MATHEMATICS

STANDARD TWO

Mathematics
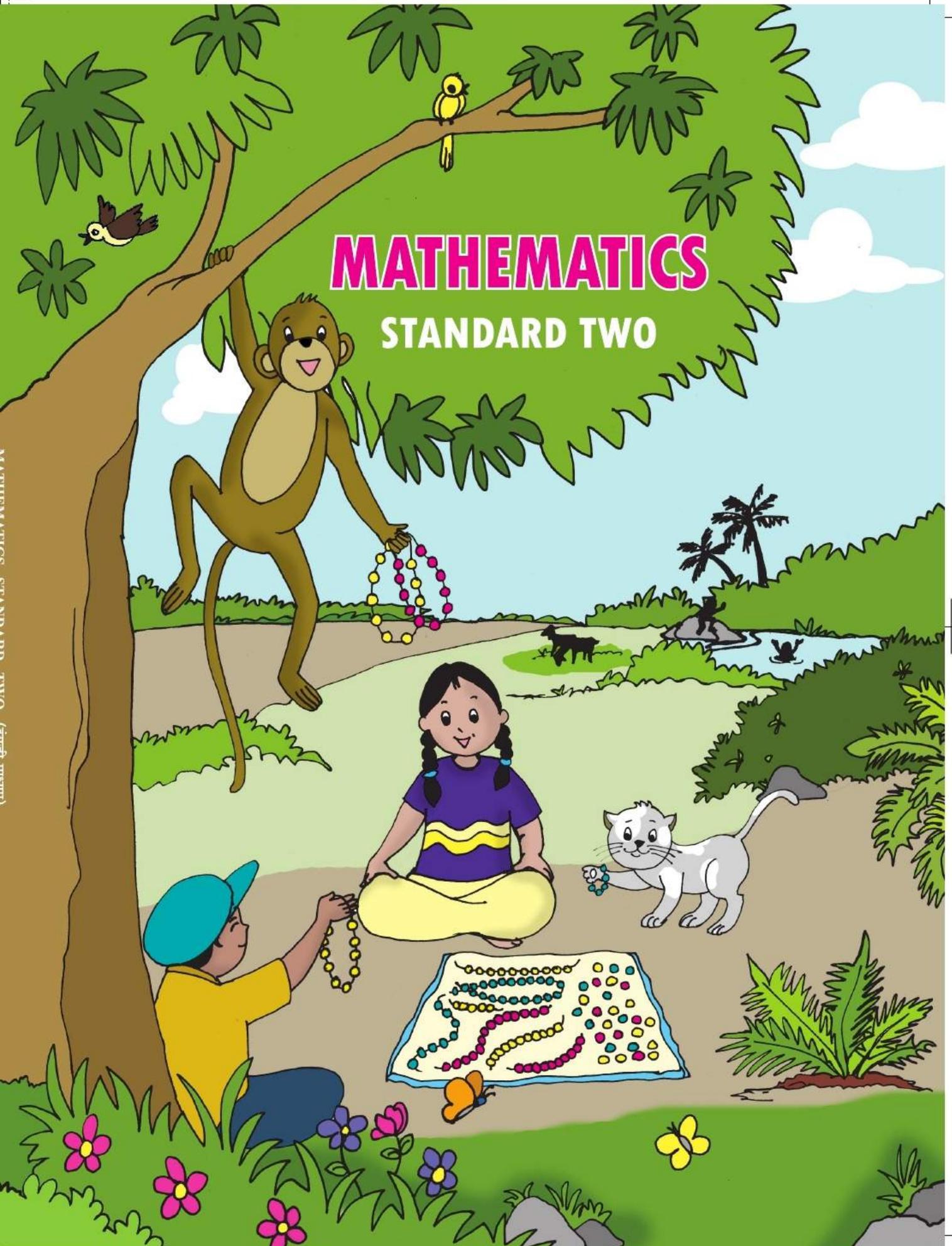
STANDARD TWO

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

A

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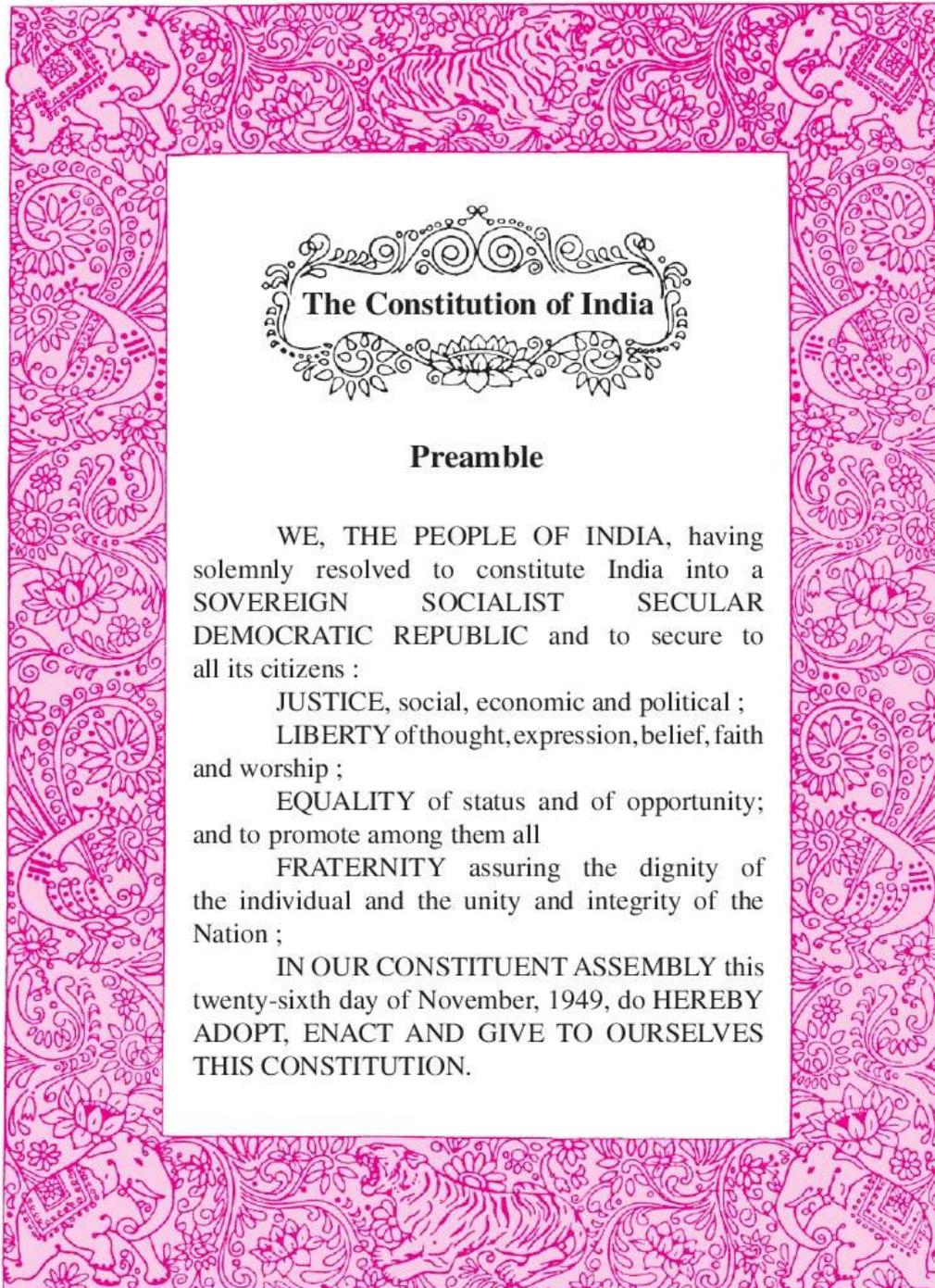
The Constitution of India

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.

C

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.

D

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.

E

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 second textbook of Standard Two 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, songs and stories 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 at the end of every teaching unit 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 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.
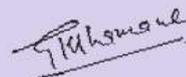
(Gangadhar Mhamane)
Director
Maharashtra State Bureau of Textbook
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Pune
Date : June 5, 2013
Jyeshth 15, 1935

✦ 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, stories, poems, 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 children 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 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.

G

Contents

H

Left-Right, Behind - In front of

❓ The Leader says, "Raise your left hand."
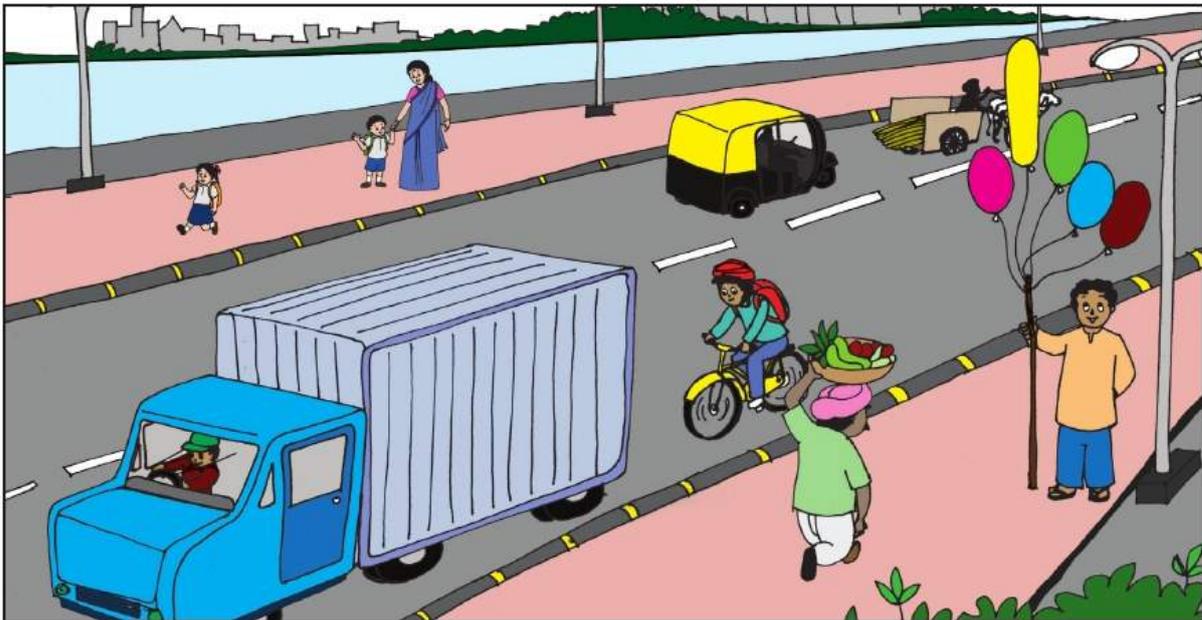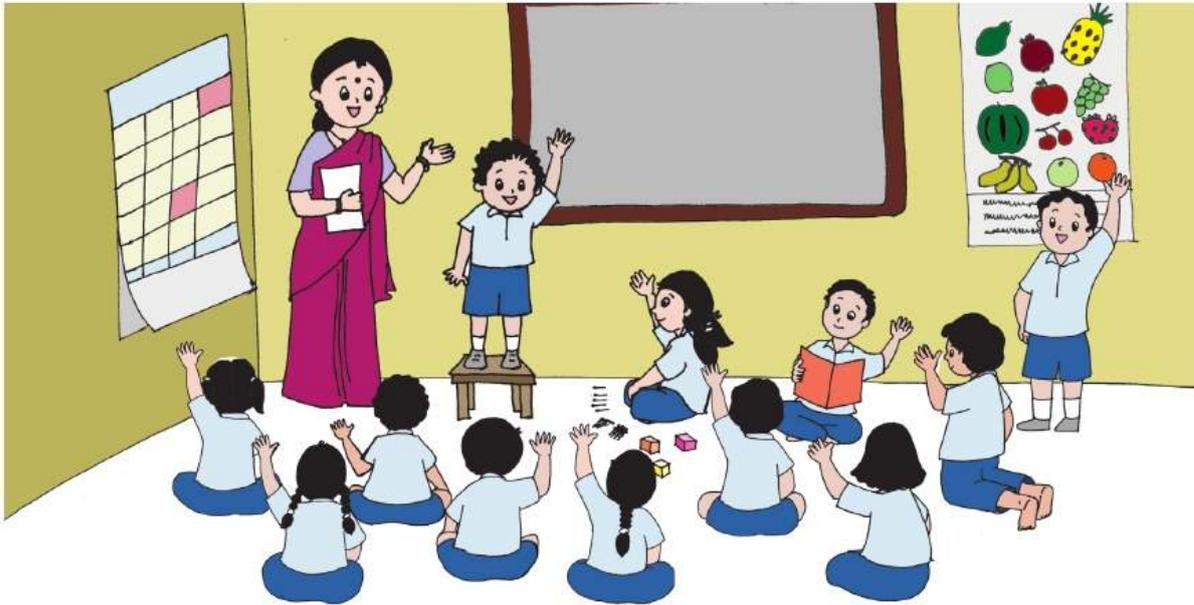
For Teachers

Conduct the game shown in the first picture. Ask questions like, 'Who obeyed the Leader's command correctly ?' Help the children to understand the concept of left and right. Make different children follow instructions like 'Sit on the right of Ramesh', 'Sit behind Ahmed' and 'Give Mary the pencil in her right hand', turn by turn. With reference to the second picture, ask questions like 'Who is on the left of the truck ?', 'Who is behind the truck ?', 'On which side of the road are the vehicles running ?' and 'On which side of the road should one walk ?'. Thus, give practice with the concepts of left and right, and behind/in front of.

Introducing Geometrical Shapes

A picnic, a picnic, in the farm fresh air
And all shapes of veggies we have found there.

Nice red tomatoes, round and shiny,
Longish brinjals, purple and spiny.

Cucumbers on creepers, cylindrical or curved,
Peel them and slice them, ready to be served.

Cone-like carrots that Motya found.
Can you guess where? Under the ground!

A bit of garlic and tamarinds from trees
I'll have some more, if you please.

Papa cooked the veggies all in a pot.
Mamma made rotis, round and hot.

2

Introducing Geometrical Shapes

✦ Make pairs of pictures of similar shapes.
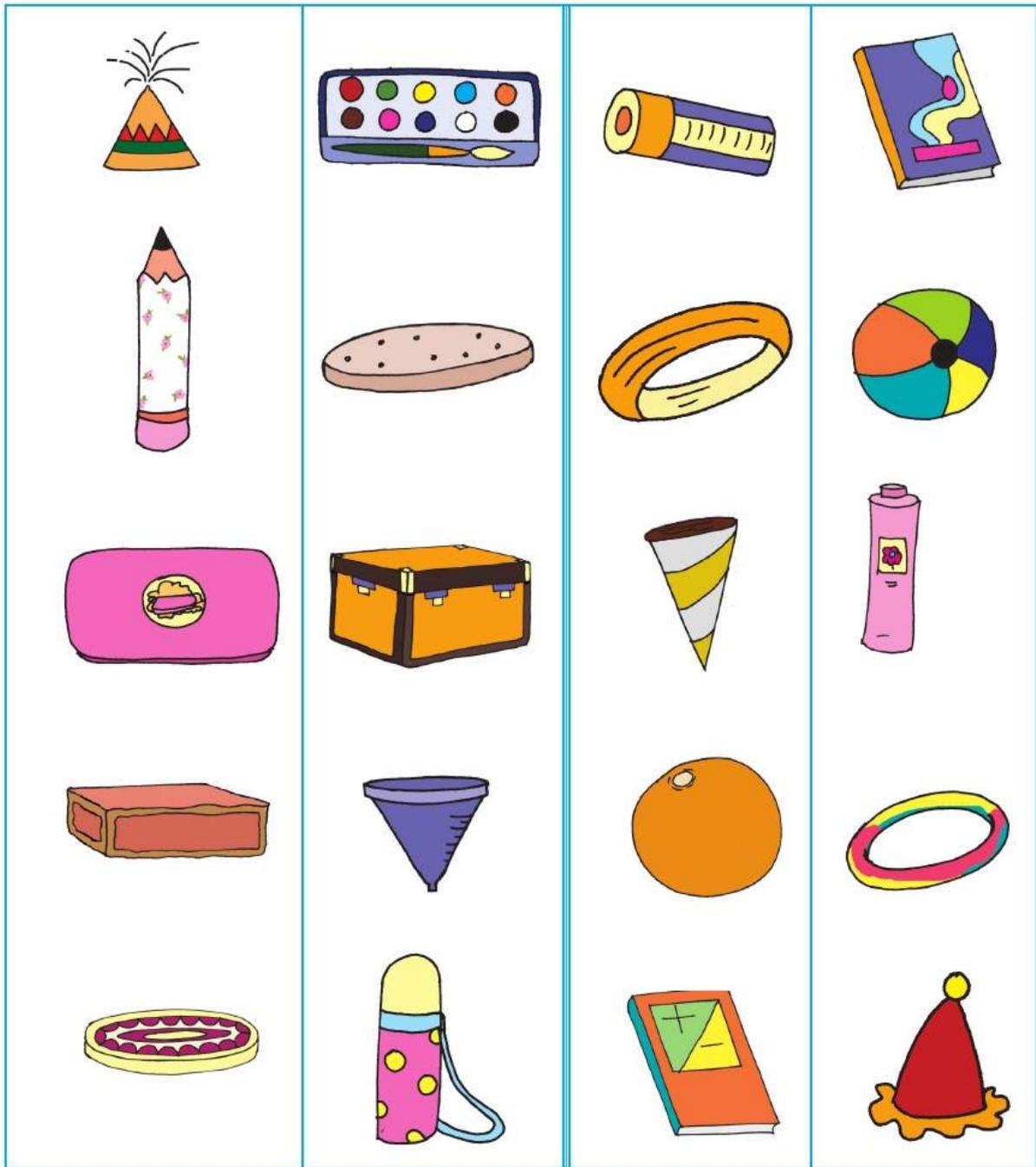
Place many objects like those shown above before the children and tell them to pair off the objects with similar shapes.

