ❖ 647 + 56
❖ 742 + 9   ❖ 547 + 8   ❖ 609 + 8   ❖ 701 + 9
❖ 199 + 1   ❖ 299 + 1   ❖ 399 + 1   ❖ 499 + 1
❖ 599 + 1   ❖ 699 + 1   ❖ 799 + 1   ❖ 899 + 1   ❖ 999 + 1

✦ **Write such pairs of numbers which will add up to 100.**
✦ **Write such pairs of numbers which will add up to 120.**

🖉 **For teachers :** Give the children plenty of practice in doing additions.

53

Word Problems

♦ **Solve the following problems.**

❖ If 365 women and 276 men took part in the Clean Village Campaign, how many people took part altogether?

Altogether, ☐ people took part.

H	T	U	
+ 3	6	5	Women
2	7	6	Men

❖ Malatibai gifted 350 books to the school library. Vasantrao gave 400 and Jayantrao, 165. What was the total number of books gifted to the school library?

❖ If 230 gulmohur trees, 375 neem trees and 160 teak trees were planted on the hillside, how many trees were planted altogether?

❖ At the pollution testing centre, 193 two-wheeler and 297 four-wheeler vehicles were tested. What was the total number of vehicles tested for pollution?

♦ **Use the given information to prepare a word problem of addition. Solve it.**

Information : A tree planting drive, 345 boys, 275 girls.
Problem : If 345 boys and 275 girls participated in a tree planting drive, how many children took part in it altogether ?

H	T	U	
+ 3	4	5	Boys
2	7	5	Girls
			Children

Altogether, ☐ children took part in the tree planting drive.
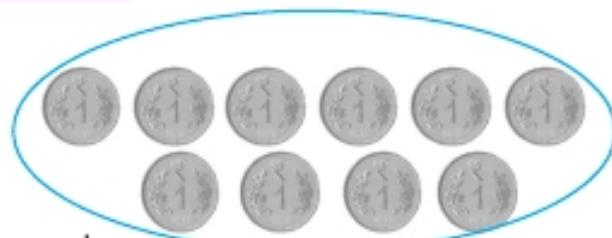
❖ Story-books 50, books of poems 75.   ❖ In the basket, 35 mangoes, 45 guavas.
❖ Cost of a dress, 275 rupees; cost of a shirt, 399 rupees.
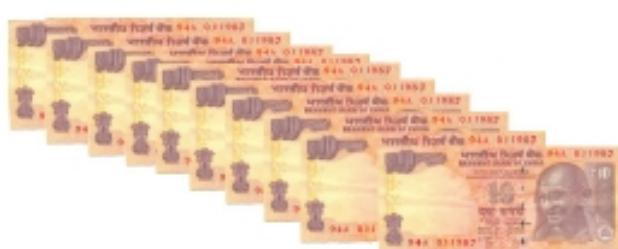
Subtraction by Borrowing

Subtraction by borrowing (Preparation)

10 rupees means 10 coins of 1 rupee each.

100 rupees means 10 notes of 10 rupees each. It also means 100 coins of 1 rupee.

If there are 10 sugarcanes in a bundle, then 10 such bundles means 100 sugarcanes.

Sonu : I have 2 notes of hundred rupees. I have to give Nandu 70 rupees.

Salma : How will you do that?

Sonu : I will exchange one hundred-rupee note for 10 ten-rupee notes.

Nandu : You could give me 7 ten-rupee notes from those.

Salma : Then Sonu will be left with 1 hundred-rupee note and 3 ten-rupee notes.

Sonu : Right. I will have 130 rupees left.
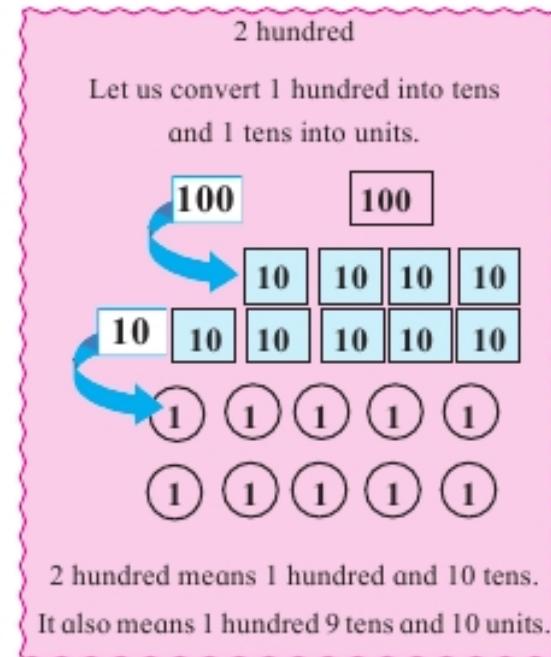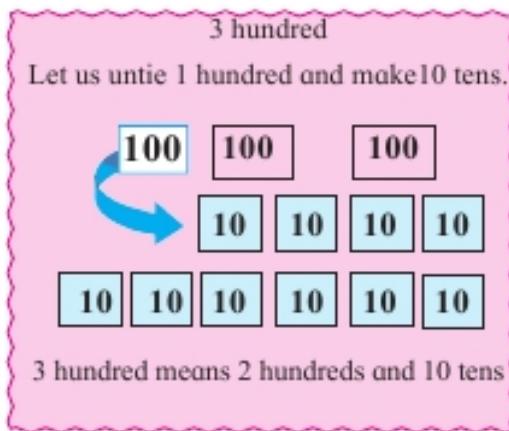
1 Hundred = 10 Tens

2 Hundreds = 1 Hundred 10 Tens.　　　4 Hundreds = 3 Hundreds 10 Tens.

3 Hundreds = 2 Hundreds 10 Tens.　　　7 Hundreds = 6 Hundreds 10 Tens.

5 Hundreds = 4 Hundreds + ☐ Tens.　　6 Hundreds = ☐ Hundreds +10 Tens.

◆ **When we subtract, sometimes we have to untie 1 hundred or 1 ten. We need to untie only one ten or one hundred, even when there are many hundreds or tens.**

3 hundred

Let us untie 1 hundred and make 10 tens.

| 100 | 100 | | 100 |

| 10 | 10 | 10 | 10 |

| 10 | 10 | 10 | 10 | 10 | 10 |

3 hundred means 2 hundreds and 10 tens

2 hundred

Let us convert 1 hundred into tens and 1 tens into units.

| 100 | | 100 |

| 10 | 10 | 10 | 10 |

| 10 | 10 | 10 | 10 | 10 | 10 |

① ① ① ① ①

① ① ① ① ①

2 hundred means 1 hundred and 10 tens.

It also means 1 hundred 9 tens and 10 units.

Subtraction : By untying a ten

◆ Study the example given below.

T	U
5	1
− 2	4

I have 51 rupees. Five 10-rupee notes and a one-rupee coin. I have to pay a shopkeeper 24 rupees.

I cannot give 4 units from 1 unit. So, I'll exchange one 10-rupee note for 10 single rupees.

T	U
4	11
− 5̸	1̸
2	4
2	7

Now I have 4 ten-rupee notes. And, these 10 single rupees along with the 1 single rupee I already had makes 11 single rupees.

I shall give 4 single rupees from the 11 single rupees. So, taking away 4 from 11, I will have 7 single rupees. Write these 7 under the units.

Now I'll subtract the tens. Subtracting 2 tens from 4, 2 tens remain.

The answer is 27. Thus, I have 27 rupees left.

◆ Subtract.

T	U
5	12
6̸	7̸
− 2	7
3	5

T	U
7	3
− 4	5

T	U
8	1
− 5	8

T	U
9	0
− 6	9

Subtraction : By untying a hundred

✦ Nandu has 5 notes of 100 rupees, 2 notes of 10 rupees and 7 coins of 1 rupee. He gave Sonu 318 rupees. How many rupees does he have now ?

H	T	U
	1	17
5	2̶	7̶
− 3	1	8
2	0	9

8 coins cannot be given out of 7 coins. So, we have to change one of the two 10-rupee notes for one rupee coins. 10 rupees from the 10-rupee note and the earlier 7 rupees. So now, we will have 17 single rupees. From these 17, we give 8. There is one 10-rupee note left. We shall give that, too. So there will not be any ten-rupee note left. We can give 3 of the 5 hundred-rupee notes.

Thus, Nandu will be left with 209 rupees.

✦ Subtract. 545 − 265

H	T	U
4	14	
5̶	4̶	5
− 2	6	5
2	8	0

545 means 5 hundreds, 4 tens and 5 units. We have to subtract 265 from that. We can subtract 5 units from 5 units, zero units remain. Now, we cannot subtract 6 tens from 4 tens, but we do have 5 hundreds. We shall untie one of them. So, 4 left in the hundreds place. One hundred gives us 10 tens. These 10 and the previous 4 make 14 tens. Take away 6 tens, 8 remain. Now we subtract 2 hundreds from 4, two hundreds remain. The answer is 280.

✦ Subtract.

H	T	U
− 2	7	1
1	3	8

H	T	U
− 6	5	4
	5	6

H	T	U
− 7	3	1
2	4	8

H	T	U
− 8	3	5
2	5	8

H	T	U
− 5	6	7
2	4	9

H	T	U
− 6	5	0
6	4	5

H	T	U
− 7	7	5
3	9	7

H	T	U
− 6	8	0
1	5	4

◆ **Subtract : 507 − 288**

H	T	U
	9	
4	1̶0̶	17
−5̶	0̶	7̶
2	8	8
2	1	9

8 units cannot be subtracted from 7 units. So we must untie one ten. But there is nothing in the tens place. So we shall untie one hundred and get 10 tens. When we untie one of these tens, we get 10 units. These and the first 7 units make 17 units. Subtract 8 units from them and we have 9 units left. Write them in the answer. Now, there are 9 tens in the tens place. We subtract 8 tens from them, 1 remains. Finally, 4 hundreds are left. Subtracting 2 from them, 2 hundreds remain. Write these in the answer, which is 219.

◆ **Subtract : 900 − 365**

H	T	U
	9	
8	1̶0̶	10
9̶	0̶	0̶
−3	6	5
5	3	5

Here, 5 units cannot be subtracted from 0 units. So we need to untie a ten. But there is nothing in the tens place either. So we untie a hundred and obtain 10 tens. Then we untie one of these tens and obtain 10 units. From these, we subtract 5 units. 5 units remain. We write these in the answer.

Now, we have 9 in the tens place. Subtracting 6 tens from them, we write the remaining 3 in the answer. Then we have 8 hundreds left. Subtract 3 hundreds from them and write the remaining 5 in the answer. It is 535.

◆ **Subtract.**

H	T	U
2	0	5
−		6

H	T	U
3	0	0
−	9	5

H	T	U
8	0	0
−2	0	7

H	T	U
7	0	0
−3	4	8

◆ **Arrange vertically and subtract.**

❖ 245 − 6   ❖ 348 − 59   ❖ 556 − 368

❖ 407 − 240   ❖ 845 − 657   ❖ 932 − 754

◆ **Write the biggest possible three-digit number and the smallest possible three-digit number using the given digits. Subtract one from the other.**

❖ 3, 5, 4   ❖ 6, 5, 1   ❖ 7, 2, 5   ❖ 3, 4, 8

Word Problems

❖ There are 175 trees in Maharaj Park and 268 in Sayaji Park. How many more trees are there in Sayaji Park than there are in Maharaj Park ?
There are more trees in Sayaji Park.
From their number, we shall subtract the number of trees in Maharaj Park.
Sayaji Park has ☐ more trees.

H	T	U	
2	6	8	Trees in Sayaji Park
− 1	7	5	Trees in Maharaj Park
			More trees

❖ There were some books in a book shop.
The shopkeeper brought 125 more. Now there are 234 books in the shop.
How many were there in the beginning ?

❖ There are 350 girls and 215 boys in a school.
How many more girls are there than boys ?

❖ Mary had 500 rupees. She bought books worth 275 rupees. How much money will be left with her ?

◆ **Using the given information, make word problems of your own and solve them.**

Information : Beads with Aman : 325;
beads with Sulabha : 150.

Problem : Aman has 325 beads and Sulabha has 150.
How many more beads should Sulabha take so that they will both have an equal number of beads ?
Sulabha should take ☐ beads.

H	T	U	
3	2	5	Beads
− 1	5	0	Beads

◆ **Using the given information, make word problems of your own and solve them.**

❖ 257 beads, 300 beads
❖ 188 mango trees, 275 guava trees
❖ 195 black bicycles, 100 red bicycles
❖ 324 *hapoos* mangoes, 268 *paayari*
❖ 932 sacks of wheat, 750 of jowar
❖ 168 rupees, 622 rupees

Addition and Subtraction

✦ **Solve the following problems orally.**

❖ If Malti has 15 blue and 7 red balloons, how many balloons does she have altogether ? ☐

❖ Ajit had some seeds. Sagar gave him 25 more. Now Ajit has 65 seeds. How many seeds did Ajit have before ? ☐

❖ There are altogether 80 rose and jasmine flowers in a basket. Thirty of them are roses. How many jasmine flowers are there in the basket ? ☐

❖ A hundred children took part in a tree planting drive. If 60 of them were girls, how many boys participated ? ☐

❖ Akbar peeled 42 potatoes. Salma peeled 35. How many more potatoes should Salma peel to equal the number peeled by Akbar ? ☐

✦ **Using the given information, make word problems of your own and solve them.**
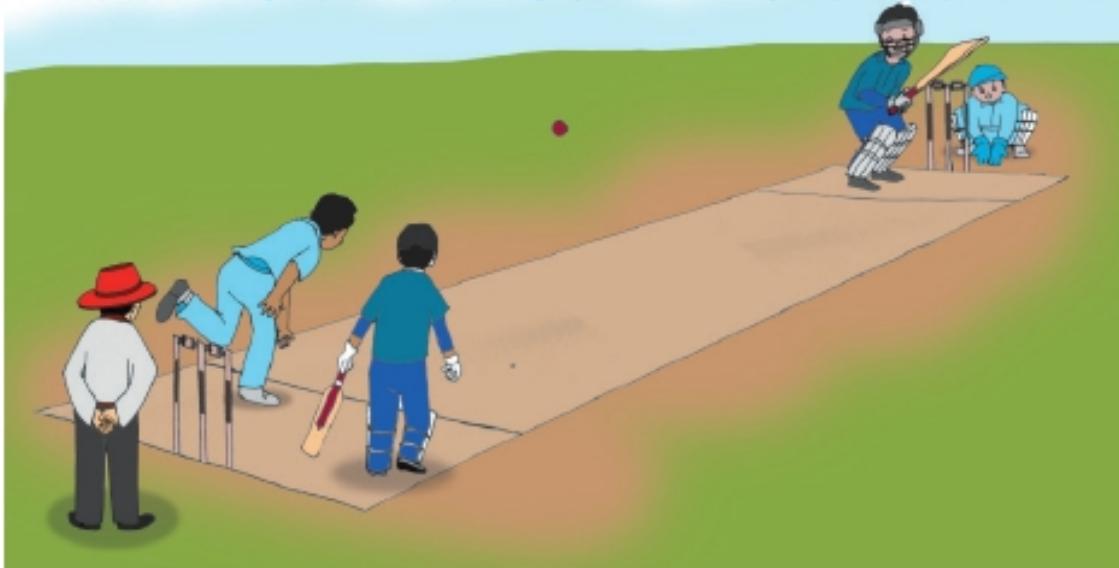
Tony has 75 books. Sonu has 40 books. Nandu has 80 books.