3

Edges and Corners

✦ Handle actual objects like the ones shown below and find out how many edges and how many corners each object has.
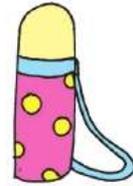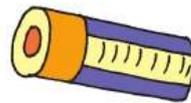
A box has .... edges and .... corners.

❓ How many corners and edges does a ball have ?

An ice-cream cone has **1** edge and **1** corner.

For Teachers — Get the children to handle various available objects and count their edges and corners. Conduct games like the following in the class : Place a variety of things in a cloth bag. One child puts his/her hand inside the bag and tells how many edges and corners an object has only by feeling it. The others must guess what object it is.

Surfaces of Objects

✦ Colour the top surfaces of the objects shown below in one colour and the bottom surfaces in another colour.
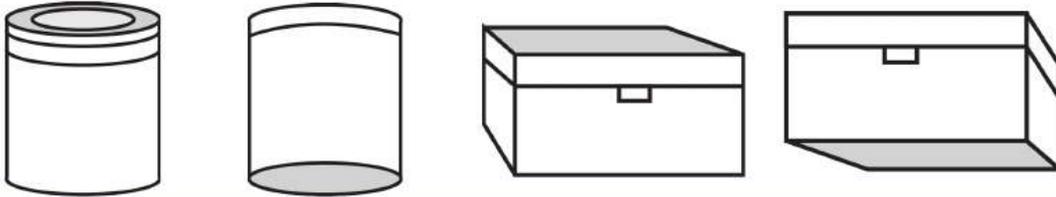
✦ Colour the flat surfaces of the objects shown below in one colour and the curved surfaces in another colour.
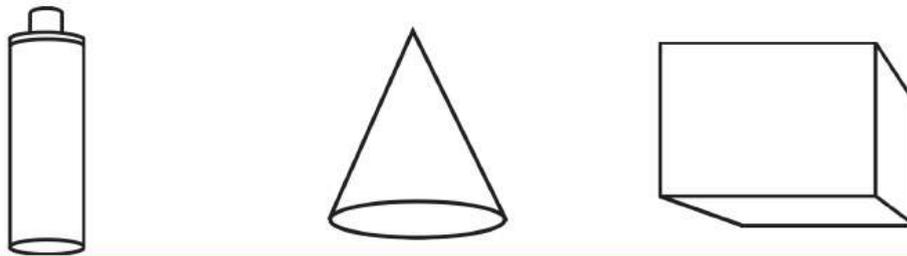
Sliding - Rolling

❓ Tell which of the following things slide and which of them roll.

For Teachers Use a plank of wood or something similar to make a small slide in the classroom. One by one, place things like a pencil, a ball, a reel of thread, an eraser, a compass box at the top of the 'slide' and let go of them. Ask the children to tell which of the objects slide and which ones roll down.

Point out that, generally, objects with edges slide and that there are some things that sometimes roll and sometimes slide.

Introducing the Line

✦ If we hold the ends of a string in our two hands and stretch it, we get a straight line. If we hold it loose, we get a curved line.
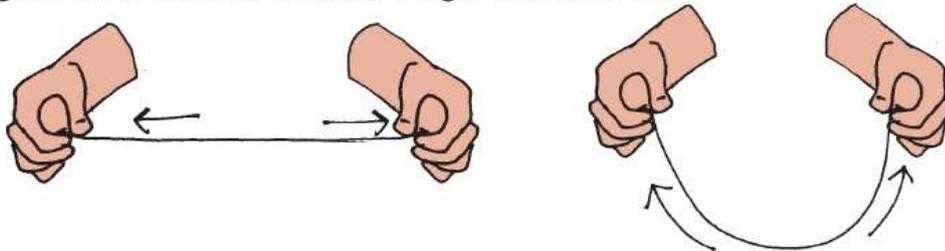
✦ Fold a sheet of paper as shown in the pictures below. Unfold it. Observe it.

A vertical line

A horizontal line
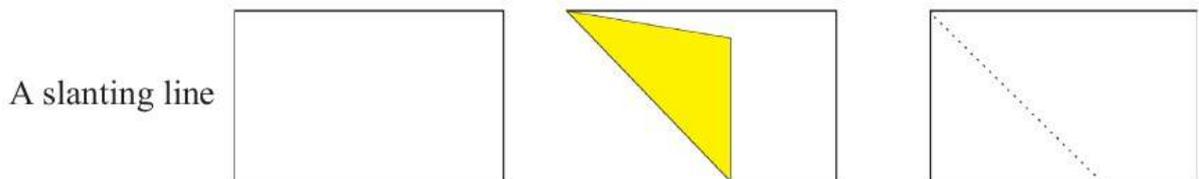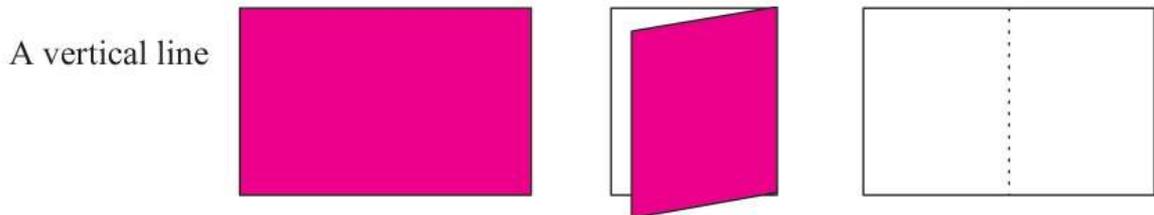
A slanting line

✦ Some lines have been drawn for you below. Draw others like them.

A horizontal line _____   A vertical line

A slanting line

Curved lines
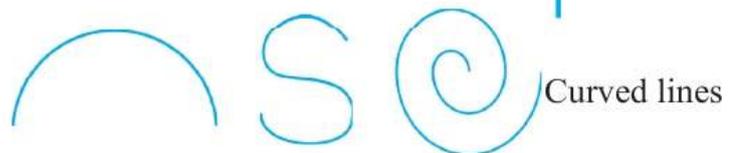
For Teachers — Wherever you fold a sheet of paper, you get a straight line. Point out that when you hang a stone using a length of thread, you get a vertical line.

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Drawing Lines and Shapes Using Objects

✦ Observe how a line can be drawn using a ruler.
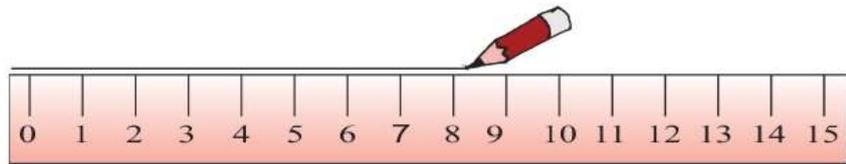
✦ Draw lines using the objects shown below.
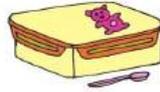
✦ Draw lines by moving your pencil along the edges of different objects as shown below.
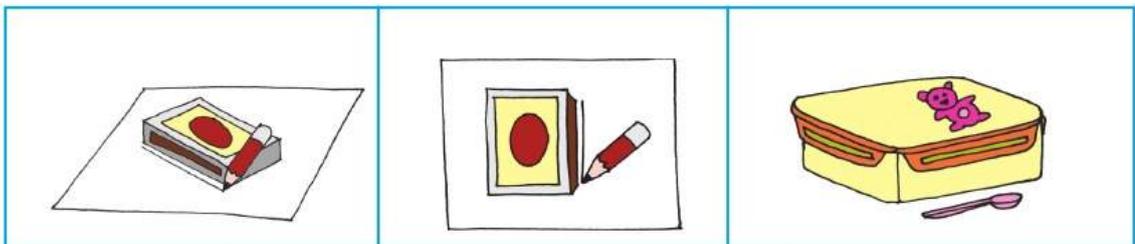
✦ Draw shapes by moving your pencil along the edges of different objects as shown in the pictures and observe the shapes.

7
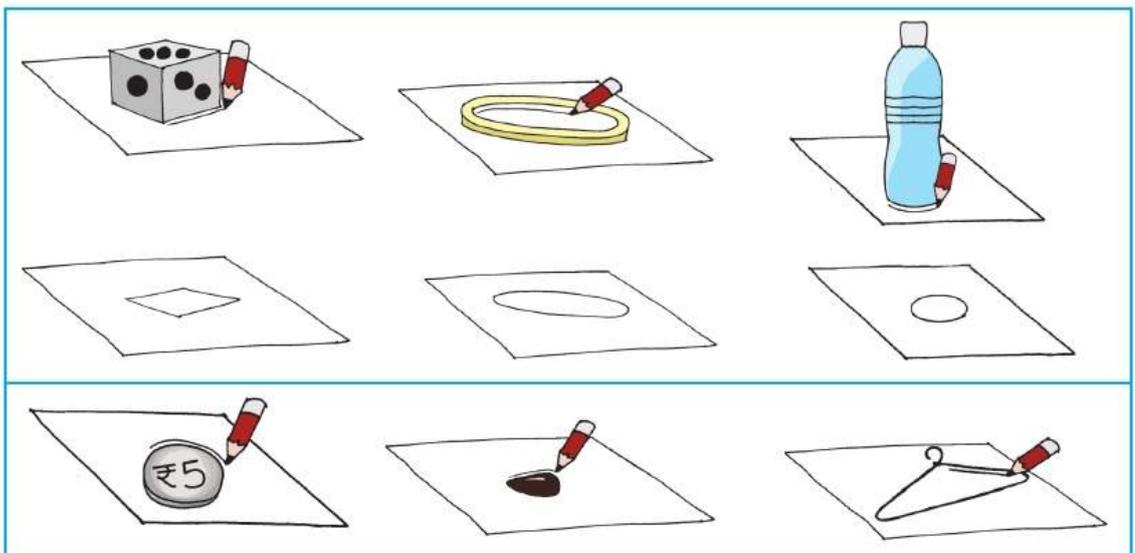
Use of Curved and Straight Lines
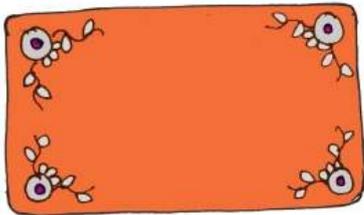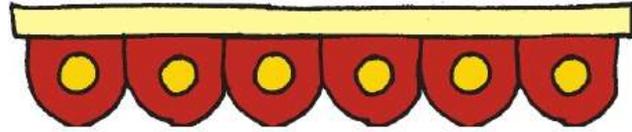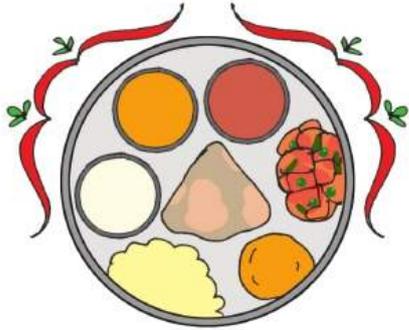
✦ In the *rangoli* below, trace the curved lines in blue and the straight lines in red.
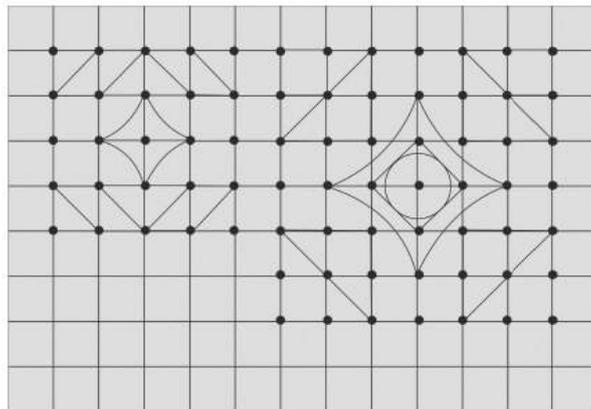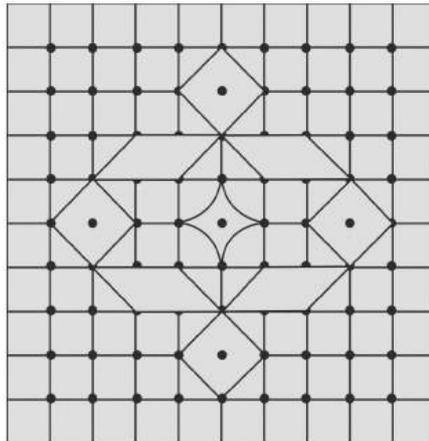
Recognizing Geometrical Shapes

These are triangles.
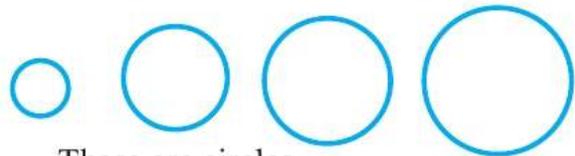
These are circles.
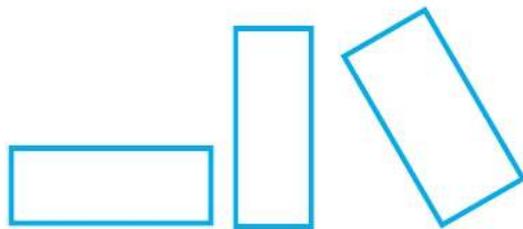
These are rectangles.
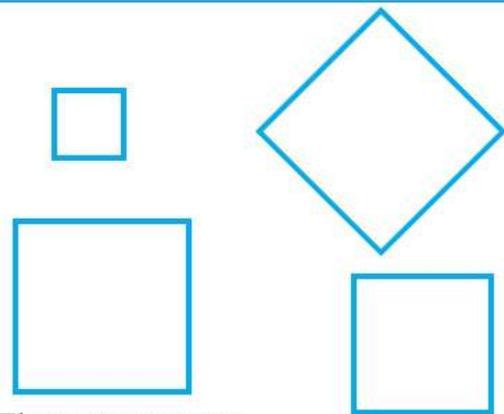
These are squares.

✦ Identify the different shapes in the picture of the duck.
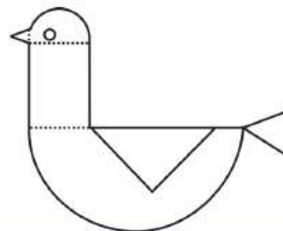
✦ Fill different colours in the pictures.
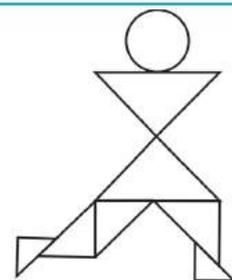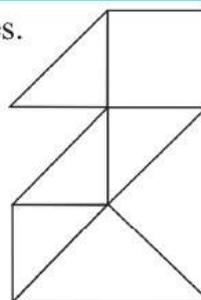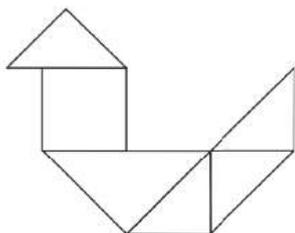
✦ Use the shapes of the square, the rectangle, the circle and the triangle to draw any picture you like in your notebook. Colour your picture.

For Teachers Tell children to make a variety of triangles by folding sheets of paper. Give instructions like, 'Colour any two triangles', 'Fold ribbons or pieces of cloth into triangular shapes'. Ask children in which everyday things they have seen the shapes shown above. Get them to make a paper boat and then unfold the paper and colour the triangles formed by the folds.

Measurement : Length

★ Length

Use a thread to compare the lengths of the four sides of the slate.

❓ Which are the longer sides of the slate ?

❓ Which sides of the slate are of equal length ?

Compare the lengths of the four sides of the objects shown below.
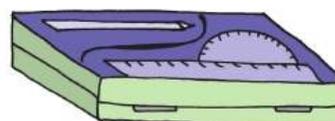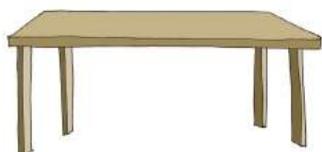
The height of the table is equal to ⬚6⬚ of Nandu's hand-spans.
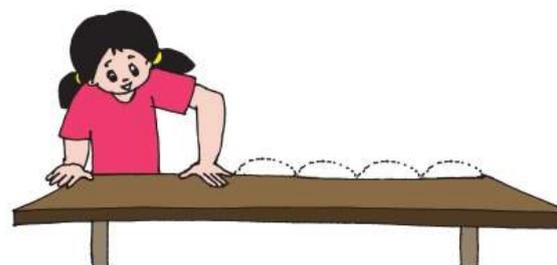
One side of the table is four hand-spans long and the other side is more than six hand-spans long.

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Measurement : Length

When playing tip-cat, use the stick to find out how far the cat is from the starting notch.
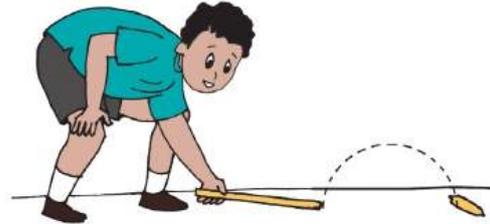
? What would you use to measure the lengths of things like a book, blackboard, cupboard, calendar or the classroom ? Write the lengths of these things in terms of the object you used to measure the lengths.

? How many lengths of the forearm is the table ?
How many hand-spans is the length of the same table ?

? How many pencils wide is the window ?

? How many steps is the distance between the two pots ?

For Teachers Measure the length of various objects in the surroundings using the hand-span, fingers, a step, arm, etc. Point out that a distance when measured by the hand-span, the forearm or the step of different people measures different.

11

Weight (Mass)

☆ Less - More

Which brinjal weighs more ?

Which bar of chocolate weighs more ?

Which pumpkin weighs more ?

The red ball is heavier, its weight is greater.

Weight : Less - More

✦ Look at the pictures.