❖ How many books do Tony and Sonu have together ?
❖ How many more books does Tony have than Sonu ?
❖ How many more books does Nandu have than Tony ?
❖ How many books should Sonu buy so that Tony and Sonu can have an equal number of books ?

✦ **Make problems of your own and solve them.**

❖ 150 red marbles,   220 blue marbles,   75 green marbles
❖ Salma's marks - 272,   Nandu's marks - 245,   Sonu's marks - 331.

The scoreboard :   ❖ Ashok - 110   ❖ Salim - 92   ❖ David - 48

Multiplication

Tony : Multiplying a number by ten means taking ten times that number.

Thus, 3×10 is ten times 3 or three tens, or $3 \times 10 = 30$.

Also, $4 \times 10 = 40$, $5 \times 10 = 50$, $6 \times 10 = 60$, $10 \times 10 = 100$.

Sonu : Then 13×10 will be 130, $24 \times 10 = 240$ and $40 \times 10 = 400$.

Tai : Yes. **To multiply a number by ten, we just need to put a zero after it.**

Salma : 20×3 means $20 + 20 + 20$. And that is 60.

Tony : 20×3 means three times 2 tens = 6 tens = 60.

Tai : To find 20×3, we can multiply 2 and 3 and place a zero after it. So the product is 60. In this way,

$20 \times 6 = 2T \times 6 = 12T = 120$ $50 \times 7 = 35\,T = 350$

$40 \times 5 = 4T \times 5 = 20T = 200$ $80 \times 3 = 24\,T = 240$

Sonu : If there's a zero in the units place of both numbers, what do we do ?

Tai : When multiplying 30×20, write one of the numbers in the tens form.

30×20 means $30 \times 2T$

Salma : But this gives us 60T. That means 600.

Sonu : So 30×20 is 600, right ?

Tony : $3T \times 2T$ is 6H !

Tai : Right ! It means that in 30×20, first carry out 3×2 and then write two zeros after their product.

Try it. $40 \times 20 = 800$. $30 \times 30 = 900$.

> **If there is a zero in the units place of both numbers, then,**
> **multiply the digits in their tens places and**
> **write two zeros after the product.**

✦ **Multiply.**

❖ $4 \times 50 =$ ⬜   ❖ $3\,T \times 3\,T =$ ⬜   ❖ $70 \times 10 =$ ⬜

❖ $6 \times 20 =$ ⬜   ❖ $4\,T \times 2\,T =$ ⬜   ❖ $20 \times 20 =$ ⬜

Multiplication of a two-digit number by a one-digit number : the lattice method

Sonu : Yesterday I bought two books for 34 rupees each. Guess how much I must have paid for them.

Salma : To find it out, we must multiply 34 by 2.

Tai : I will tell you a trick for doing this multiplication. For making the 6 times table, we had divided 6 into two convenient parts, 4 and 2. Let's do the same here. We shall split 34 into two convenient parts, 30 and 4. As 30 is a tens number, it is easy to multiply.

×	30 (3 T)	4 (4 U)
2	(30 × 2) 60	(4 × 2) 8

Sonu : First, we multiply 30, that is 3 tens by 2. We get 6 tens, which is 60.

Then, 4 units × 2 = 8

Lastly, we add 60 and 8.

60 + 8 = 68. So, 34 × 2 = 68.

✦ **Multiply.**

❖ **37 × 4**

×	30	7
4	120	28

120
+ 28
148

37 × 4 = 148

❖ **56 × 3**

×	50	6
3	150	18

150
+ 18
168
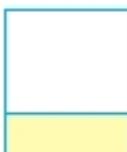
56 × 3 = 168

✦ **Use the above method to carry out the following multiplications.**

❖ **42 × 3**

×	40	2
3		
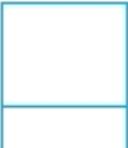
❖ **51 × 6**

×	50	1
6		

❖ **73 × 5**

×	70	3
5		

❖ **39 × 8**

×	30	9
8		
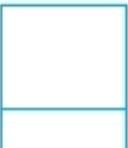
❖ Twelve rupees are to be collected from each child for a visit to the zoo. If 25 children are going, how much money will be collected ?

Nandu : To find it out, we have to multiply 25 by 12.

Tai : We shall again split the numbers into convenient parts and multiply using the lattice method.

Let's split the numbers like this : 25 = 20 + 5 and 12 = 10 + 2.

✕	20	5
10	200	50
2	40	10

200
+ 50
+ 40
+ 10

300

25 ✕ 12 = 300 rupees will be collected.

✦ **Multiply.**

❖ **43 ✕ 23**

✕	40	3
20		
3		

43 ✕ 23 = ☐

❖ **62 ✕ 13**

✕	60	2
10		
3		

62 ✕ 13 = ☐

❖ **32 ✕ 14**

✕	30	2
10		
4		

32 ✕ 14 = ☐

❖ **13 ✕ 27**

✕	10	3
20		
7		

13 ✕ 27 = ☐

✦ **Multiply.**

❖ **56 ✕ 16**   ❖ **71 ✕ 12**   ❖ **29 ✕ 29**

Multiplication : Vertical Arrangement

Tai : We have learnt to multiply using the lattice method. Let us learn another way to do the same. We have understood the operation. We shall only write it in a different way.

◆ **Multiply : 34 × 2**

T	H
3	4
×	2
6	8

First multiply the 4 in the units place by 2. 2 fours are 8. Hence, write 8 under the line in the units place. Now, multiply the 3 in the tens place by 2. 2 threes are 6. Write this 6 under the line in the tens place. The product is 68.

Tony : Good ! This is a quick method.

◆ **Multiply.**

T	U
4	2
×	2
8	4

T	U
2	4
×	2

T	U
2	2
×	4

T	U
3	1
×	3

Multiplication by carrying over

Tony : How to multiply 26 by 3 ?

Salma : Let's arrange the multiplication vertically.
First multiply the 6 in the units place by 3.
3 sixes are 18.

T	U
2	6
×	3

Tai : From these eighteen units, we take 10 units to make 1 ten or 1 T. We write this ten at the top in the tens place. We write the remaining 8 in the units place under the line. Multiply the 2 in the tens place by 3. Three twos are 6, and with the new 1 ten, we get 7 tens. This, we write in the tens place in the answer.
The product is 78.

T	U
1	
2	6
×	3
7	18

carrying over

◆ **Multiply :** 18×4

T	U
③	
1	8
×	4
7	3 2

First multiply 8 units by 4. Four eights are 32.
30 of these 32 units make 3 tens. Write these 3 tens in the tens place at the top and the 2 units under the line in the units place. Now multiply the 1 in the tens place by 4. 4 ones are 4, and, alongwith the 3 written at the top, we have 7 tens. Write these in the tens place under the line. The product is 72.

◆ **Multiply**.

T	U
1	5
×	5

T	U
2	4
×	3

T	U
2	7
×	3

T	U
1	5
×	6

	T	U
	2	
	2	3
×		7
1	①6	②1

H	T	U
1	6	1

Tai : Now, look at this carefully. We have to multiply 23 by 7. First we multiply 3 units by 7. Seven threes are 21. Of these 21 units, we make 2 tens and write them at the top in the tens place. 1 is left in the units place. Now, 7 twos are 14, and together with the carried over 2, we get 16 tens.