The pan with the book goes down. It means that the book weighs more. The pan with the guava is higher means that the guava weighs less.
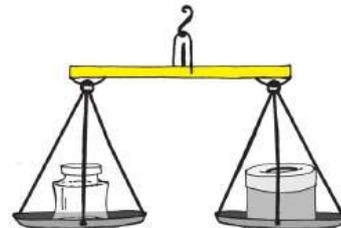
The pans with the jar and the box are both at the same level. Neither is higher or lower than the other. Hence, they weigh the same.

✦ Look at the picture and say which one weighs more – the pumpkin or the pomegranate ?

Weight

See, I found a loaf of bread.

Let's share it. This piece is for you.

But, your share looks bigger.

Let's weigh it on a balance.

Mani's share weighs 10 marbles.

Moti, your piece weighs 11 marbles.
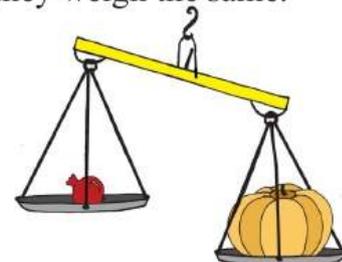
Moti was satisfied. The two ate their shares of the bread happily.

Weight (Mass)
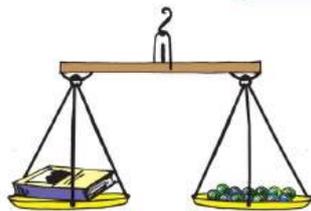
The book weighs 13 marbles.
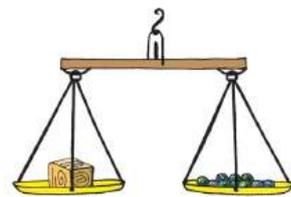
The block weighs 10 marbles.

For Teachers — In the class, give children the opportunity to weigh various objects using a balance. Tamarind seeds, chalksticks, pencils could be used in place of marbles to weigh the objects.

Ordinal and Cardinal Numbers

Robert Sachin Saurabh Hasan Shubham
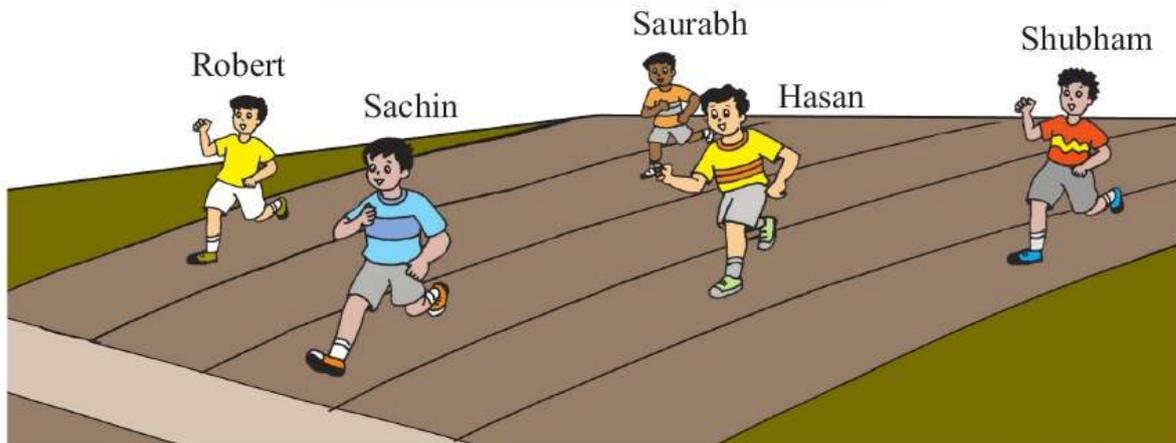
❓ In the picture above, how many children do you see running a race ?　5

5 is a cardinal number indicating the number of children.

❓ At which place is Saurabh in this race ?　5th

5th is a word that shows a place in a certain order or sequence.
It indicates an ordinal number.

❓ Who is first ?　[　　　]　❓ Who is in the fourth place ?　[　　　]

❓ In which wagon is the peacock ?　❓ Who is in the first wagon ?

❓ In which place is the lion's wagon ?　❓ Who is in the seventh wagon ?

❓ In which place is the wagon that comes after the camel's wagon ?

❓ In which place is the wagon that comes before the elephant's wagon ?

❓ In which wagon is the rabbit ?

For Teachers Point out and lay stress on the proper use of the cardinal numbers 1, 2, 3, 4,... and words like first, second, third, ... , which denote a place in a particular order.

A Feast in the Forest

First, first, the Deer was first
With a bagful of greens ready to burst.

Second, second, the Hare's second
But in his haste, the tiffin's forgotten.

Moo, moo, the Cow is third,
Gajar ka halwa ! Wow ! is the word.

Who's fourth? The Elephant's fourth.
A trunkful of sugarcanes swinging back and forth.

With corns from the cob, the sparrow was fifth,
The monkey brought fruits and he was sixth.

In shiny feathers, the peacock's the seventh,
His roasted chana will nourish and strengthen.

One by one, they add to the treat.
With fun and frolic, they have their feast.

Read the Numbers

11 **31 91 81** **61**	**22** **32 12 42** **92**	**43** **13 83 53** **93**	**16** **36 76 86** **56**	**17** **37 67 77** **87**
10 **60 20 70** **40**	**15** **35 65 75** **95**	**24** **64 84 44** **94**	**19** **39 69 99** **49**	**18** **48 38 98** **58**
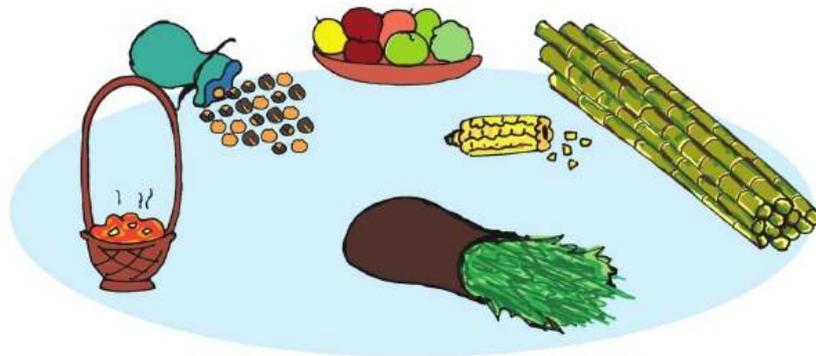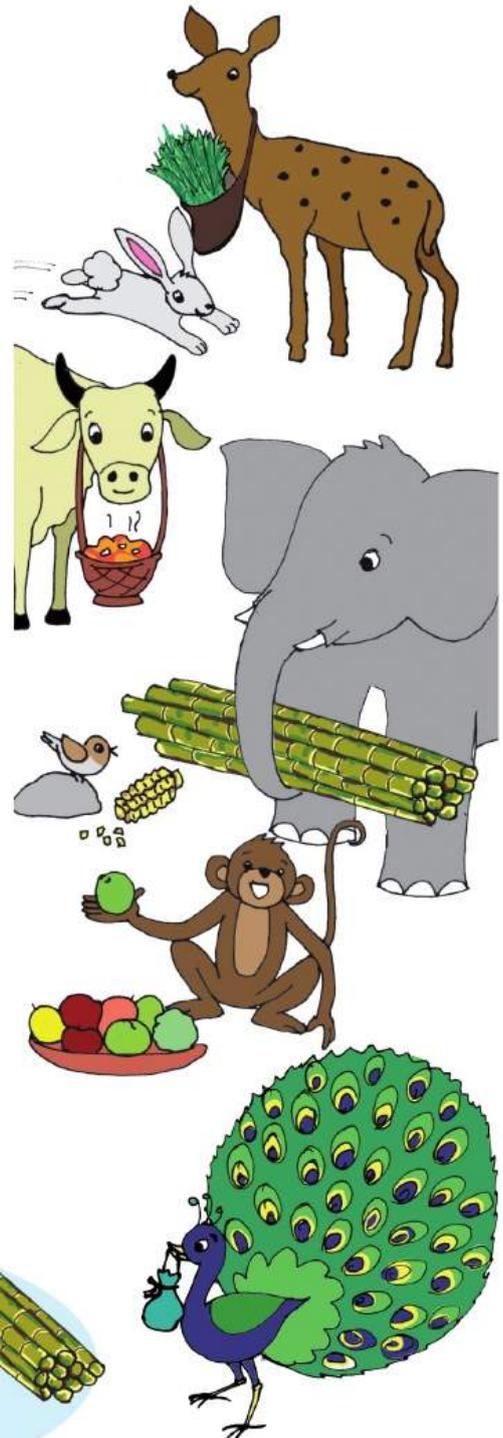
For Teachers Conduct 'number-reading' by showing any number-card and telling the children to read it.

◆ Say. **33** to **50**   **24** to **31**   **48** to **70**   **85** to **99**   **65** to **75**

In the chart below, join the numbers from **1** to **100** in the proper order to help the mouse reach its treat.

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

Numbers - Counting Forward

The children had brought many marigolds to make garlands. Gampu and Motya sat down to make the garlands. Gampu was threading the flowers on the string pretty fast and Motya could not keep up with him. When all the flowers were finished, Gampu's garland was longer than Motya's. Mani asked Gampu, 'How many flowers are there in your garland ?' Gampu counted the flowers
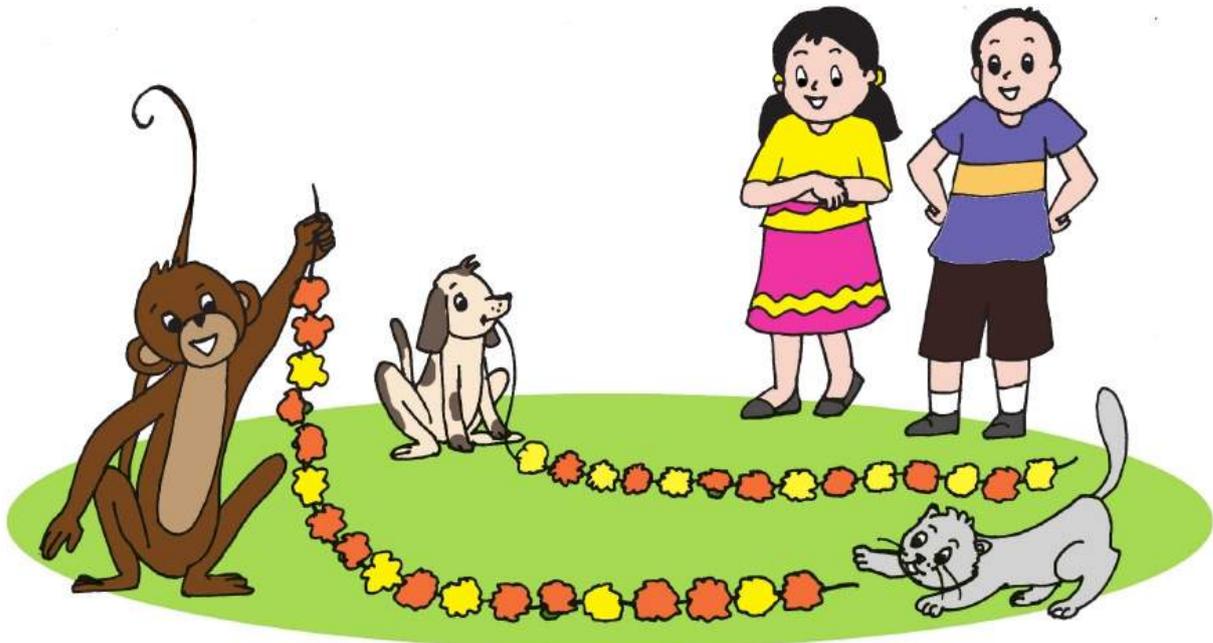
and answered, 'I have 18.' Nandu said, 'I brought 32 flowers altogether. Now Motya, count the flowers in your garland forward after 18.' Then Motya counted, '19, 20, 21 .....' up to 32 flowers. 'That's right', said Nandu. 'We have all the 32 flowers in the two garlands.' Then Mani asked, 'But how many flowers does Motya's garland have ?' 'Shall we count Motya's flowers afresh, or shall we do a subtraction ?' Sonu wondered. Motya said, 'I feel it's easier to count than to do subtraction sums', and set about counting the flowers in his garland. There were 14. Sonu said, 'We have learnt one more thing, that 18 and 14 make 32 altogether.'

For Teachers

Read out the story given above, slowly. Give practice of similar counting exercises. For example, 'Count forward after 17 up to 29; after 36 up to 51; after 46 up to 64; forward after 79 up to 92. Play a game of counting forward with all the children sitting together in front of you. For example, Mohan starts counting 1, 2, 3, ... till 17. At 17, stop Mohan and tell Seema to count forward from the next number. When Seema says the number 28, stop her and tell Hasan to count from the next number. When the children reach 100, the counting can start again from 1.

Clap Your Hands - Snap Your Fingers : A Game

One snap of your fingers means one unit.

snap

One clap means one ten.

clap

You heard two claps and three snaps. The number is **23** !

Count the claps and snaps. Write the number.

The Number [ ]

Take any two numbers at a time from those around the diamond and make as many numbers as possible.

1
2 ◇ 4
7

[ ]

2
5 ◇ 5
2

[ ]

1
3 ◇ 4
1

[ ]
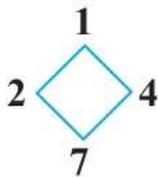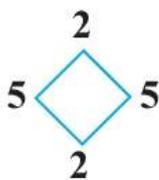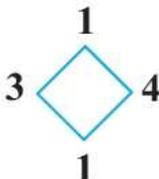
For Teachers
Give the children any four digits and tell them to make as many numbers as possible by choosing from them any two digits at a time.

18

Counting

Count to see how many.
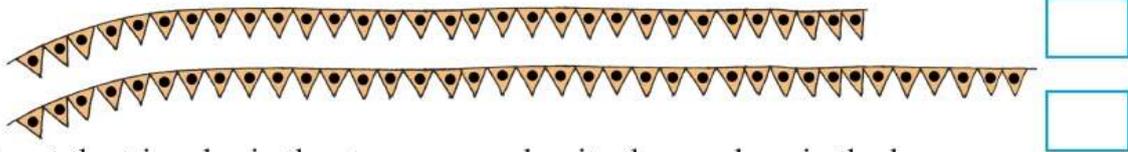
Count the triangles in the streamers and write the numbers in the boxes.
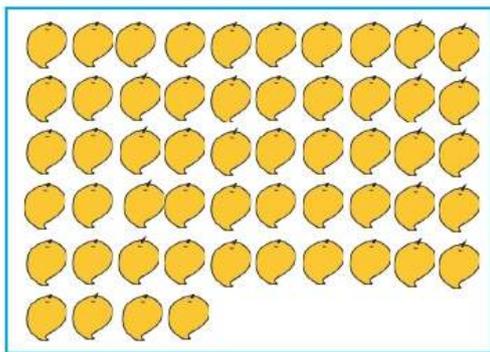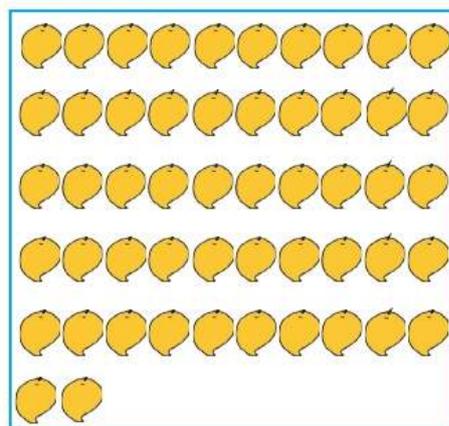
❓ Count the mangoes and write the number in the empty box.
Which frame shows more mangoes ?
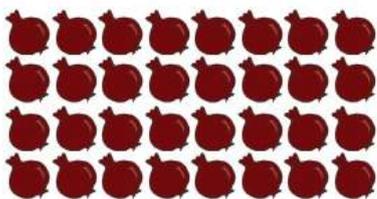
1, 2, 3, ..., 32,
– that's how
I counted.

10, 20, 30, ...
that's how
I counted.

Aman's Method

Javed's Method

Aman said, "I liked Javed's method of counting." Javed counted the objects in groups of 10. Try using Javed's method to count objects.

19

A Counting Game

Look at the pictures. Write the numbers.

Bundles of 10	Singles	Bundles of 10	Singles	Bundles of 10	Singles	Bundles of 10	Singles

Sonu and her friends have to count the *tiklis*. They are to be counted in groups, ten *tiklis* to a group. Count the *tiklis*.

Names	Objects	Tens	Units	Number
Sanjay		1	2	12
Mary				
Rohit				
Shubham				
Rehman				

Place as many objects as each of the numbers given below.

24	72	35	82

For Teachers Make the children sit in pairs. Place several bundles of sticks and single sticks, as well as the strings of ten beads and single beads in front of them. One child gives the other any number. The second child must select a number of sticks or beads equal to the given number. Tell the children to read the number.

Numbers in Tens and Units Form

Sita sells strings of beads. She sells them in strings of ten beads or as single beads. Reshma wants **15** beads. How should Sita count out **15** beads for her ?

Other girls also want to buy beads. Write how Sita should give them the beads they want.

Names of Girls	Number of Beads	Strings of tens	Single Beads
Salma	21		•
Anju	17		
Manju	32		
Rekha	35		
Nasreen	49		
Beena	55		
Martina	50		
Najma	72		
Sujata	47		
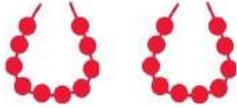
For Teachers Tell the children to show the strings of tens and the single beads according to the given number.