Salma : 16 tens means 1 hundred, 6 tens. So the product is 161.

H	T	U
	3	6
×		4

H	T	U
	4	0
×		8

H	T	U
	5	4
×		7

H	T	U
	9	2
×		8

❖ How many chocolates in 9 jars if there are 34 chocolates in 1 jar ?

	3	
	3	4
	×	9
3	0	6

3 4 — Chocolates in 1 jar
× 9 — Number of jars
3 0 6 — Number of chocolates

Total number of chocolates **306**

❖ If one book costs 85 rupees, what is the total cost of 5 such books ?

85   Cost of 1 book
× 5   Number of books
———   Rupees

Total cost [＿＿＿] rupees

❖ One metre of cloth costs ₹ 95. How much will 6 metres of cloth cost ?

Cost of cloth [＿＿＿] rupees

❖ One litre of milk costs 40 rupees. How much will 3 litres of milk cost ?

Cost of milk [＿＿＿] rupees

✦ **Solve the following problems.**

❖ 25 children in a row. How many in 7 rows ?

❖ How much will 6 towels cost at 53 rupees a towel ?

❖ 72 apples in 1 box. How many in 5 boxes ?

❖ One box holds 40 laddoos. How many laddoos do 9 boxes hold ?

✦ **Make your own problems of multiplication and solve them.**

Information : 8 rupees for 1 book, 45 books

Problem : If one book costs 8 rupees, how much do 45 books cost in all ?

45   books
× 8   cost of 1 book
———
360   rupees

Total cost of 45 books : 360 rupees.

Information : 48 pomegranates in 1 box 7 boxes

Problem : If there are 48 pomegranates in 1 box, how many are there in 7 boxes?
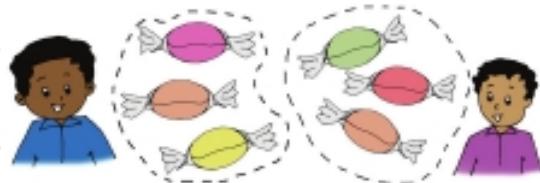
Total number of pomegranates in the 7 boxes is [＿＿＿]

❖ 15 trees in one row, 9 rows

❖ 16 toys, cost of each toy ₹ 10.

❖ 20 laddoos in one box, 8 boxes

❖ Cost of one book ₹ 36, 7 books.

Division

Making equal shares

Raju : My mother has given me 6 sweets. Let's share them equally.

Sanju : Ok, you take one, I'll take one, turn by turn.

Raju : I got 3 sweets.

Sanju : I also got three. So, we got three sweets each.

Total sweets	Sweets for each
6	3

❖ These are pictures of some boys and girls. Count to see how many children there are. There are some guavas too. They have to be shared equally among the children. How will you do that ?
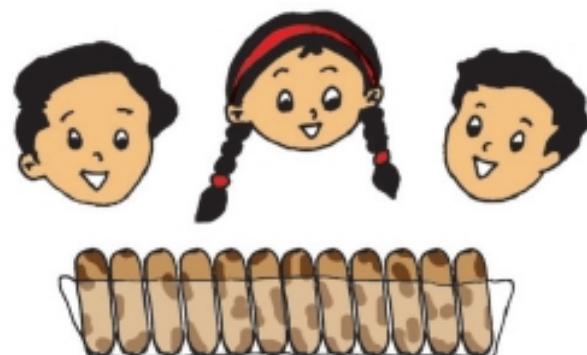
| Total guavas	Suma	Raju	Meena	Anju

How many guavas did each child get ?
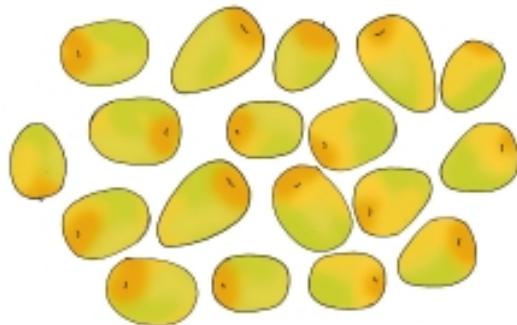
❖ There are 12 biscuits in a packet. Equal shares must be given to three children – Raju, Sanju and Anita.

Total biscuits	Each one's share		
	Raju	Sanju	Anita
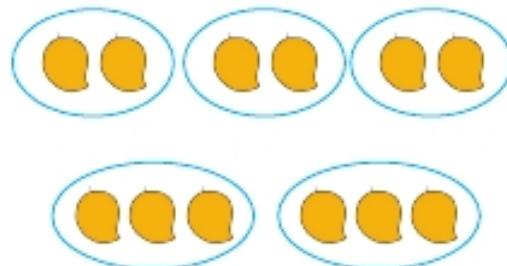
On sharing the biscuits equally, each one got ☐ biscuits.

❖ 18 fruits are shown in the picture alongside. If they are shared equally between two people, how many will each one get ?

❖ If 18 fruits are shared by 3 people equally, how many will each get ?

❖ If 18 fruits are shared equally by 6 people, how many does each one get ?

Forming groups or making shares or lots

Mother : I have brought 6 mangoes. Sucheta, make lots of 2 mangoes to a lot. How many lots do you get ?

Sucheta : 3 lots. Now, shall I make lots of 3 mangoes each ?

Mother : Sure. Do it and see how many lots there are.

Sucheta : There are only 2 lots this time.

The table below shows how Sucheta distributed the mangoes.

Total number of mangoes	Mangoes in each lot	Total number of lots
6	2	3
6	3	2

❖ **Mark the lots in the picture and complete the table.**

Total number of mangoes	Mangoes in one lot	Total number of lots	
8	2		
8	4		

❖ **Mark the lots in the picture and complete the table.**

Total number of cucumbers	Number of cucumbers in one lot	Total number of lots	
10	1		
10	2		
10	5		
10	10		

❖ There were 12 children with Tai. She said to them, 'Let's play the game of making groups. You must make groups of as many children as the number of fingers I show'.

- Tai showed 4 fingers.
  How many groups were formed ?
- Tai made a hand-sign of 3 fingers.
  How many groups were formed ?
- Tai showed 2 fingers.
  How many groups were formed ?
- Tai made a hand-sign of 6 fingers.
  How many groups were formed ?
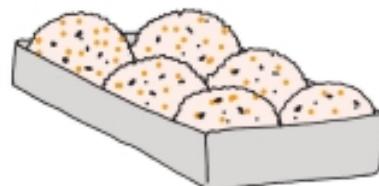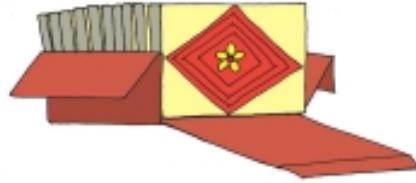
❖ One carton can hold 6 laddoos. How many cartons will be needed to pack 48 laddoos ? Let's see if you can work that out.

Total laddoos	Number of laddoos in one carton	Number of cartons
48	6	
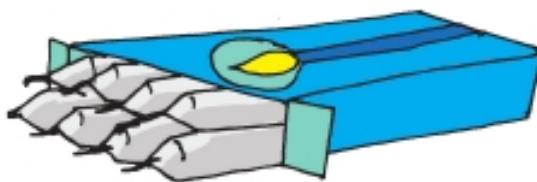
❖ One carton can hold 10 tiles. A certain room needs 60 tiles for the floor. How many cartons of tiles will be needed ?

Total number of tiles	Number of tiles in one carton	Number of cartons
60	10	

❖ One carton contains 8 candles.
How many cartons do we need for packing 24 candles ?

> **Making equal lots from a collection of objects is called division.**

❖ **Subtracting the same number again and again**
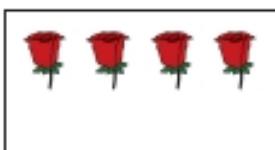
From these 8 flowers, we shall take away 2 every time.
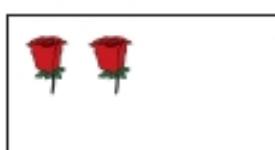
The first time, we take away 2 flowers from 8.
8 – 2 = 6   6 flowers left.

The second time, we take away 2 flowers from 6.
6 – 2 = 4.   4 flowers left.

The third time, we take away 2 flowers from 4.
4 – 2 = 2.   2 flowers left.

The fourth time, we take away 2 flowers from 2.
2 – 2 = 0.   No flowers left.
In other words, zero (0) flowers are left.

Four is the maximum number of times that we could take away 2 flowers at a time from 8 flowers.

❖ The doctor gave Nandu 15 pills and told him to take 3 pills every day. How many days does Nandu have to take the pills ? Draw pictures as shown above to show it.

Tai : I have brought some *jamuns*. Who is present today ?

Sonu : Three of us – Salma, Tony and me.

Tai : Count these *jamuns*. And share them equally among the three of you.

**Sonu** : These are 12 *jamuns*. I'll distribute them giving each, one *jamun* at a time.
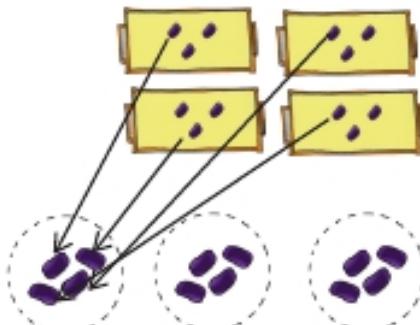
Tai : How many did each of you get ?

Sonu : Each of us got four.

Salma : May I distribute them in a different way ?

Tai : Certainly. How do you want to do it ?

Salma : Three of us have to share them, so I'll make groups of three *jamuns*. Then each of us will take one from each group.

Tony : Oh, yes ! One from each group means 4 *jamuns* for each of us.

Tai : And, did you notice this ? When Salma was making the groups, she was taking away three *jamuns* every time. In other words, from 12, she was subtracting 3 again and again.

Salma : Yes, Tai ! And when she did this four times, no *jamuns* were left.

Tai : So, now you must have understood that sharing twelve *jamuns* equally among three or making groups of three *jamuns* from them is the same as taking away 3 *jamuns* from 12 again and again. The outcome of all these actions is the same.

71

Tony : Yes, Tai.

**Tai** : That is why all these actions are given the same name in mathematics, which is division.
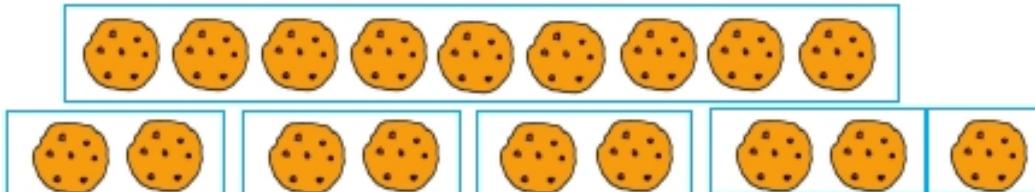
> ❖ Division means distributing things equally.
> ❖ Division means making equal groups of things.
> ❖ Division also means taking away the same number of things again and again from a certain number of things.

Tony : Tai, we know the method of writing a multiplication using a sign. There must be a sign for division too!

Tai : This is the sign for division '÷'. This is how we use it, $12 \div 3 = 4$. It is read as '12 divided by 3 is equal to 4'.

Salma : I understood ! 4 threes are 12. It means that when we put together 4 groups of 3 things each, we get 12 things. And if we make groups of 3 things using 12 things, the number of groups we get is 4.

Tai : Excellent. When making groups of three, we say the 3 times table up to 12. We come to know how many groups of three we can get from twelve. When making 3 equal shares out of 12 also, we say the 3 times table. When we come to '3 fours are 12' we know that each one will get 4 things.

There are 9 laddoos in one box. They have to be shared equally by four people. After giving 2 laddoos each to 4 people, 1 laddoo remains. It means that if we have to give whole laddoos, we cannot make equal shares. Had there been only eight laddoos in the box, there would be no laddoos left over after the equal shares had been made. Sometimes, things get left over after making equal shares containing whole things only. This number of remaining things is called the 'remainder'. Look at the vertical arrangement which shows numbers instead of things.

Shared among 4 persons.

2	Number of laddoos in each share
4) 9	Number of laddoos to be shared
8	Number of laddoos shared
1	Remaining laddoo

❖ **12 flowers shared equally among 4 children.**

(Quotient)

(Divisor) 4)12 (Dividend) Total flowers
3 Flowers each one got
− 12 Flowers shared
0 (Remainder) Flowers left.

Each one gets 3 flowers, because 4 threes are 12. This division is written vertically as shown alongside.
12 divided by 4, remainder 0.

❖ **15 laddoos were shared among 5 children.**

3 (Quotient)
(Divisor) 5)15 (Dividend)
− 15
0 Remainder

Each one gets three laddoos. Because 5 threes are 15. The number of laddoos that each one gets is called the 'quotient'.
All the laddoos are finished. Nothing remains. That is, remainder 0.

❖ **22 rupees to be distributed equally among 5 people.**

5)22

4 Quotient
Divisor 5)22 Dividend
− 20
2 Remainder

Tony : Here, 22 is the dividend and 5, the divisor.
Salma : Here, 5 is the divisor, so we shall use the 5 times table. 5 fours are 20 and 5 fives are 25.
Tony : We can't give away 25 rupees from 22. But we can give 20 from 22.
Sonu : So, we use 5 fours are 20 and we write 4 in the units place above the line.
Nandu : We mustn't write this 4 in the tens place because each one gets 4 rupees and not 4 tens. That would be 40 rupees !

✦ **Divide.**

4
9)36
− 36
0

7)42

8)64

6)54

7
8)58
− 56
2

6)49

5)47

7)29

Measurement of Time

■ Reading the clock

Tai : You had asked me how to tell the time using a clock. Today, I have brought a big clock to help you to learn that. Look at the long hand and the short hand of the clock. When both are at 12, it is twelve o'clock.

Salma : When the short hand is at 4 and the long one at 12, it is 4 o'clock.

Nandu : We can also show 5 o'clock and 9 o'clock like this.

Sonu : The short hand goes slowly, but the long one moves faster!

Tai : Yes. The short hand shows hours and the long one shows minutes. That is why they are also called the hour hand and the minute hand. The long hand has reached 1. So it is 5 minutes past 12 o'clock.

Nandu : When the minute hand reaches 2, it will be 10 minutes past 12, and, when it reaches 3, it will be 15 minutes past 12. Then we will see that the hour hand has also moved forward a little.

Tai : That's right. Between two adjacent numbers, there is a difference of five minutes.

Sonu : That means, we can use the 5 times table for counting minutes. So when the hour hand is between 12 and 1 and the minute hand is on 9 we can tell that it is 45 minutes past 12. Because 9 fives are 45.

Tai : Great! When the minute hand moves forward starting from 12 and reaches 12 again, it has completed one round. The time it takes to do this is 60 minutes or 1 hour. In that time, the hour hand moves from 12 to 1. And at that moment, the time is 1 o'clock.
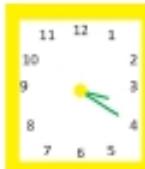
Tony : I got it. If the hour hand is between 4 and 5 and the minute hand is on 8, then, because 8 fives are 40, it is 40 minutes past 4.