21

Two-digit Numbers on a String of Hundred

Look at the number **32** shown on a string of hundred.
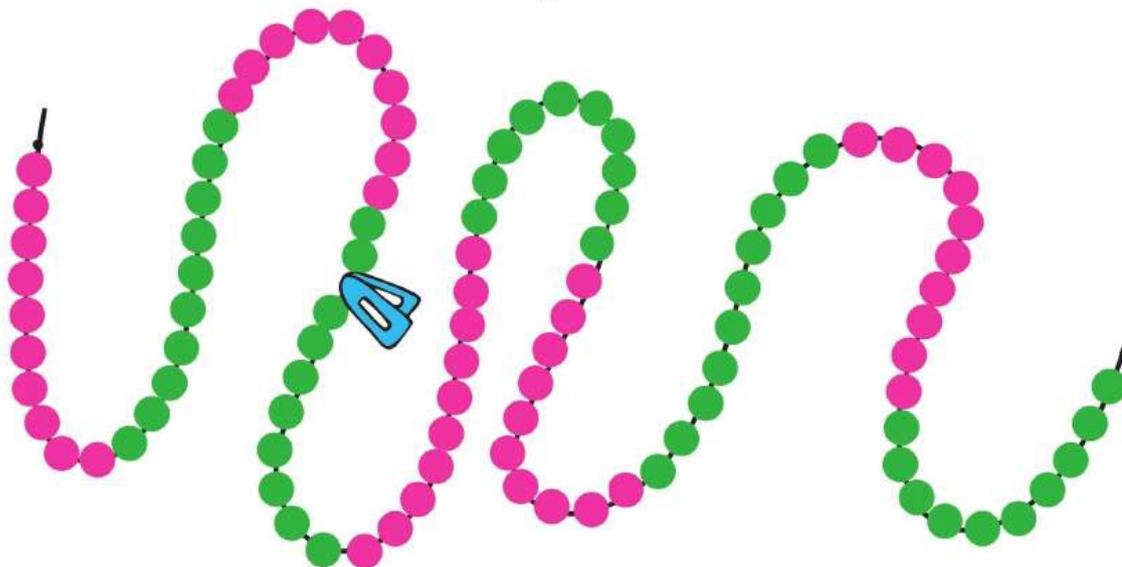
3 tens   **2** units = **32**

Show the following numbers on a string of hundred.

15

32

47

95

64

For Teachers Show a string of hundred beads to the class. Tell children to count beads on this string.
Give them practice in showing numbers on it and in writing the numbers in tens and units.

22

Numbers : In Tens and Units Form

Write the given number in the tens-units form.

Number	Tens	Units
25	2	5
31		
18		
42		
57		

Number	Tens	Units
63		
77		
50		
90		
79		

Look at the tens and units and write the number.

Match the following.

44

30

54

65

Writing Numbers in Words

One to Twenty-five

In figures	1	2	3	4	5
In words	one	two	three	four	five
In figures	6	7	8	9	10
In words	six	seven	eight	nine	ten
In figures	11	12	13	14	15
In words	eleven	twelve	thirteen	fourteen	fifteen
In figures	16	17	18	19	20
In words	sixteen	seventeen	eighteen	nineteen	twenty
In figures	21	22	23	24	25
In words	twenty-one	twenty-two	twenty-three	twenty-four	twenty-five

✦ Write the following numbers in words.

19,   21,   18,   13,   11,   23,   20,   17

✦ Write the following numbers in figures.

seventeen, twenty-three, fourteen, twenty-two, fifteen, twelve, sixteen

For Teachers | Conduct this game using number cards. Show the number and tell the children to write in words or show the number in words and tell them to write it in figures. Give a lot of practice.

24

Revision : Addition and Subtraction

The Cap-seller and the Monkeys

Nandu had decided to give caps to his friends on his birthday. So, the cap-seller was taking 20 caps to Nandu's house. He lay down to rest under a tree by the roadside. The monkeys on the tree made off with all his caps. They sat on the tree and wore the caps. They just would not return the caps to the cap-seller. The cap-seller threw his cap to the ground in anger. And, guess what happened? Most of the monkeys did the same! The cap-seller put his cap back on his head and quickly collected all the others. He got back 18 caps. Now, how many more caps will Nandu need on his birthday ?

20 children were invited to the party.

The cap-seller handed over the 18 caps he had got back. 17 children came for the party.

Did every child get a cap ? Were some caps left over ? How many ?

For Teachers Tell the story in the class. Through a discussion, encourage the children to find answers to the questions in the story.

25

Addition : By Counting Forward

Look at the table of 100.

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

✦ **12 + 7 = ?**   Put your finger on the number **12**.

After **12** , count **7** more boxes in the same column.

Which number do you get ?

$$\begin{array}{r} 1\ 2 \\ +\ \ \ 7 \\ \hline 1\ 9 \end{array}$$

✦ **29 + 5 = ?**   In the table, after **29**, count **5** more boxes in the same and the next column. Write the number in the box.

$$\begin{array}{r} 2\ 9 \\ +\ \ \ 5 \\ \hline \end{array}$$

Count forward and add.

| $\begin{array}{r}8\\+6\end{array}$ | $\begin{array}{r}7\\+9\end{array}$ | $\begin{array}{r}1\ 2\\+\ \ 5\end{array}$ | $\begin{array}{r}1\ 5\\+\ \ 4\end{array}$ | $\begin{array}{r}2\ 2\\+\ \ 5\end{array}$ | $\begin{array}{r}7\ 2\\+\ \ 3\end{array}$ | $\begin{array}{r}8\ 7\\+\ \ 4\end{array}$ |

| $\begin{array}{r}2\ 5\\+\ \ 7\end{array}$ | $\begin{array}{r}3\ 7\\+\ \ 8\end{array}$ | $\begin{array}{r}3\ 8\\+\ \ 9\end{array}$ | $\begin{array}{r}4\ 1\\+\ \ 3\end{array}$ | $\begin{array}{r}2\ 2\\+\ \ 6\end{array}$ | $\begin{array}{r}6\ 4\\+\ \ 8\end{array}$ | $\begin{array}{r}1\ 9\\+\ \ 5\end{array}$ |

For Teachers Give practice in counting forward on fingers instead of using the table. Point out to the children that 'Addition means to increase.'

26

Addition : Using Tens-Units

	2 tens	2 units
+	1 ten	3 units
	3 tens	5 units

	T	U
+	2	2
	1	3
	3	5

 +

☐ tens	☐ units
☐ tens	☐ units
☐ tens	☐ units

+ ☐ ☐ / ☐

When adding numbers, the digits in the units place are added first.

Add.

T	U
1	5
+1	2

T	U
2	5
+1	4

T	U
1	2
+1	3

T	U
1	8
+1	1

T	U
1	7
+1	2

T	U
2	2
+1	5

Draw lines to show tens and units separately and add the numbers.

2 1	+1 5

| 2 3 | +1 4 |

| 2 4 | +1 2 |

| 3 2 | +1 5 |

| 3 3 | +1 4 |

| 3 5 | +1 2 |

| 4 1 | +2 2 |

| 5 2 | +1 4 |

| 5 5 | +3 2 |

| 6 1 | +2 4 |

| 6 5 | +3 3 |

| 5 3 | +2 4 |

For Teachers Tell the children to use actual bundles of beads/sticks for tens and single beads/sticks for units to carry out additions.

Adding Zero and Subtracting Zero

$$\begin{array}{r} 5 \\ + \ 0 \\ \hline 5 \end{array}$$

$$\begin{array}{r} 0 \\ + \ 5 \\ \hline 5 \end{array}$$

Let's shake the tree to make the papayas fall.
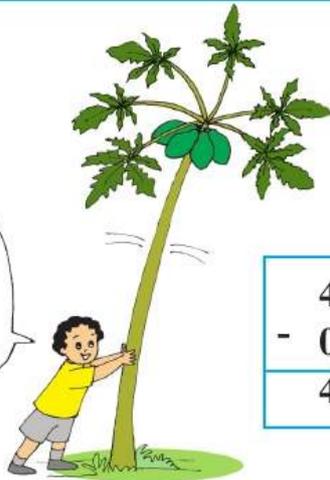
$$\begin{array}{r} 4 \\ - \ 0 \\ \hline 4 \end{array}$$

I shook the tree so hard but no papaya fell.

✦ Solve.

- 8 + 0 = ____
- 23 + 0 = ____
- 66 + 0 = ____
- 12 + 0 = ____
- 73 + 0 = ____

- 11 − 0 = ____
- 57 − 0 = ____
- 19 − 0 = ____
- 23 − 0 = ____
- 40 − 0 = ____

For Teachers Point out that when zero and any number are added we get the same number and that when we subtract zero from any number the remainder is the same number, too.

28

Another Meaning of Subtraction
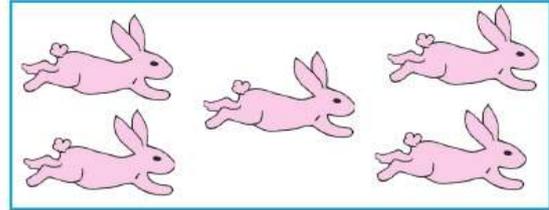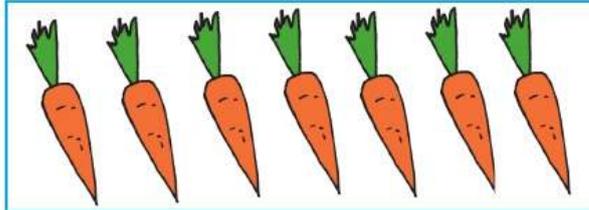
How many more carrots are there than rabbits ?
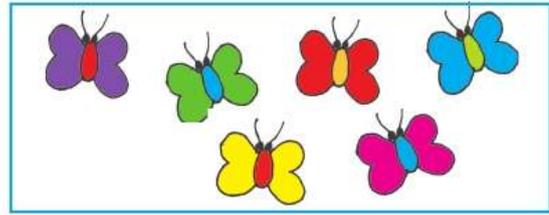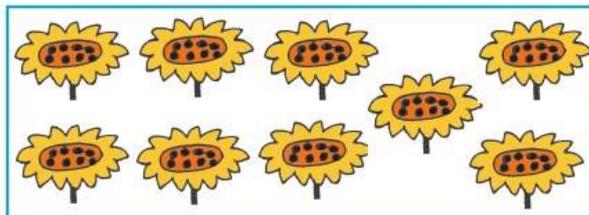
The butterflies are fewer than the flowers – by how many ?

The number **5** is ☐ more than **2**.   It means that   **5 = 2 +** ☐

The number **2** is ☐ less than **5**.   It means that   **2 = 5 −** ☐

The number **7** is ☐ more than **3**.   It means that   **7 = 3 +** ☐

The number **3** is ☐ less than **7**.   It means that   **3 = 7 −** ☐

Fill in the boxes.

The number 5 is ☐ less than 11,   means 5 = 11 − ☐.

The number 9 is ☐ more than 4,   means 9 = 4 + ☐.

For Teachers Point to every picture and lead the children by eliciting oral answers to questions such as : ✳ Is the number 5 bigger or smaller than 2 ? ✳ By how much is 5 bigger than 2 ? ✳ 5 is equal to 2 plus how many ? ✳ Is the number 2 bigger or smaller than 5 ? ✳ By how many is 2 smaller than 5? ✳ 2 is equal to 5 minus how many ?

The Relationship Between Addition and Subtraction
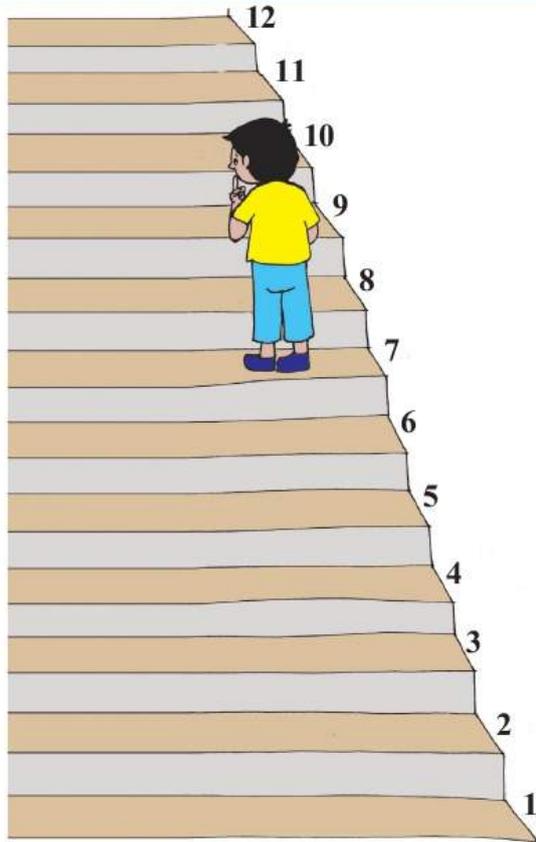
How many more steps are there to climb?

$7 + \boxed{} = 12$ $12 - 7 = \boxed{}$

Let's play a game.

Anita was holding 14 seeds in her two hands. She hid some of them in the fist of one hand and she held out the rest in the other. These were five. How many seeds was she hiding?

$\boxed{}$

Write the correct numbers in the boxes.

$8 + \boxed{} = 15$ $15 - 8 = \boxed{}$

$9 + \boxed{} = 18$ $18 - 9 = \boxed{}$

$12 + \boxed{} = 20$ $20 - \boxed{} = 12$

$25 + \boxed{} = 28$ $28 - \boxed{} = 25$

$29 + \boxed{} = 32$ $\boxed{} - 3 = 29$

Subtraction By Counting Forward

9
− 4

Four are to be taken away from nine, so count forward after four and make one dot for every number after four, till nine.

Total number of dots = **5**

Therefore, **9 − 4 = 5**

• • • • •
5 6 7 8 9

9
− 4
5

1 2
− 8

Eight are to be subtracted from twelve, so count forward after eight making one dot for each number after eight, till twelve.

Total number of dots = **4**

Hence, **12 − 8 = 4**

• • • •

1 2
− 8

◆ Subtract by counting forward.

9		1 2		1 5		1 1		1 2
− 5		− 5		− 7		− 4		− 9

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

1 2		1 5		8		1 8		1 5
− 1 2		− 9		− 3		− 9		− 8

Subtraction

T	U
– 2	5
1	2
1	3

To subtract **12** from **25** :
From **2 tens** and **5 units**,
take away **1 ten** and **2 units**.

◆ Subtract by striking off the correct number of tens and units.

T	U
– 3	5
1	5

From **3 tens** and **5 units**,
take away **1 ten** and **5 units**.
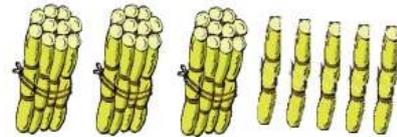
First take away **4 units** from **6 units**. Write the remainder in the units place of the answer.

T	U
– 3	6
1	4

Now, subtract **1 ten** from **3 tens** and write this difference in the tens place of the answer.
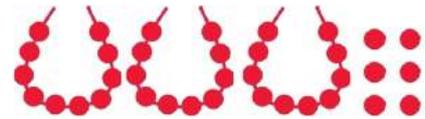
Subtract using the method shown above.

– 2 5	– 2 7	– 3 5	– 3 7	– 4 7	– 4 9
1 2	1 3	1 1	2 5	3 2	3 3

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

– 7 2	– 7 8	– 8 4	– 8 7	– 9 8	– 9 7
4 1	5 3	3 2	4 5	3 5	4 5

For Teachers In the beginning, let the children do practical work to do the sums.

32

Word Problems

Solve the following problems.

✦ Ajit planted 15 guava trees and 22 papaya trees. How many trees did he plant altogether ?

T	U	
1	5	Guava trees
+ 2	2	Papaya trees
3	7	Total trees

✦ Surekha made 15 paper boats. Amit made 21 boats. How many boats altogether ?

✦ Akbar cast some grain for the birds. First, 15 sparrows came to pick the grain. Later, 20 pigeons also came. Altogether, how many birds came to eat the grain ?

✦ Sagar read 12 story-books. Shabnam read 24. How many books did the two of them read altogether ?

✦ Of the 25 potatoes that were boiled, Vijay peeled 12. How many potatoes are still to be peeled ?

✦ Rahul had 25 chocolates. He shared 11 of them with his friends. How many does he have now ?

T	U	
2	5	Chocolates
− 1	1	Chocolates
1	4	Chocolates

✦ Saleem had 37 bicycles in his shop. If he sold 23 of the bicycles, how many are left in the shop ?

✦ Maria brought 46 plants from the nursery and planted 24 in the garden. How many has she not planted yet ?

✦ Mihir had 26 chalksticks. Shama gave him some more and then Mihir had 36 chalksticks. How many chalksticks did Shama give Mihir ?

✦ Chhaya had brought 48 beads to the class. After a string had been made, 6 beads were left. How many beads were threaded into the string ?

33

Days of the Week : Yesterday, Today and Tomorrow

✮ **Days of the Week**
Sunday, Monday, Tuesday, Wednesday, Thursday, Friday, Saturday

✮ **Yesterday, Today, Tomorrow**

✦ Today is Wednesday.
What day will it be tomorrow ?
Tomorrow it will be Thursday.

✦ Today it is Saturday.
What day was it yesterday ?
Yesterday, it was Friday.

Sunday
Saturday
Monday
Friday
Tuesday
Thursday
Wednesday
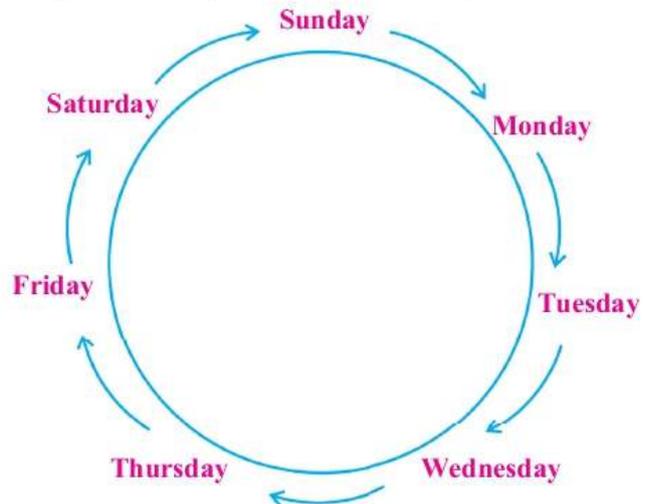
✦ Tell the day : the day before and the day after

	Tuesday	
	Sunday	
	Friday	
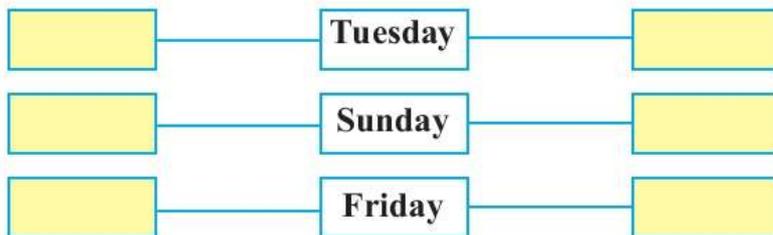
Tell the children to make groups. Give each group the name of a flower. Every group will conduct the morning assembly in turn.