> **Hour and minute are the units for measuring time.**

✦ **Write in hours and minutes the time that each clock is showing.**

✦ **Read the given time and draw the hands of the clock below to show that time.**

10 minutes past 5   5 minutes past 9   20 minutes past 6   35 minutes past 11

✦ **Write in the table below, approximately how many minutes or hours or days it takes for each of the following to happen.**

Rice gets cooked in the pressure cooker	A cow is milked	Mother cooks a meal	The water tank gets filled	A sweater is knitted	A rose bud blooms into a flower

✦ **In the table below, fill in the main things you do in a day, the times at which you do them and the positions of the hands of the clock at each of those times.**

S.No.	What I do	Time in the clock	Positions of the hands of the clock
1.	Get up in the morning.	15 min past 6	Short hand just after 6, long hand at 3.

✦ **Find out what you can about the following kinds of clocks/watches.**

❖ The clock in the mobile phone   ❖ The clockwork clock

❖ The pendulum clock   ❖ The automatic clock or watch

❖ The stop-watch   ❖ The hourglass

❖ The sundial
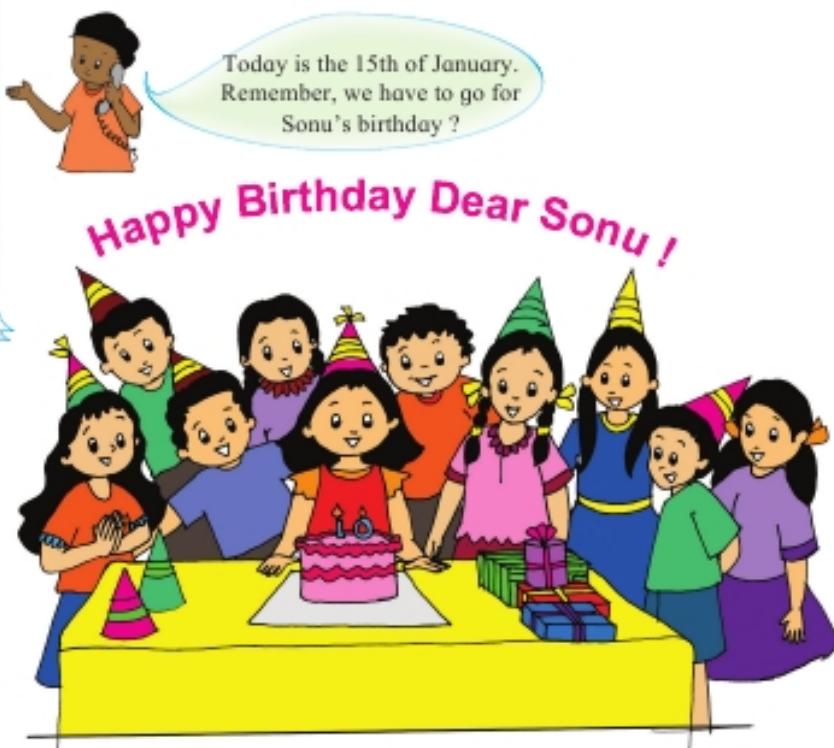
75

The Calendar

Using a Calendar

✦ Look up this year's calendar. Write the information in the table below.

The festivals in the month of October	The holidays in the month of August	How many days after the 5th of December is Christmas ?	The dates of the Sundays in June.

January 2015

S	M	T	W	T	F	S
				1	2	3
4	5	6	7	8	9	10
11	12	13	14	15	16	17
18	19	20	21	22	23	24
25	26	27	28	29	30	31

Today is the 15th of January. Remember, we have to go for Sonu's birthday ?

Happy Birthday Dear Sonu !

Salma : In which year were you born ?
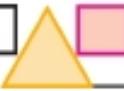
Sonu : I was born on the fifteenth of January two thousand and five.

Tony : Today's date is 15th January 2015. It means that Sonu is 10 years old today.

Salma : My date of birth is 12th March 2006. In whole years, I am 8 years old today.

Tony : So, your birthday will be on 12th March 2015 and that day you will be 9 years old.

> To tell someone's age, count forward from the year of birth till the current year.

✦ Some people's dates of birth are given in the table below. Write how many years of age they complete this year, on their birthdays.

Name	Sarika	Mohan	Ahmed	Makhan Singh
Date of Birth	18.7.2002	14.5.2000	01.2.2003	13.7.1977
Age				

✦ Write the dates of birth of the people in your family and complete the table below.

Person	Date of Birth	Date on 25th birthday	Age today in whole years	Date of 40th birthday
Mother				
Father				
Sister				
Brother				

✦ Find out –

❖ Whose birthday comes every four years ? Why ?

❖ Which is your favourite festival ? On which date did it fall last year ? What is its date this year ?

❖ About different types of calendars.

❖ How to work out age in whole years, in months, in days.

❖ Our country became independent on 15th August 1947. How many years have we completed after that ?

❖ India launched the satellite 'Aryabhatta' into space. The year 2005 was the 30th year after this event. In which year was this satellite launched ?

❖ 'The year 1987 was the centenary of the birth of the great Indian mathematician Ramanujan.' What does this tell us ?

Half

Tony and Nandu were hungry. Salma had one *bhakari*. She quickly made two pieces of the *bhakari* and gave it to them.

Tony : I got less of the *bhakari*.

Nandu : That's true. I really got the bigger piece.

Salma : Oh, I'm sorry! It's because I broke it in a hurry. I have a *puri*, too. I'll divide it equally into two parts for you.
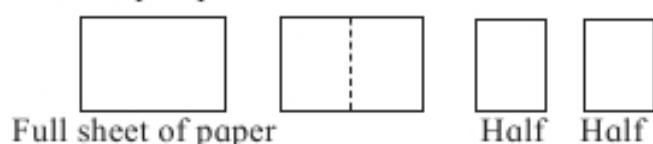
Tony : Yes, this time we have equal pieces.

Sonu : Both of you got exactly half the *puri*.

Sonu has a large sheet of paper. Both Sonu and Salma want to draw a picture.

**Sonu** : Let's divide this sheet into two equal parts.

Tony : Come, I'll do it.

Full sheet of paper   Half   Half
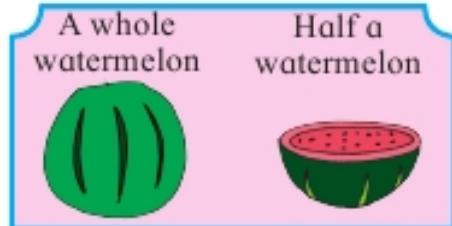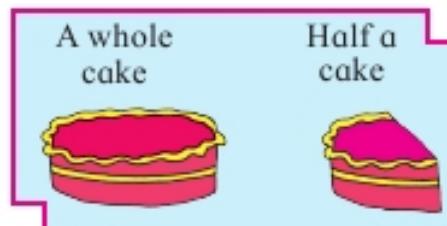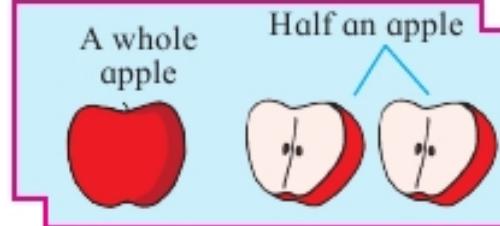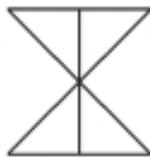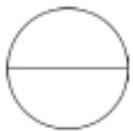
Sonu and Salma both got half a sheet of paper.

> **When something is divided into two equal parts, each of the parts is a half of that thing.**

✦ **Observe the pictures given below.**

A whole guava   Half a guava

A whole apple   Half an apple

A whole cake   Half a cake

A whole watermelon   Half a watermelon
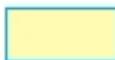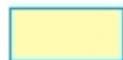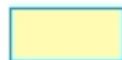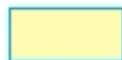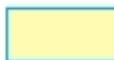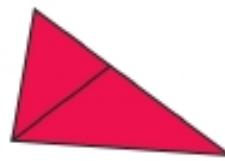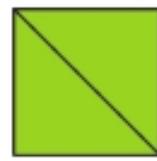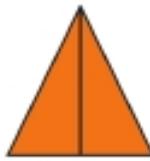
✦ **Colour a half of each of the pictures given below.**

✦ **A line has been drawn in each of the figures given below. Put a tick mark (✓) under the figures which get divided into two equal parts by that line.**
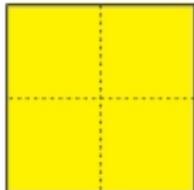

A quarter

Tai : Salma, Nandu, Sonu, Tony, come here all of you. I have a large sheet of kite paper. Each of you, use it to make a kite for yourself.

**Tony** : It means that we will have to make 4 equal parts of that paper.

Nandu : I'll make the four equal pieces.

Tai : Excellent. Each of these parts is a quarter of the big sheet of paper.

A quarter part

When something is divided into four equal parts, each of the parts is a quarter of that thing.

✦ **Observe the pictures below to understand the meaning of 'quarter'.**

A whole cucumber   A quarter of a cucumber

A whole watermelon   A quarter watermelon
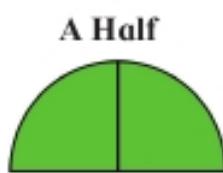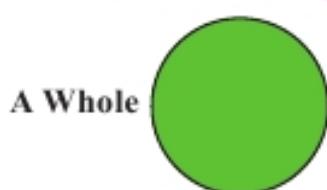
A whole cake   A quarter of a cake

■ A whole, a half and a quarter

A Whole   **A Half**   **A Quarter**

If we divide a half into halves again, we get two quarters.
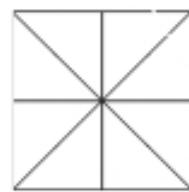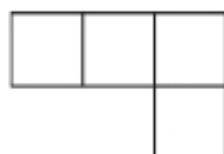
We have seen already that when a whole is divided into four equal parts, we get a quarter.

If we put two quarters together, we get a half.
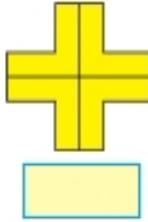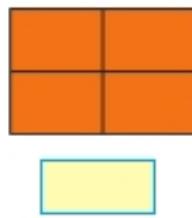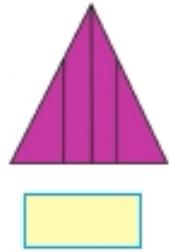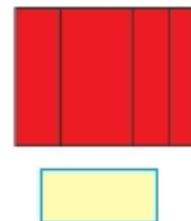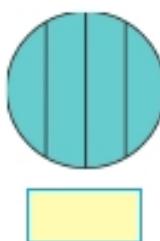
Similarly, if we put four quarters together, we will get a whole.
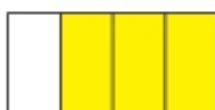
✦ **Colour a quarter part of each picture below.**

✦ **In each of the pictures below, lines have been drawn to divide the figure into four parts. If a figure is divided into equal parts, put a tick (✓) mark under it. If not, put a (✗) cross.**
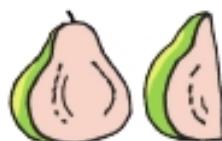
Nandu : I have drawn lines in this picture so that it gets divided into four equal parts. Three of these parts have been coloured. In other words, three quarters of the paper has been coloured.

> **If a whole is divided into four equal parts and we take three of them, the part that we have taken is called 'three quarters'.**

Half a guava   A quarter of a guava   A half and a quarter make three quarters.

Three quarters may also be called a three quarter part of the whole.

When we take away a quarter from a whole, what we have left is also three quarters.

✦ **Colour three quarters of the pictures below.**

✦ **Say whether the coloured and the white parts of the figures below are a quarter, a half or three quarters.**

Figure						
Coloured part	Half					
White part						

A quarter, a half, and three quarters of a collection

The picture shows a collection of eight balls.

We divide the collection of eight balls into two equal parts.
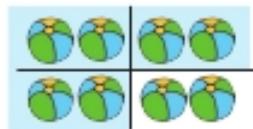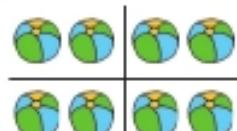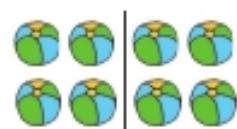
Each part is a half of the collection of eight balls. There are four balls in each part.

In this picture, a collection of eight balls has been divided into four equal parts. Each part is a quarter of the collection. Each quarter contains two balls. When a half of a collection is halved again, what do we get?

A half and a quarter together make three quarters. Hence, a quarter and a half of a collection together make three quarters of that collection.

The picture shows a three quarter part of a collection of eight balls. When a quarter is taken away from a whole, we get a three quarter part.

When three quarters of a collection are brought together, what is the name of the part we get?


✦ Show a half of this collection.
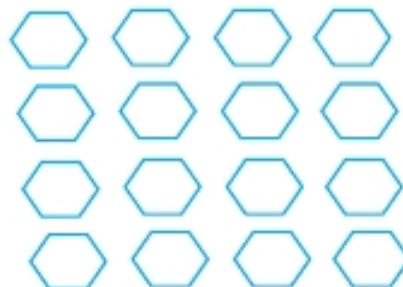
✦ Show a half of the collection given below.

✦ Colour three quarters of the collection shown below.

✦ Show a quarter of the collection given below. Colour the remaining part and say what part of the whole collection it is.

Using Half, Quarter, Three quarters

✦ **Study the following examples.**

❖ The length of the school ground is 20 metres. Half the length of the ground is half of 20 metres, which means 10 metres. A quarter of the length of the ground is 5 metres and three quarters is 15 m.

❖ One hour has 60 minutes. A half hour/ Half an hour has 30 minutes.

❖ A quarter of 4 litres is 1 litre.

❖ Jivraj has 200 rupees. He gave three quarters of that amount to Meena. It means that Jivraj gave Meena 150 rupees.

❖ One dozen bananas means 12 bananas. Half a dozen bananas means 6 bananas. Three quarters of a dozen bananas means 9 bananas.

✦ **Solve the following problems.**

❖ Anand is 8 years old today. Shruti is half as old as Anand. Then how old is Shruti ?

❖ Sonali has a length of 10 metres of cloth. She gave half of it to Ramu. What length of the cloth does she have left? How much did she give Ramu?

❖ Anagha has a hundred rupees. If she gives a quarter of that amount to her brother, what is the amount of money she gives him ?

❖ A rope has a length of 16 metres. If a three-quarter length is to be cut off, what length should be marked off from one end ?

❖ It takes 6 hours to travel from Solapur to Nanded. It takes half that time to reach Latur from Solapur. How long does it take to travel from Solapur to Latur ?

✦ **How much is each of the following ?**

❖ Half of a 24 metre length of cloth.

❖ A quarter part of 80 rupees.

❖ Three quarters of 40 kilograms of sugar.

❖ A quarter of 12 litres of kerosene.