Group	Day of the week
Hibiscus	Monday
Mogara	Tuesday
Jui	Wednesday
Lotus	Thursday
Marigold	Friday
Rose	Saturday

✦ On which day will the Hibiscus Group conduct the assembly ?

✦ If it was *Jui* Group's turn today, what day was it yesterday ?

✦ If the Lotus Group conducted the assembly today, what day will it be tomorrow ?

✦ If the Rose Group conducted the assembly today, what day will it be tomorrow ?

For Teachers Use the weekly class timetable to ask questions like the above based on 'yesterday, today, tomorrow'.

34

Measurement of Time

★ **Months of the Gregorian Year**

There are twelve months in a year.

December 31

January 31

February 28 or 29

November 30

March 31

October 31

The Gregorian Year

April 30

September 30

May 31

August 31

July 31

June 30
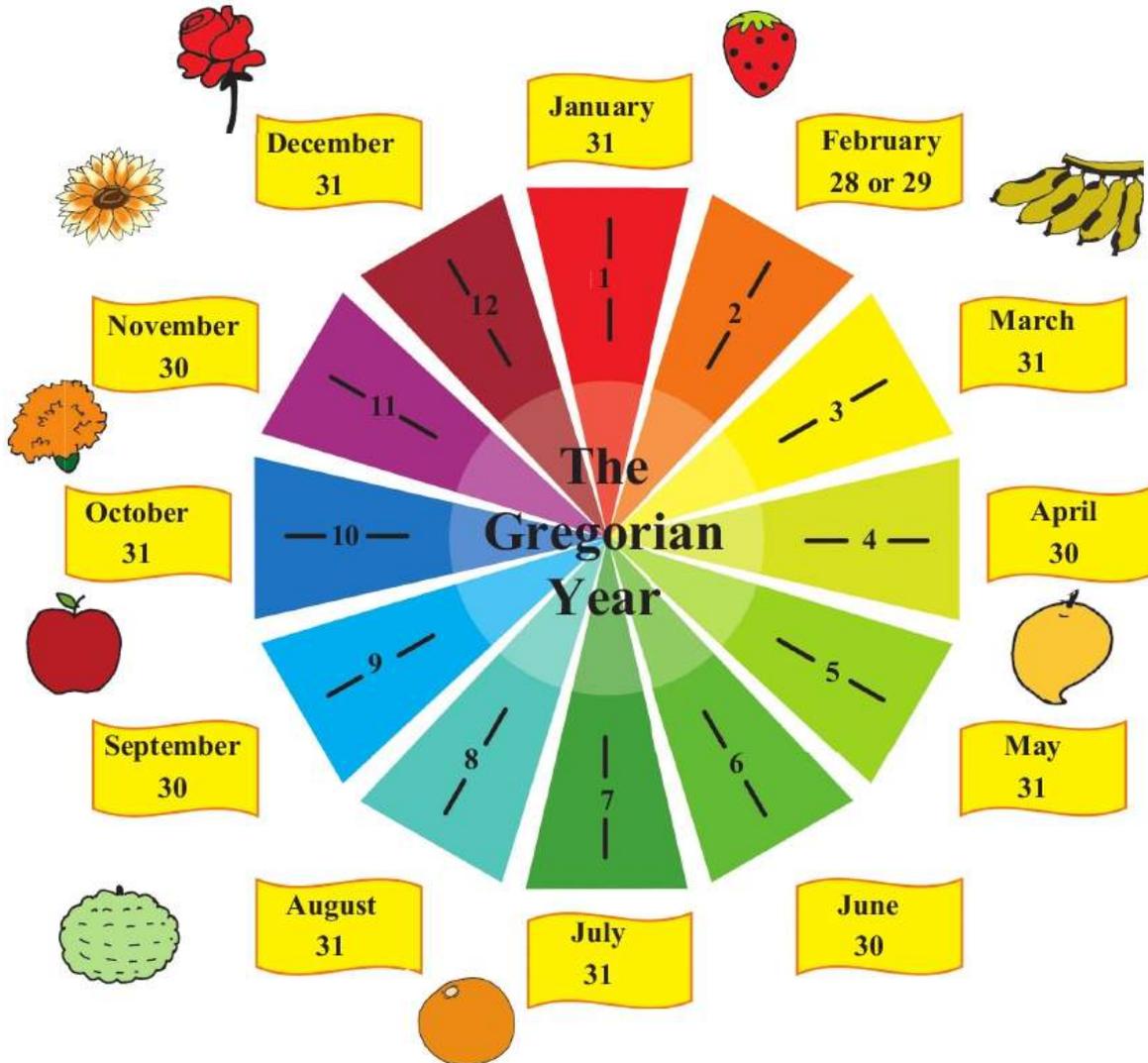
The year begins with the month of January and ends in December. Then, a new year starts again in January.

✦ Write the month before and the month after.

| | March | |
| | July | |

For Teachers

Using a calendar, give practice by asking questions like, 'Which is the month before ....?', 'Which is the month after ....?' Also give practice in saying the months of the year in the proper order.

35

Measurement of Time

⭐ **Months of the Indian Solar Year**

The Indian Solar Year

- Chaitra 30 or 31 — 1
- Vaishakh 31 — 2
- Jyeshth 31 — 3
- Ashadh 31 — 4
- Shravan 31 — 5
- Bhadra 31 — 6
- Ashwin 30 — 7
- Kartik 30 — 8
- Agrahayan 30 — 9
- Paush 30 — 10
- Magh 30 — 11
- Phalgun 30 — 12
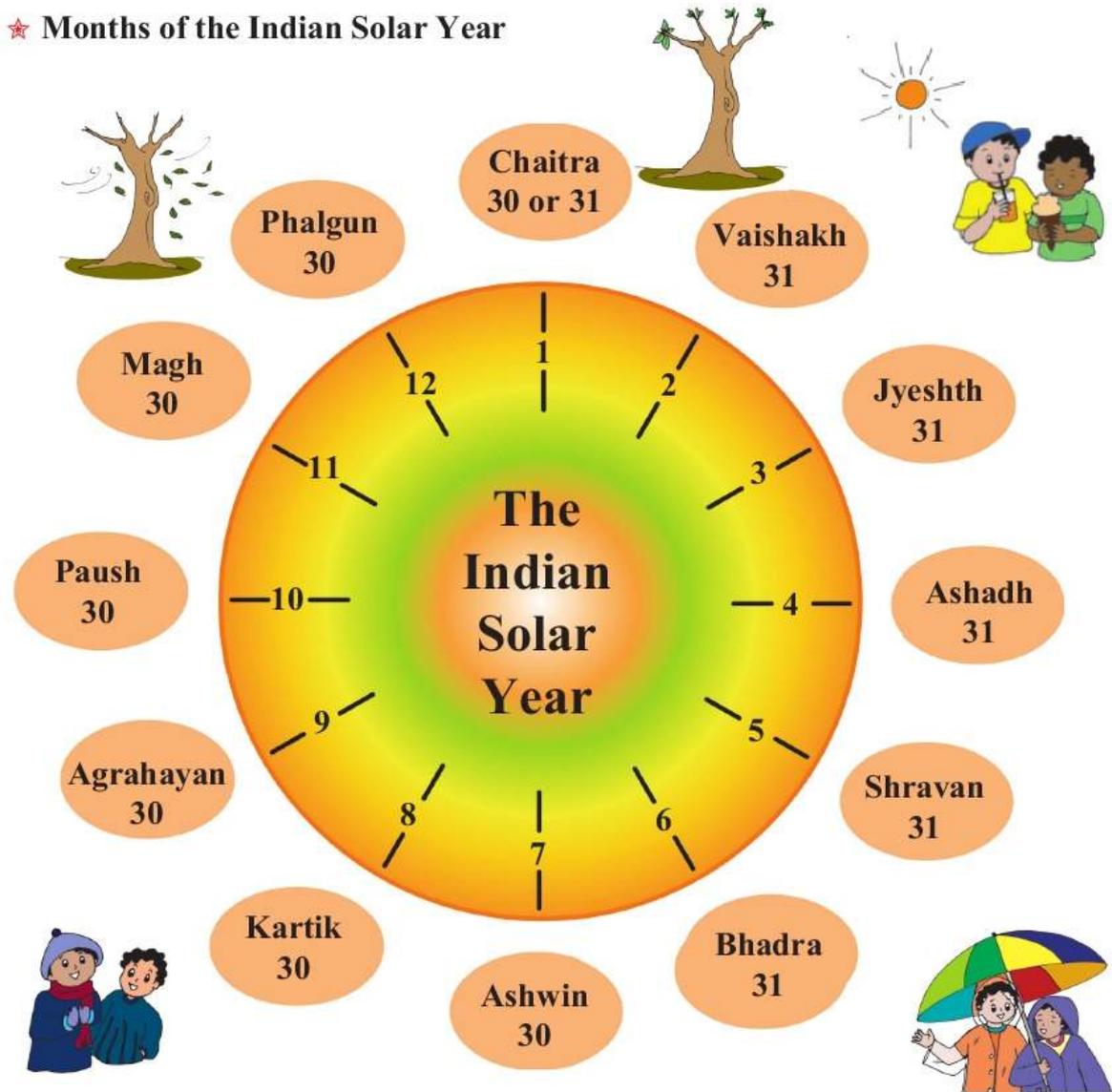
✦ Write the month that comes before and the one that comes after.

○ [ ] — Bhadra — [ ]

○ [ ] — Paush — [ ]

In the calendar of the Indian Solar Year, how many months -
✦ have 31 days ?
✦ have 30 days ?

For Teachers — Make children say the names of the months of the year starting from Chaitra.

36

Smaller and Bigger Numbers

Say which is the bigger number and which is the smaller one. (Practical work)

Numbers	Use of pictures / objects		Smaller Number	Bigger Number
13, 15			13	15
27, 25			25	27
37, 32				
42, 45				
53, 57				
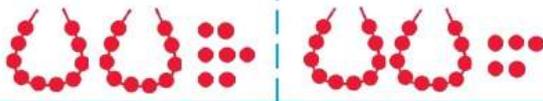
Using two strings of 100 to determine smaller and bigger numbers.

Number	Smaller Number	Bigger Number
20, 10		
30, 20		
50, 10		
30, 60		
80, 70		
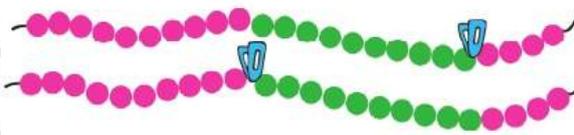
Determine the smaller and the bigger number in each of the pairs below.

Number	Smaller Number	Bigger Number
15, 21		
32, 15		
54, 45		
47, 37		
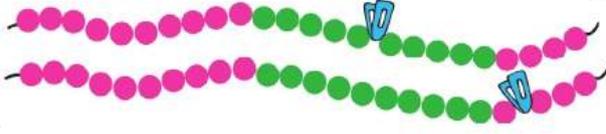
For Teachers Give children strings of 100, bundles of sticks and single sticks to compare numbers.

37

Smaller and Bigger Numbers

⭐ **Comparing numbers using the table.**

Look at the table of **1** to **100** below.

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

Numbers	In the table, the number on the left	In the table, the number on the right	Smaller Number	Bigger Number
57, 22	22	57	22	57
54, 45				
67, 56				
72, 27				
82, 28				

⭐ **Using the number strip**

| 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 |
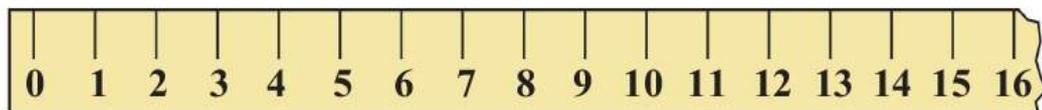
Between 6 and 9, which is the smaller number and which, the bigger ?
Start reading the numbers from 0. The number 6 comes first, 9 comes later.
So, 6 is smaller than 9.

✦ Of 4 and 13, which number comes before the other on the number line ?
So, ☐ is smaller than ☐.

✦ Of 16 and 11, which number comes after the other on the number line ?
So, ☐ is bigger than ☐.

Smaller and Bigger Numbers

Our friends, Nandu, Gampu, Sonu, Moti and Mani were deep in thought, looking at the table of 1 to 100.

Moti : If we take any two of the numbers in this table, can we tell which one is bigger and which one, smaller ?

Nandu : A number in a column on the left is smaller than a number in a column on its right. See 38 and 52.

Gampu : In 38, there are 3 tens and in 52, there are 5. The column with 38 is on the left of the column of 52. So 38 is smaller than 52.

Moti : But, what if both the numbers belong to the same column ?

Sonu : That's easy, too. Look at the numbers 62 and 68. They have the same number in the tens place and they are in the same column. Now look at the units place. 2 is in the units place in 62 and 8 is in the units place of 68. As 2 is smaller than 8, 62 is smaller than 68.

Mani : So, it means that if we are looking at numbers in the same column, then the number above is smaller than the number below.

Moti : Oh, now I understand ! Let's also see 61 and 70. Looking at the tens, 70 is bigger than 61. And even if they are in the same column, 61 is above 70. So, 61 is smaller.

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

Smaller and Bigger Numbers - By Comparing Tens and Units

✦ Between 43 and 51, determine the smaller and bigger number :

43

4 T   3 U

51

5 T   1 U
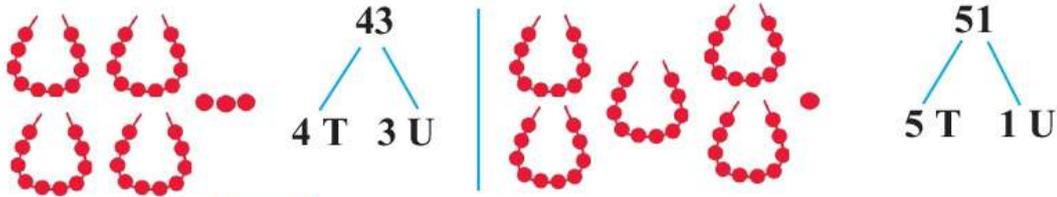
In the number 43, ☐ is in the tens place.
In the number 51, ☐ is in the tens place.
5 tens are bigger than 4 tens.
So, 51 is bigger than 43 and 43 is smaller than 51.

> If two-digit numbers have different digits in the tens place, the number with the bigger tens digit is the bigger number.

✦ Between 71 and 79, determine the smaller and the bigger number.

71

7 T   1 U

79

7 T   9 U

As the numbers 71 and 79 have the same digit in the tens place, we will compare the digits in the units place.
In the number 71, ☐ is in the units place.
In the number 79, ☐ is in the units place.
9 is bigger than 1.
So, 79 is bigger than 71 and 71 is smaller than 79.

> If two-digit numbers have the same tens digit, then the number with the bigger units digit is the bigger number.

✦ Determine the smaller and the bigger number in each of pairs given below.

Number	Smaller Number	Bigger Number
91, 35		
62, 22		
70, 8		
43, 48		

Smaller and Bigger Numbers

✦ Sonu brought 29 beads in one basket and 33 in another. Then she asked, 'Is the number 29 smaller than 33 ?'

Motya, Nandu, Gampu and Mani all gave different reasons to show how 29 is a smaller number than 33.
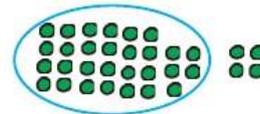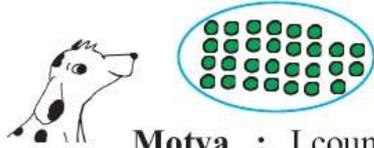
Motya : I counted both. I had to count forward after 29 to reach 33. So, 29 is smaller than 33.

Gampu : I made strings of ten. 33 has 3 tens strings and 29 has two. So, 29 is smaller than 33.
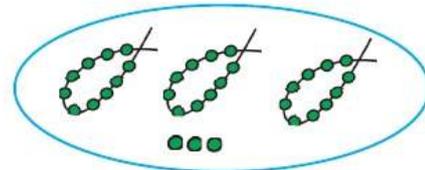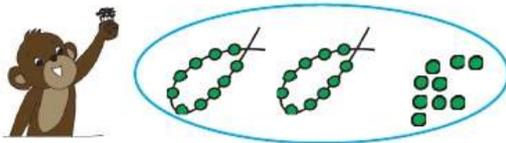
Nandu : I won't count the beads. I can tell by looking at the table of 1 to 100. 29 is in a column on the left of the column of 33. So, the number 29 is smaller than 33.

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

10   20   30
              29   33
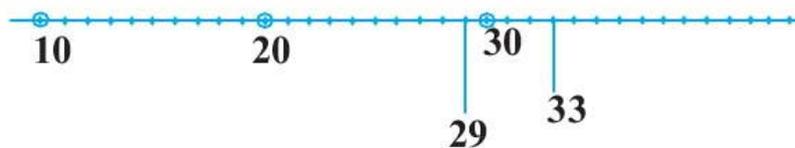
Mani : The number 29 comes before the number 33 on the number strip. So, 29 is smaller than 33.

41

The Ascending and Descending Order of Numbers
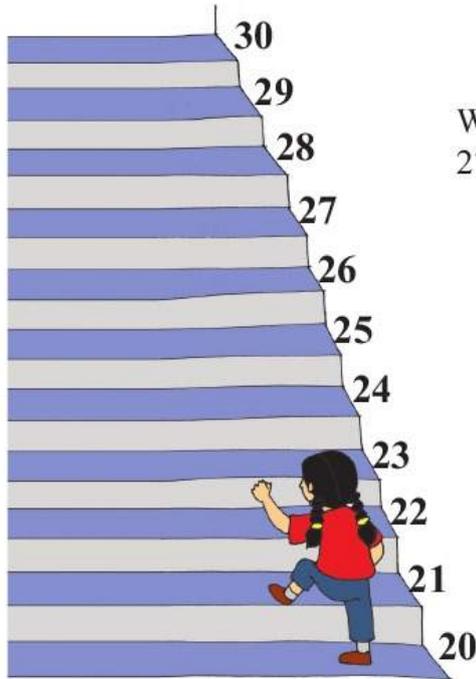
When climbing up the stairs, which stair, 27, 25 or 21,

will Sushma climb first ? [ ]

will Sushma reach next ? [ ]

will Sushma reach last ? [ ]
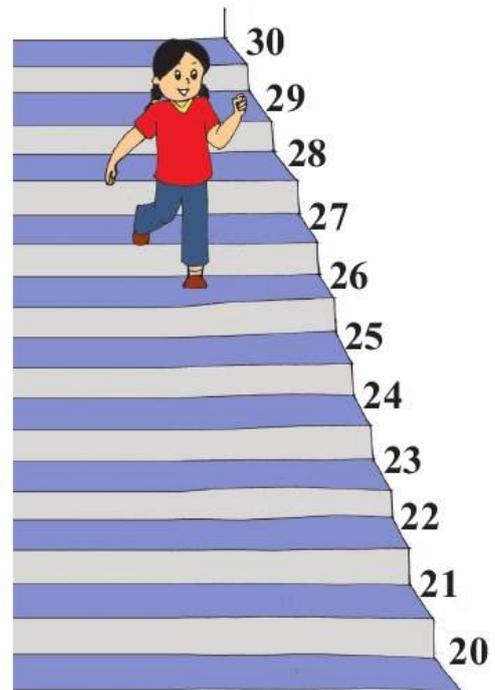
When climbing down the stairs, which stair 27, 25 or 21,

will Sushma be at first ? [ ]

will Sushma be at next ? [ ]

will Sushma be at last ? [ ]

When writing three numbers in ascending order, we write the smallest one first, the middle number next and the biggest one last.

When writing three numbers in the descending order, we write the biggest number first, the middle number next and the smallest one last.

42

Numbers in Ascending and Descending Order

✦ Of the numbers 42, 47, 45, which is the smallest, the biggest and the middle number ?

When counting, the number 42 comes first. So, 42 is the smallest.

47 comes last. So, 47 is the biggest number.

45 is between 42 and 47. So the ascending order of these numbers is 42, 45, 47.

✦ Find the ascending order of the numbers 36, 66, 86, 26.

The number that comes first is [____]. The number that comes last is [____].

26 is the number that comes first.

86 comes last.

Of the remaining numbers, 36 and 66, which one comes earlier ? [____]

So, the ascending order is 26, 36, 66, 86.

✦ Put the numbers in ascending and descending order.

The given numbers are 34, 32, 60, 53.

Write the smallest number. [____] Now, 34, 60 and 53 are left.

The smallest of these is 34. Now, 60 and 53 are left.

Of these, 53 is the smaller one and the last one is 60.

Ascending order : 32, 34, 53, 60. Descending order : 60, 53, 34, 32.

✦ Put the following numbers in ascending and descending order.

	Ascending Order	Descending Order
11, 15, 12		
23, 32, 42		
46, 81, 9		
13, 18, 16, 11		
27, 49, 51, 16		
33, 63, 43, 23		
35, 39, 27, 19		

43

Introducing : Numbers in Steps

Observe the rabbit's leaps.

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
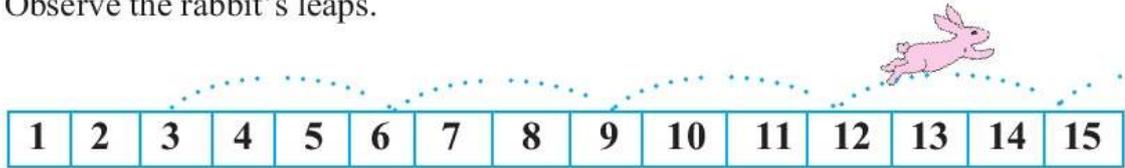
Read the number from which the rabbit starts.

③————⑥————⑨————⑫————⑮
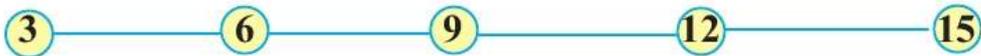
On counting 3 numbers forward after 3, we get the number 6. If we count 3 numbers forward after 6, we get the number 9. Thus, every time, we get the next number by counting 3 more numbers forward. 3, 6, 9, 12, 15 are numbers in steps of 3.

✦ Observe the deer's leaps.

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
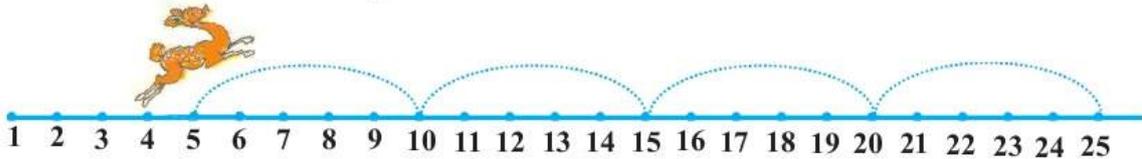
✦ Write the numbers from which the deer leaps forward.

◯——◯——◯——◯——◯

5, 10, 15, 20, 25 are numbers in steps of 5.

Look at the numbers from which the frog jumps forward.

1 2 3 4 5 6 7 8 9 10 11 12 13 14
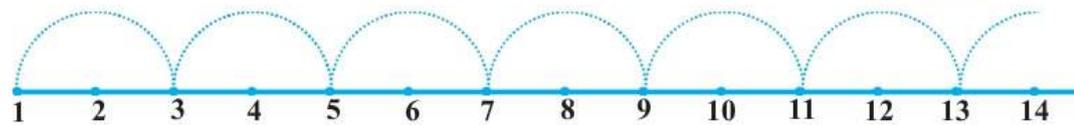
Circle the numbers from which he leaps. Write them in the empty boxes below.

1										

✦ Look at the numbers in the coloured boxes. What step do they show ?

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

For Teachers Carry out activities like drawing numbers on the floor in serial order, choosing a certain number for a step and jumping on the numbers that come in those steps.

44

Numbers in Steps : By Counting Forward

✦ Look at the numbers in the coloured boxes. Find the step.
Colour all the numbers in that step.

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

The numbers in the coloured boxes are in steps of ☐. Write these numbers below.

③ ○ ○ ○ ○ ○ ○ ○ ○

✦ Starting from any number, colour the boxes that come in steps of 10.

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

Numbers in Steps : By Repeated Addition

✦ Given below are numbers in steps. Study them.

⭐ 4   ⭐ 7   ⭐ 10   ⭐ 13   ⭐ 16   ⭐ 19

On adding 3 to 4, we get 7. On adding 3 to 7, we get 10.

On adding 3 to 10, we get 13. On adding 3 to 13, we get 16.

Hence, these numbers are in steps of 3.

In steps of 3, the number after 16 is ☐

For Teachers
Conduct the following activities :
In a table of 1-100, find the numbers that come in steps of any given number -
(a) starting from 1
(b) starting from any other number.
Use objects like seeds, buttons, stones for this activity.

45

Addition by Carrying Over : Preparation

Convert into tens.

◆ 9 units + 5 units = 14 units = 1 T 4 Units

| | | | | | | | | | | | | | | | | | | | | | | | | | | ⟨| | | | | | | | |⟩ | | | |

14 Units = 1 Ten 4 Units

◆ 4 units + 8 units = 12 units = 1 Ten 2 Units

| | | | | | | | | | | | ⟨| | | | | | | | | |⟩ | |

◆ 5 units + 8 units = [ ] units   is the same as   1 Ten 3 Units

| | | | | | | | | | | | | ⟨| | | | | | | | |⟩ | | |

◆ 6 units + 7 units = [ ] units   is the same as   1 Ten 3 Units

| | | | | | | | | | | | | ⟨| | | | | | | | |⟩ | | |

+ 9 U | | | | | | | | |
   5 U | | | | |

14 U | | | | | | | | | | | | | |

⟨| | | | | | | | |⟩ | | | |

14 units is the same as 1 ten 4 units

+ 8 U | | | | | | | |
   9 U | | | | | | | | |

17 U | | | | | | | | | | | | | | | | |

⟨| | | | | | | | |⟩ | | | | | |

17 units is the same as 1 ten 7 units

⟨| | | | | | | | |⟩ | | | | | | | | | | | | ⟨| | | | | | | | |⟩   ⟨| | | | | | | | |⟩ | | | |

1 ten   14 units   is the same as   2 tens   4 units

2 T 13 U is the same as [3] T [3] U | 3 T 17 U is the same as [ ] T [ ] U

4 T 13 U is the same as [ ] T [ ] U | 5 T 15 U is the same as [ ] T [ ] U

For Teachers — 23 units means 2 tens 3 units, 79 units is the same as 7 tens 9 units. Make the children explain other two-digit numbers in this way.
Conduct practical work to practise adding in the way shown above.

Addition by Carrying Over

	T	U
carry over	①	
+	¹1	5
		9
	2	⁄4

2 T + 4 U means 24

15 + 9 = 24

First, let us add the units.

5 U + 9 U = 14 U

14 U = 1 T 4 U

We shall 'carry over' 1 ten made from 10 units.
That is, we will move it to the tens column.
Now, 1 T + 1 T = 2 T
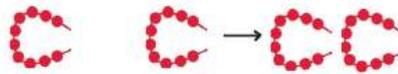
	T	U
carry over	1	
	2	8
+1		7
	4	5

4 T + 5 U means 45

8 U + 7 U = 15 U
15 U = 1 T 5 U

The **1T** here is carried over.
We move it to the tens column.

1 T + 2 T + 1 T = 4 T

28 + 17 = 45

Tens	Units
+ 1	4
2	9
3	13

13 units make **1** ten and **3** units.
3 tens and **1** ten **3** units
is the same as **4** tens and **3** units.

	Tens	Units
carry over	1	
+ 1		4
2		9
	4	①3

✦ Look at the picture.
   Write the proper numbers and add.
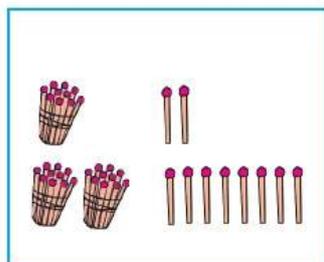
T	U

✦ Write in pictures and add.

T	U
2	5
+3	7

Addition By Carrying Over (Continued)

◆ Add.

T	U
4	7
+	5

T	U
6	2
+ 2	8

T	U
4	4
+ 4	8

T	U
3	8
+ 1	4

T	U
7	1
+ 1	9

carry over

T	U
2	5
+ 3	7

T	U
3	5
+ 2	9

T	U
4	2
+ 1	9

T	U
2	7
+ 3	4

	4	9
+		3

	5	5
+		8

	6	9
+		9

	6	4
+	2	7

	6	5
+	2	6

	7	8
+	1	8

	2	9
+	5	2

	1	8
+	2	9

	7	7
+	1	8

	1	9
+	6	6

	6	7
+	1	6

	2	7
+	3	5

	4	9
+	2	7

	3	6
+	1	7

	5	7
+	2	7

For Teachers Teachers should conduct practical work for these sums, using bundles of sticks and single sticks.

Word Problems : Addition

✦ Manisha placed a dish of water in the garden for the birds. 21 sparrows came to drink water. 19 crows came, too. Altogether, how many birds came to drink water ?

T	U
1	
2	1
+ 1	9
4	0

Altogether 40 birds came to drink water.

Read the problem. Draw boxes for tens and units on your slate. Write the digits in the proper places and add.

✦ Sagar planted 29 mango and 37 tamarind saplings. How many saplings did he plant altogether ?

✦ Sudhir read 45 pages of his story-book in the morning and 18 pages in the evening. How many pages did he read altogether ?

✦ In a game of cricket, Vijay made 52 runs and Joseph made 29. How many runs did they score in all ?

✦ Amit gave a gift of 35 books to the school library and Salma gave 27 books. How many books did they give altogether ?

✦ Mary did 19 additions and 17 subtractions. How many problems did Mary solve altogether ?

✦ Ajay has 35 rupees. If Shankar has 15 rupees more than Ajay, how much money does Shankar have ?

Make word problems of your own for the following additions.

✦ For example, **15 + 22**

'I planted 15 guava saplings and Mary planted 22. How many saplings did we plant altogether ?'

✦ 27 + 37	✦ 30 + 19	✦ 49 + 17
✦ 34 + 28	✦ 51 + 29	✦ 29 + 15
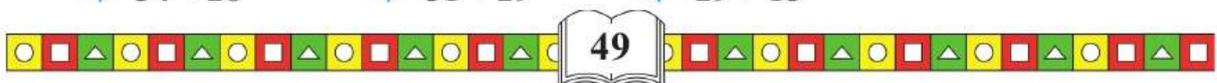
Introducing Coins and Currency Notes

◆ Coins

| 50 paise | ₹ 1 | ₹ 2 | ₹ 5 | ₹ 10 |

◆ Currency notes

₹ 1   ₹ 2   ₹ 5

₹ 10   ₹ 20

₹ 50   ₹ 100

Coins and Currency Notes

✦ See which notes were paid to the shopkeeper to buy the article.
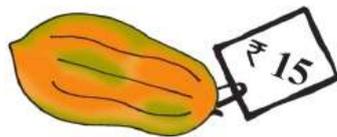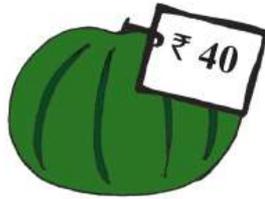
See if you can pay for each article using other combinations of currency notes.

For Teachers
Arrange a mock market-day with paper/clay articles, vegetables and fruits to sell, and give children the experience of buying and selling.

Coins and Currency Notes

✦ See how many rupees there are in each line and write the number in the empty box.

✦ Ajit has 3 notes. They are worth ₹ 15 altogether. Which notes does he have ?

✦ Mayur has 5 notes. They make a total of ₹ 50. Which notes are these ?

✦ I want ₹ 10. Which coins or currency notes will you give me ?

✦ I want ₹ 5. Which coins or currency notes will you give me ?

For Teachers Show the children actual coins and currency notes and ask questions like the above.

Coins and Currency Notes

Sonu went to a shop. See how many one-rupee coins she got in exchange for her 10-rupee note.

I have a 5-rupee note. See how many coins I got in exchange for it.

Think for yourself and write the number in the empty box.

✦ I have a ten-rupee note and 15 one-rupee coins.
  How many rupees do I have altogether ?

✦ How many two-rupee coins will I get in exchange for one 10-rupee note ?

✦ If I give one 10-rupee note and 1 coin of ₹ 2, how many one-rupee coins will I get in exchange ?

✦ How many one-rupee coins will I get in exchange for 1 ten-rupee and one five-rupee note ?

✦ Raju gave a ten-rupee note for a pen worth ₹ 7. How many one-rupee coins will he get back ?

Subtraction : By Counting Backward

Subtract.

| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 |
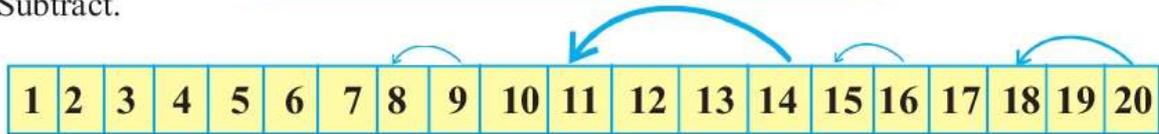
$9 - 1 = 8$

To subtract 1, we must go 1 place backward on the number strip.

So, $9 - 1 = $ 8

$16 - 1 = $

To subtract 1, we must go 1 place back from 16. So, we get $16 - 1 = $ 15

$20 - 2 = $

Subtracting 2 means going 2 places back. So, $20 - 2 = $ 18

$14 - 3 = $

Subtracting 3 means going 3 places back. So, $14 - 3 = $ 11

| 31 | 32 | 33 | 34 | 35 | 36 | 37 | 38 | 39 | 40 | 41 | 42 | 43 | 44 | 45 | 46 | 47 | 48 | 49 | 50 |

Subtract using the number strip above.

$32 - 1 = $ $37 - 4 = $ $50 - 5 = $

$43 - 7 = $ $35 - 4 = $ $49 - 7 = $

$35 - 1 = $ $43 - 2 = $ $39 - 3 = $

For Teachers As above, make number strips of the required number-groups and give practice.

54

Addition by Increasing in 10's and Subtraction by Taking Away 10's.

Look at this addition.
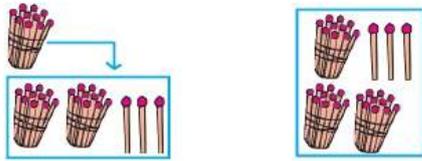
23 + 10 = 33

Add.

54 + 10 = ☐

16 + 10 = ☐

46 + 10 = ☐

6 + 10 = ☐

42 + 10 = ☐

Table of 1 to 100

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

Look at this subtraction.

12 − 10 = 2
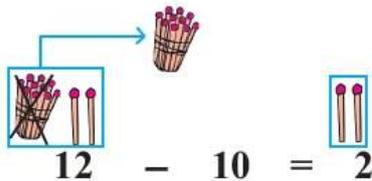
Subtract.