❖ Half of 4 hours 40 minutes.

❖ Three quarters of 60 rupees.

It was Sonu's birthday. Her friends had come for her birthday party. Everyone wished her a Happy Birthday and also gave her gifts. Nandu had not gone for the party. He asked Sonu :

❖ Who had come for the party? How many boys? How many girls?

❖ What gifts did you get? How many of them?

Sonu told Nandu the names of all those who had come.

Tony : Let us see the gifts first. We can answer Nandu's questions later.

Tony put the gifts into groups.

Salma counted the books.

Sonu counted the pens. Tony counted the pencils.

Nandu wrote down this information on a slate.

Sonu : So, I got 30 gifts in all !

Tony : Hey, this has become a table !

Gifts	Number
Pencils	17
Pens	4
Books	9
Total gifts	30

✦ **Next day when Nandu came to the class, he asked each boy and girl, 'How do you come to school ?' He took down their answers as shown below :**

Rohit – Bus, Vijay – Rickshaw, Maya – Bus, Gopal –Walking, Rekha – Rickshaw, Krishna – Bicycle, Abha – Car, Mahadev – Walking, Roger – Walking, Faroukh – Rickshaw, Ahmed – Bus, Sanika – Bicycle, Smita – Bus, Nandu – Rickshaw, Sonu – Rickshaw, John – Bus, Sarabjit – Bus, Swara – Car, Ramnath – Walking, Alan – Walking, Vikas – Rickshaw, Anthony – Rickshaw, Sarah – Bus, Satish – Bicycle, Albert – Bus, Ramswami – Walking, Neeta – Bus, Alaka – Bus, Nagesh – Bicycle, Kailas – Bicycle.

Nandu made a table and presented the same information in it as shown below.

Come by bus	Rohit, Smita, Maya, Sarah, Ahmed, John, Sarabjit, Albert, Neeta, Alaka	10
Come by rickshaw	Vijay, Rekha, Sonu, Nandu, Faroukh, Vikas, Anthony	7
Come walking	Gopal, Ramswami, Mahadev, Roger, Ramnath, Alan	6
Come on a bicycle	Krishna, Sanika, Satish, Nagesh, Kailas	5
Come by car	Abha, Swara	2

◆ It was not required to wear the uniform on Thursday. Children had come to school wearing clothes of different colours. Alan made a table showing this. Salma suggested that instead of writing names, they could put one mark for each child.

The table that Alan made

Colour of clothes	Names of children	Number of children
Red	....	4
Green	....	2
Yellow	....	7
Blue	....	10

The table that Salma made
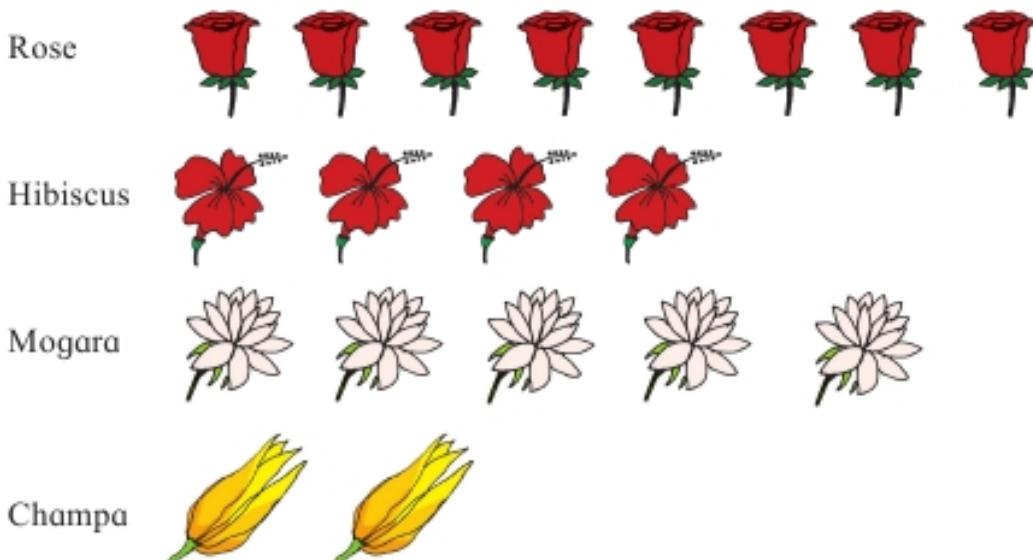
Colour of clothes	Tally Marks	Number of children
Red	||||	4
Green	||	2
Yellow	|||||||	7
Blue	||||||||||	10

Tony : My clothes are red. So I am in the first group.

Salma : But, is the number of marks the same as the number of children? How can we tell?

Sonu : The number of children wearing red is 4, and so is the number of marks, that's how! That's why they're called tally marks, you see.

◆ Mary made a table giving information about the flowering plants in her garden.

Rose

Hibiscus

Mogara

Champa

Sonu : You are good at drawing pictures. So the table looks pretty.

Tony : But I can't draw such nice pictures like you. And it takes so long to draw them well. So we'll make tally marks instead of drawing pictures of things. That will be quicker.

Name of plant	Tally marks	Total number of plants
Rose		
Hibiscus		
Mogara		
Champa		

✦ Rita asked her friends to name their favourite sweet dish. She showed their answers in a table using tally marks. Count the tally marks to write the answers to the following questions.

Name of sweet dish	Tally marks	Number of children
Jalebi	||||	
Laddoo	|||||||	
Gulabjamun	||||||||||||	
Other sweet dishes	|||	

❖ Which is the most popular dish among the children?

❖ By how much is the number of children who like *laddoos* more than the number who like *jalebis* ?

✦ Collect the following information. Use pictures or tally marks to make tables.

❖ In which months are the birthdays of the children in the class?

❖ Things in the kitchen and their number
  (e.g. bowls, glasses, plates, pots, cups, saucers, spoons, etc.)

❖ Which pet animal do the children in the class like the most?

✦ Look at the table below and answer the questions.

Name of the crop in the field	Number of farmers growing it
Wheat	👨👨👨👨
Jowar	👨👨👨👨👨👨👨👨
Rice	👨👨👨👨👨
Peas	👨👨👨
Peanut	👨👨👨👨👨
Sugarcane	👨👨

❖ About how many crops does the table give us some information?

❖ How many farmers grow peanuts?

❖ Which crop is grown by the smallest number of farmers?

❖ Which crop is grown by the largest number of farmers?

✦ What did you do to entertain yourself on Sunday evening? The answers that the children gave to this question have been tabulated as shown below.

Form of entertainment	Tally marks	Number of children
Played games	|||||||	
Watched TV	|||	
Took a walk in a garden	||||	
Read a story-book	||||||||	

❖ About how many children does the table inform us?

❖ How many children took a walk in the garden?

❖ What did the least number of children do?

✦ Collect information about children's favourite fruit and present it in a table.

Favourite fruit	Tally marks	Number of children
Mango		
Guava		
Apple		
Pomegranate		

✦ **Write down all the information that you get from this table.**

❖ Which fruit do the greatest number of children like?

❖ The number of children that like mangoes is greater than the number of children that like ……………… .

✦ **Find out the answers to the following questions and prepare tables showing the information collected.**

❖ When school gets over, how many two-wheelers, three-wheelers and four-wheelers come to the school gate to pick up the students?

❖ How many plastic, iron and wooden chairs are there in your school?

❖ What are the colours of the school bags of the children in your class?

❖ What fuel is used for cooking in the homes of the children in your class – gas, kerosene or wood?

❖ Visit the homes of 10 farmers in your village or town and collect information about how many domestic animals they keep.

✱✱✱