45 − 10 = ☐

26 − 10 = ☐

67 − 10 = ☐

82 − 10 = ☐

Table of 1 to 100

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

For Teachers Point out that increasing by 10 means increasing by one 'ten'. Subtracting 10 means taking away one 'ten'.

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Addition and Subtration (in Steps)

Observe.

$27 + 1 = 28$ $28 - 1 = 27$

27   28   27   28
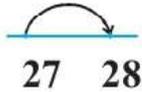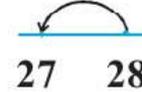
$34 + 10 = 44$ $44 - 10 = 34$
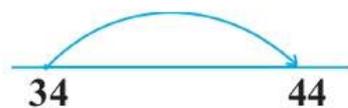
34   44   34   44
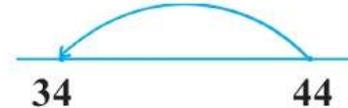
$23 + 20 = 43$ Here, we see two big steps. $43 - 20 = 23$
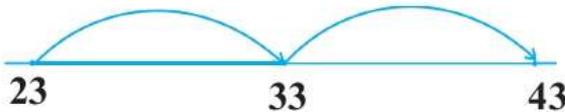
23   33   43   23   33   43
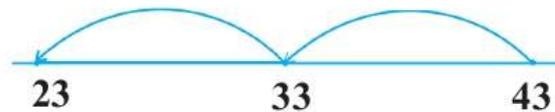
$52 + 32 = 84$ (32 means 3 big and 2 small steps)

52   62   72   82   83   84

$84 - 32 = 52$

52   53   54   64   74   84
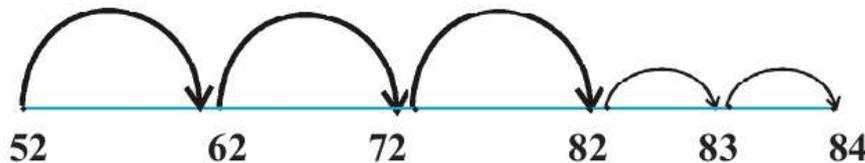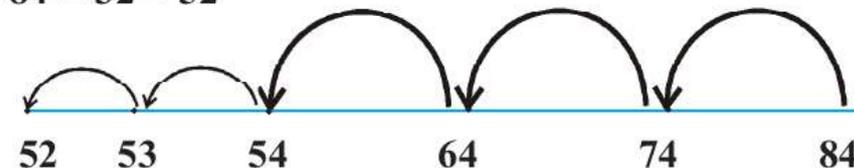
Do these sums by the method given above.

(1) $24 + 2$ (2) $57 + 10$ (3) $39 + 22$

(4) $53 - 1$ (5) $27 - 10$ (6) $48 - 23$

Subtraction : Preparation

Practice the additions below in order to understand subtraction properly.

$1 + 1 = 2$	$2 + 1 = 3$	$3 + 1 = 4$	$4 + 1 = 5$	$5 + 1 = 6$
$1 + 2 = 3$	$2 + 2 = 4$	$3 + 2 = 5$	$4 + 2 = 6$	$5 + 2 = 7$
$1 + 3 = 4$	$2 + 3 = 5$	$3 + 3 = 6$	$4 + 3 = 7$	$5 + 3 = 8$
$1 + 4 = 5$	$2 + 4 = 6$	$3 + 4 = 7$	$4 + 4 = 8$	$5 + 4 = 9$
$1 + 5 = 6$	$2 + 5 = 7$	$3 + 5 = 8$	$4 + 5 = 9$	$5 + 5 = 10$
$1 + 6 = 7$	$2 + 6 = 8$	$3 + 6 = 9$	$4 + 6 = 10$	$5 + 6 = 11$
$1 + 7 = 8$	$2 + 7 = 9$	$3 + 7 = 10$	$4 + 7 = 11$	$5 + 7 = 12$
$1 + 8 = 9$	$2 + 8 = 10$	$3 + 8 = 11$	$4 + 8 = 12$	$5 + 8 = 13$
$1 + 9 = 10$	$2 + 9 = 11$	$3 + 9 = 12$	$4 + 9 = 13$	$5 + 9 = 14$
$1 + 10 = 11$	$2 + 10 = 12$	$3 + 10 = 13$	$4 + 10 = 14$	$5 + 10 = 15$

From Addition towards Subtraction

$4 + 3 = 7, \quad 9 + 3 = 12$

Note that from $4 + 3 = 7,$ we get $7 - 4 = 3$ and $7 - 3 = 4$.
In the same way do more subtractions from other additions.

For example, $9 + 3 = 12$ so, $12 - 3 = 9$ and $12 - 9 = 3$.

In the same way, do the following additions and from them make examples of subtraction.

$7 + 8 = $ ☐ $9 + 6 = $ ☐ $4 + 7 = $ ☐

For Teachers Ask questions like, 'One and seven, how many ?', 'How much is five and three ?' 'Eight and seven is... ?' Give practice so that children learn to add any two less-than-ten numbers quickly. Tell them to use the additions to do subtraction sums.

Addition and Subtraction

Gampu plucked 14 *jambhuls* from the tree and put them in his basket. Gampu, Nandu, Sonu and Moti all had two *jambhuls* each but Mani had only one.

Nandu : We ate 9 *jambhuls* altogether. Now, can we tell how many are left, without looking in the basket ?

Sonu : What's so difficult ? Take away 9 from 14.

Gampu : Let's count forward after 9 upto 14. We counted five numbers 10, 11, 12, 13, 14. So, 14 - 9 = 5.

Moti : Oh dear, I can't get this so quickly.

Mani : My method is different. 14 - 4 = 10. Isn't this easy ?

Moti : Yes, but we have to subtract 9.

Mani : Ok, we took away 4. We can take away 5 more.

Nandu : We took away 4 from the units digit. Now we will use the 10 and subtract the remaining 5. So, 10 - 5 = 5.

Sonu : There's still another method. If you have practised small additions well and you remember that 9 + 5 =14, then you can tell at once that 14 - 9 = 5.

Moti : Hmm. It means that we must practise small additions a lot. Otherwise we can make two convenient parts of 9 and subtract them one by one.

✦ Subtract.

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

	1 1		1 0		1 6		1 4		1 1
−	5	−	3	−	9	−	8	−	8

Necklaces and Bracelets of Beads

Sonu : I have four strings of ten beads each and 5 single beads.

Mani : Shall we make bracelets from the beads ?

Gampu : I like a necklace more than a bracelet.

Sonu : I will give each one the number of beads they want.

Moti : I want a bracelet of 9 beads.

Sonu : I'll give you the 5 single beads. But, to give you 4 more beads I will have to untie a string.

Moti : It means that you will give me 9 beads out of 15 single beads. There will be 6 single beads left.

Mani : I need only 5 beads. My wrist is thin, you know.

Sonu : Oh, this is easy ! I don't have to untie another string. I can give you 5 from the 6 that were left.

Gampu : I'll tell how many are left now.
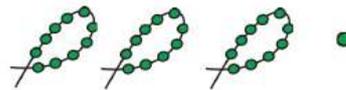
Nandu : I want 10 beads.

Sonu : Easy, again ! I'll just give you one string of 10 beads. Now, I'm left with
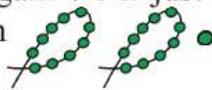
Gampu : I will need 7 beads.

**Sonu** : I'll untie one string. Then I'll have 11 single beads. I'll give you 7 out of those.

Mani : I will say how many are left.
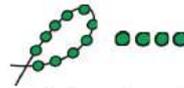
**Sonu** : I will wear a necklace of the remaining beads.

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## Subtraction (By Untying a Ten) : Preparation

28 means

2 tens   **8** units

Untying **1** ten,

1 ten **18** units

2 tens **8** units means
1 ten **18** units

26 means

2 tens   **6** units

Untying **1** ten,

1 ten **16** units

2 tens **6** units means
1 ten **16** units

15 means

1 ten   **5** units

Untying **1** ten,

0 ten **15** units

1 ten **5** units means **0** tens **15** units

47 means

4 tens   **7** units

Untying **1** ten,

3 tens **17** units

4 tens **7** units means
3 tens **17** units

32 means

3 tens   **2** units

Untying **1** ten,

2 tens **12** units

3 tens **2** units means
2 tens **12** units

Subtraction (By Untying a Ten) : Preparation
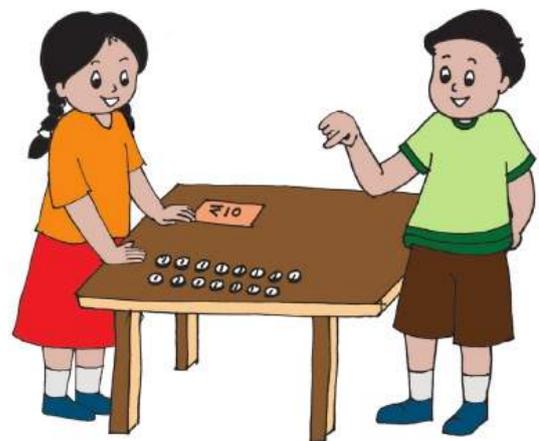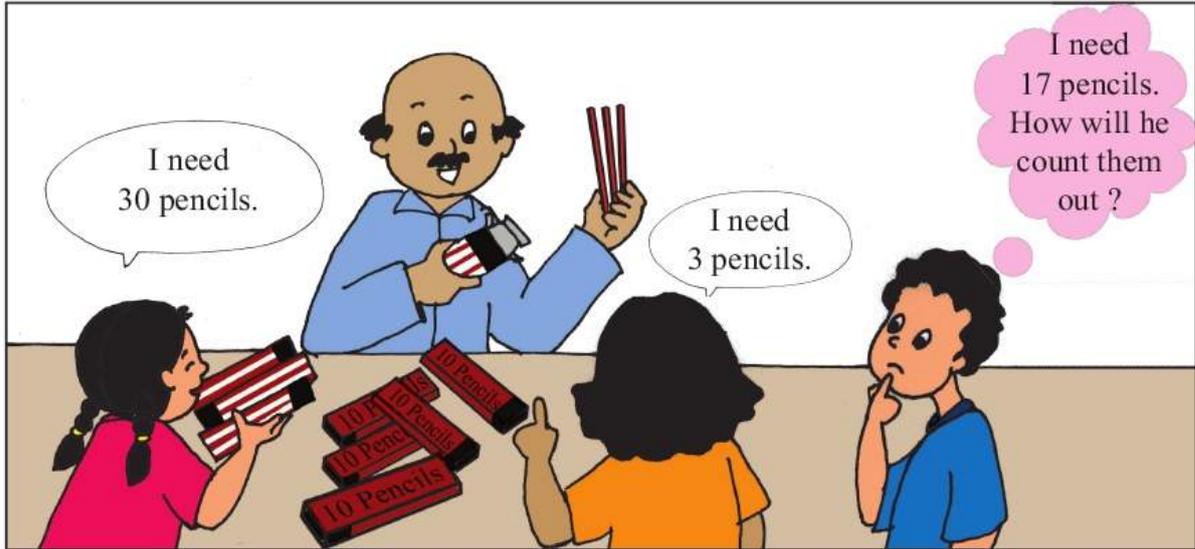
Subtraction (By Untying a Ten) : Preparation

Sonu : I have [10-rupee note] [10-rupee note] [coin] [coin] [coin] [coin] [coin] rupees.

I have to give [coin] [coin] [coin] [coin] [coin] [coin] [coin] rupees to Nandu.

Nandu : But you only have [coin] [coin] [coin] [coin] [coin] rupees loose change.

How will you give me [coin] [coin] [coin] [coin] [coin] [coin] [coin] rupees out of these?

Sonu : That's not difficult. I will go to a shop and change one ten-rupee note for ten one-rupee coins.

Nandu : Now you have one 10-rupee note and 15 one-rupee coins. Give me 7 of those one-rupee coins.

Sonu : So, in the end, I have one 10-rupee note and 8 one-rupee coins. It means I have 18 rupees left.

Sanika has 2 strings of ten and 3 single beads. If she gives Javed 8 beads, how many beads will she have left ?

T	U
2	3
−	8

Single beads with Sanika : 3; beads to give Javed : 8. We cannot give 8 beads from 3 single beads. That is, we cannot subtract 8 units from 3 units. So, we must untie 1 string of ten.

2 tens 3 units is the same as 1 ten 13 units. Out of 13 units, we give 8 beads to Javed. We have 5 single beads left. And 1 string of ten, too.

T	U
1	13
2	3
−	8
1	5

Sanika is left with **15** beads.

For Teachers
Carry out the above subtraction using coins and notes, bundles of sticks and separate sticks or strings of ten and single beads. Show that when, in a subtraction the units digit cannot be subtracted from the units digit, then it is enough to borrow one ten and untie it into units. Point out that when we untie one ten from the upper number, its tens digit and units digit are both changed.

Subtraction : By Untying a Ten

Now look at the subtraction below.
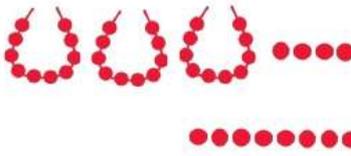
T	U
3	4
−	
	8

is the same as

T	U
2	14
−	
	8
2	6

Suppose 51 means 5 ten-rupee notes and a single rupee.
24 rupees are to be taken away.
We cannot give 4 from 1, so we must get change for 1 ten-rupee note.
Then, there will be 4 ten-rupee notes and 10 + 1, which means 11, single rupees.
Now we can write this subtraction as shown below.

	5	1
−	2	4

T	U
5	1
−2	4

is the same as

T	U
4	11
5̶	1̶
−2	4

is the same as

T	U
4	11
−2	4
2	7

When we subtract 24 from 51 we have 27 left.

Let's do the following subtraction in the same way.

T	U
8	2
−2	8

is the same as

T	U
7	12
8̶	2̶
−2	8
5	4

Answer : 54

T	U
7	0
−2	5

is the same as

T	U
6	10
7̶	0
−2	5
4	5

Answer : 45

For Teachers Point out that as in addition, we start a subtraction from the units place.

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Subtraction

✦ If Anagha has planted **27** of the **45** trees, how many does she still have to plant ?

T	U
3	15
4	5
−2	7
1	8

She has to plant **18** trees.

✦ If Sumeet has finished reading **39** of the **52** pages in the story-book, how many are remaining ?

✦ Ajay has already given the feed to **13** of the **32** cows in the cowshed. How many cows are still to be fed ?

✦ Hasan collected **50** seeds. **25** of them are *chiku* seeds. How many seeds are of other fruits ?

Subtract.

T	U
2	5
−1	8

T	U
2	7
−1	9

T	U
3	1
−1	8

T	U
3	5
−1	6

T	U
4	1
−2	4

T	U
4	5
−3	7

T	U
5	2
−3	9

T	U
5	5
−3	8

T	U
6	1
−4	2

T	U
6	3
−5	7

T	U
7	2
−4	9

T	U
7	5
−3	8

T	U
4	2
−2	8

T	U
8	2
−4	9

T	U
8	5
−5	6

T	U
9	2
−7	8

T	U
9	9
−3	9

T	U
6	2
−2	7

For Teachers Conduct practical work and give plenty of practice in order to make it clear how to subtract by borrowing.

## Multiplication and Division : Preparation

⭐ Multiplication : Preparation

◆ There are **4** groups of **2** flowers each. Count the total number of flowers.

◯ ◯   ◯ ◯   ◯ ◯   ◯ ◯

◆ There are **3** groups of **3** flowers each. Count the total number of flowers.

◆ There are **5** groups of **4** flowers each. Count the total number of flowers.

◆ There are **6** groups of **5** flowers each. Count the total number of flowers.

◆ There are **5** groups of **10** flowers each. Count the total number of flowers.

⭐ Division : Preparation

◆ Saroj has **10** beads. If each child is to get **2** beads, how many children will get the beads ? ◯ ◯ | ◯ ◯ | ◯ ◯ | ◯ ◯ | ◯ ◯

◆ Manish has **15** flowers. How many children will get the flowers, if each child is given **3** flowers ?

◆ Sagar has **20** chalks. How many children will get the chalks, if each child is given **5** chalks ?

◆ Saleem has **16** beads. How many children will get the beads, if each child is given **4** beads ?

A game : Gampu says : Run, run........ Gampu says : Make groups of 3.

◆ How many groups were formed ?

◆ Are there 3 children in each group ? Check. How many groups do not have 3 children ?

◆ How many groups of 3 children are there ?
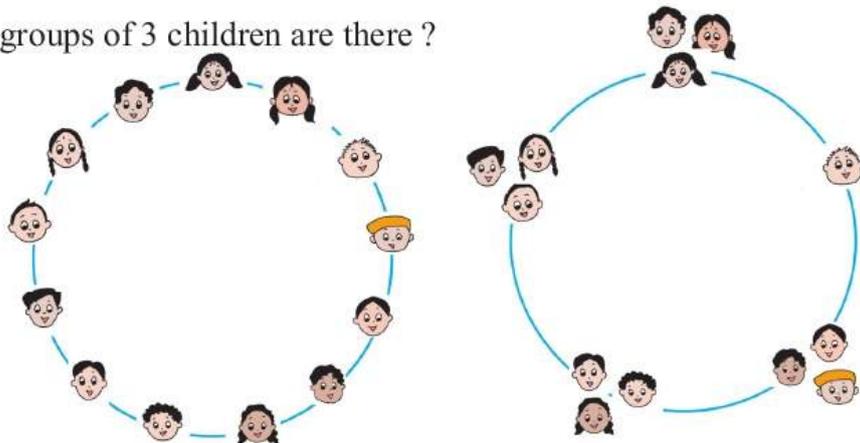
For Teachers Conduct games of making groups like the above. Also conduct practical work using actual objects.

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Multiplication : Preparation

3 children in a row. How many rows ?
How many children altogether ?

3 + 3

5 pencils in a row. How many rows ?
How many pencils altogether ?
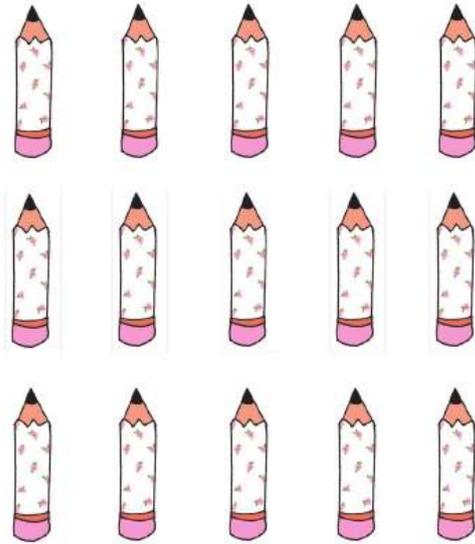
5 + 5 + 5

How many hats in **1** row ?
How many rows ?
How many hats altogether ?
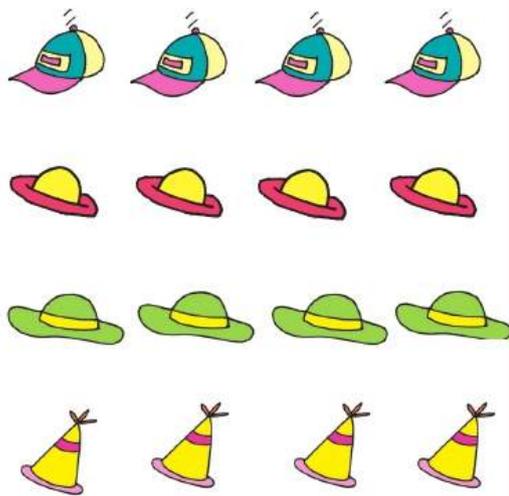
4 + 4 + 4 + 4

How many mangoes altogether ?
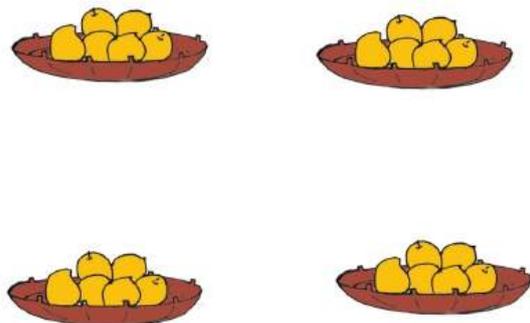
How many mangoes in each basket ? ☐
How many baskets ? ☐

6 + 6 + 6 + 6

Multiplication : Preparation

? Two carrots for each rabbit. How many rabbits ?
How many carrots altogether ?

2 + 2 + 2 = 6

? Three *modaks* for each mouse. How many mice ? How many *modaks* altogether ?
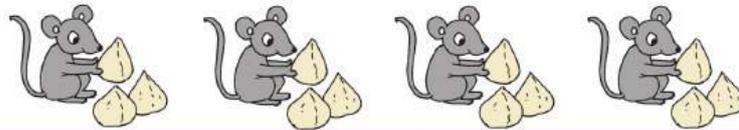
? Four leaves for each deer. How many deer ? How many leaves altogether ?

? Two bananas for each monkey. How many monkeys ?
How many bananas altogether ?
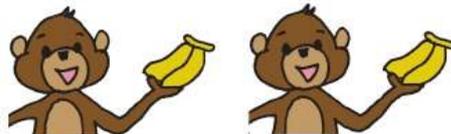
? Five sugarcanes for each elephant. How many elephants ?
How many sugarcanes altogether ?

67
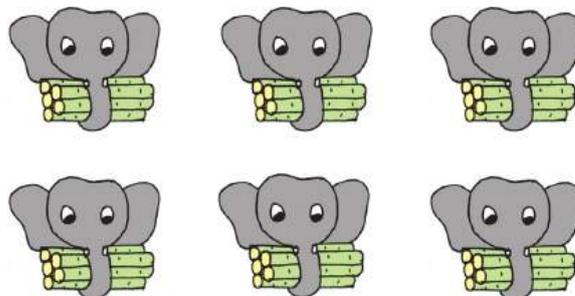
Multiplication Tables : Preparation
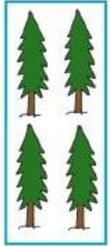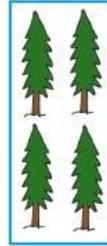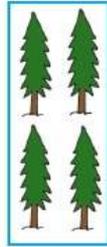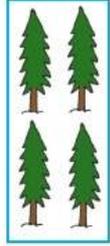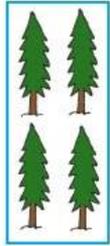
Look at these groups of trees.

In each group, there are **4** trees. Let's count how many trees there are altogether.

$4 + 4 + 4 + 4 + 4 = 20$

It means that when we add the number **4**

5 times, we get **20**.

> When we add the same number again and again,
> we get the table of that number.

For example, look at the following additions.

$2 + 2 = 4$, $2 + 2 + 2 = 6$, $2 + 2 + 2 + 2 = 8$

What we are getting is the 2 times table. We shall see later how to write and say it.

Now look at this group.   Look at these dots arranged as shown below.
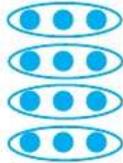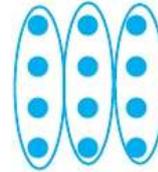
$3 + 3 + 3 + 3 = 12$ and also $4 + 4 + 4 = 12$

It means that when we add **3** four times or when we add **4** three times, we get **12**.

Three taken four times is twelve, that is, $3 + 3 + 3 + 3 = 12$ or $3 \times 4 = 12$.

We use the sign × for multiplication.

Let's now make the **2, 3** and **4** times tables.

The 2 Times Table

	2 times **1**	**2 × 1 = 2**	Two ones are two.
	2 times **2**	**2 × 2 = 4**	Two twos are four.
	2 times **3**	**2 × 3 = 6**	Two threes are six.
	2 times **4**	**2 × 4 = 8**	Two fours are eight.
	2 times **5**	**2 × 5 = 10**	Two fives are ten.
	2 times **6**	**2 × 6 = 12**	Two sixes are twelve.
	2 times **7**	**2 × 7 = 14**	Two sevens are fourteen.
	2 times **8**	**2 × 8 = 16**	Two eights are sixteen.
	2 times **9**	**2 × 9 = 18**	Two nines are eighteen.
	2 times **10**	**2 × 10 = 20**	Two tens are twenty.

For Teachers Tell the children to write numbers in steps of 2 up to ten steps, starting with 2 as the first number. Thus make the 2 times table.

The 3 Times Table

	3 times **1**	**3 × 1 = 3**	Three ones are three.
	3 times **2**	**3 × 2 = 6**	Three twos are six.
	3 times **3**	**3 × 3 = 9**	Three threes are nine.
	3 times **4**	**3 × 4 = 12**	Three fours are twelve.
	3 times **5**	**3 × 5 = 15**	Three fives are fifteen.
	3 times **6**	**3 × 6 = 18**	Three sixes are eighteen.
	3 times **7**	**3 × 7 = 21**	Three sevens are twenty-one.
	3 times **8**	**3 × 8 = 24**	Three eights are twenty-four.
	3 times **9**	**3 × 9 = 27**	Three nines are twenty-seven.
	3 times **10**	**3 × 10 = 30**	Three tens are thirty.
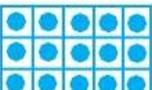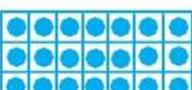
The 4 Times Table

	4 times 1	4 × 1 = 4	Four ones are four.
	4 times 2	4 × 2 = 8	Four twos are eight.
	4 times 3	4 × 3 = 12	Four threes are twelve.
	4 times 4	4 × 4 = 16	Four fours are sixteen.
	4 times 5	4 × 5 = 20	Four fives are twenty.
	4 times 6	4 × 6 = 24	Four sixes are twenty-four.
	4 times 7	4 × 7 = 28	Four sevens are twenty-eight.
	4 times 8	4 × 8 = 32	Four eights are thirty-two.
	4 times 9	4 × 9 = 36	Four nines are thirty-six.
	4 times 10	4 × 10 = 40	Four tens are forty.
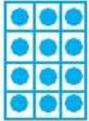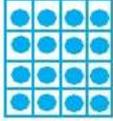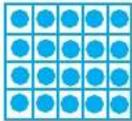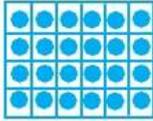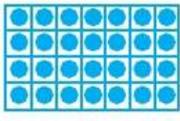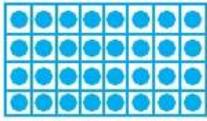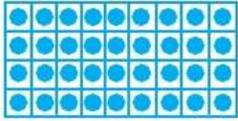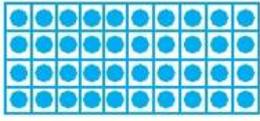
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Tables of 5 and 10

Gampu : Today I plucked 5 guavas from the guava tree.

Sonu : Let's use them to make the 5 times table.

Moti : The whole 5 times table using only 5 guavas ? Won't we need more guavas ?

Nandu : No, we won't. We'll all make this table together. Let's keep these guavas in a row. Moti, you count them once. Then write '5 × 1 = 5, Five ones are five'. Moti did that.

Nandu : Now, Gampu, you count the same guavas a second time, but count forward after 5. Gampu counted them as six, seven, eight, nine, ten and wrote the second line of the table. '5 × 2 = 10, Five twos are ten'.

Sonu : Mani, it's your turn to write the third line. So Mani counted the same 5 guavas a third time counting forward from 10. She wrote '5 × 3 = 15, Five threes are fifteen'.

Moti : Now I see how we can count the same 5 guavas again and again to make the 5 times table. I'll make the next line.

Sonu : Making the 10 times table is easier still. We don't even have to count.

Nandu : Yes ! That's because we know that 10 units make one ten.

One ten = **10** means '10 × 1 = 10, Ten ones are ten'.

Two tens = **20** means '10 × 2 = 20, Ten twos are twenty'.

If we go on like this we get Nine tens = **90** means '10 × 9 = 90, Ten nines are ninety'.

And last of all, Ten tens = **100** means '10 × 10 = 100, Ten tens are hundred'.

The 5 times table
$5 \times 1 = 5$
$5 \times 2 =$ ☐
$5 \times 3 =$ ☐
$5 \times 4 =$ ☐
$5 \times 5 =$ ☐
$5 \times 6 =$ ☐
$5 \times 7 =$ ☐
$5 \times 8 =$ ☐
$5 \times 9 =$ ☐
$5 \times 10 =$ ☐

| The 10 times table |
|---|
| $10 \times 1 = 10$ |
| $10 \times 2 =$ ☐ |
| $10 \times 3 =$ ☐ |
| $10 \times 4 =$ ☐ |
| $10 \times 5 =$ ☐ |
| $10 \times 6 =$ ☐ |
| $10 \times 7 =$ ☐ |
| $10 \times 8 =$ ☐ |
| $10 \times 9 =$ ☐ |
| $10 \times 10 =$ ☐ |

Pictorial Information (Classification)

✦ Look at the pictures below and put them into two groups : animals that fly and animals that don't fly.
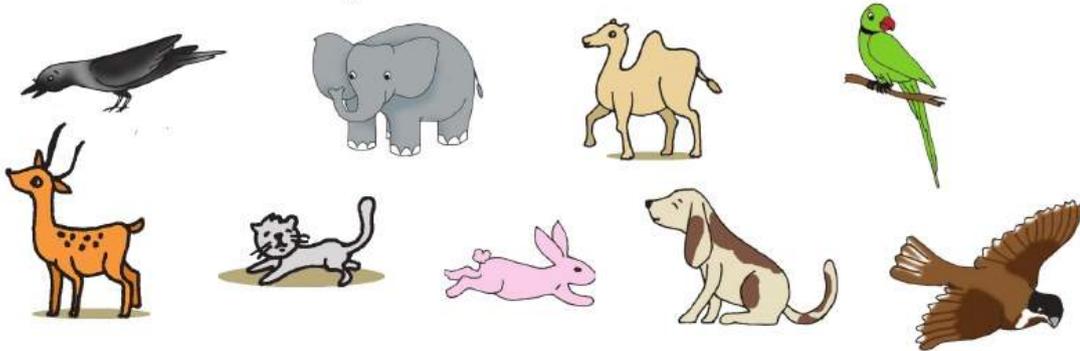
✦ How would you classify the vehicles shown below in different ways ?

✦ Count the number of times you see each shape in the picture below and write the number in the box.
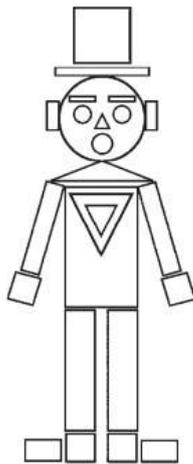
✦ Which shape do you see the most number of times ?

✦ Which shape do you see the least number of times ?

For Teachers Suggest to the children that they could classify vehicles in different ways according to fuel, number of wheels, number of passengers, etc.

Patterns in our Surroundings
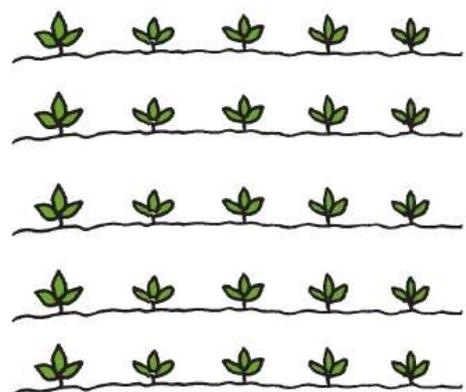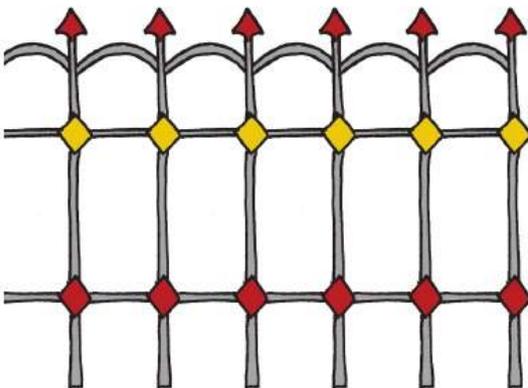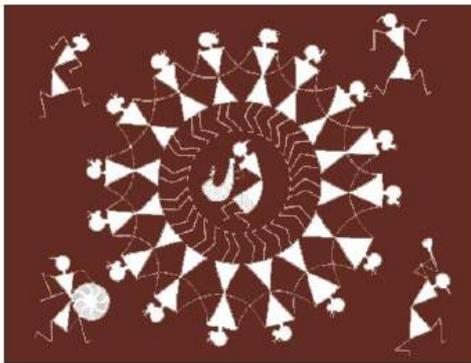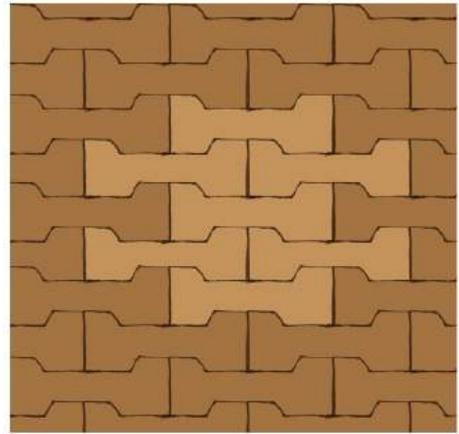
Get children to look for patterns that they can find in their surroundings.

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Patterns

✦ Complete the pattern in each of the strips shown below.
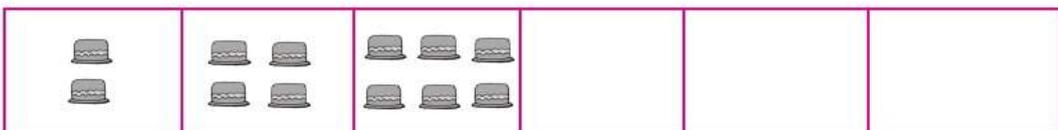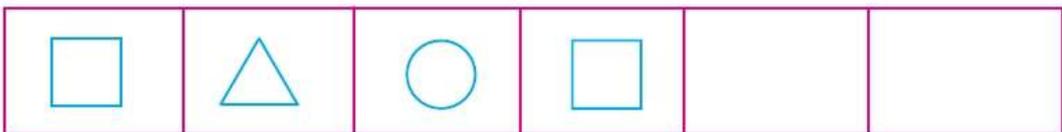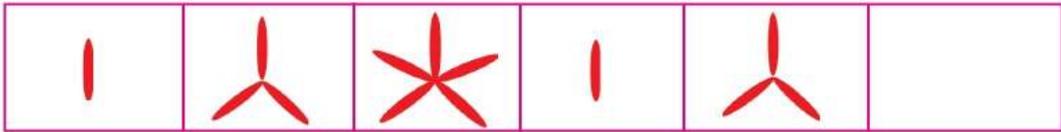
Patterns

✦ Find the pattern in the numbers and fill in the empty boxes.

5	10	15		25		

3			12	15		21

20	19		17	16		14

18	28		48		68	

70	60	50				

7	10	13				

28	25	22				

11	22	33				

Handling Data

✦ Ask the children in your class for the month in which they were born. Record the answers as shown below.

January | Shruti | Neeta | Amol |

February | Vasant | Madhuri | Asha | Surjeet |

March | Aruna | Nilesh | Ranjana |

April | Mohit | Shivani | Balbir |

May | Shubham | Javed | Joseph |

June | Aniket | Soham | Sagar |

July | Arti | Vaishali | Geeta |

August | Shantanu | Piyush | Amit | Rafique |

September

October | Ishwari | Nehal |

November | Aryan | Abha | Salma | Komal |

December | Uttara | Usha | Vishal |

Answer the following questions orally.

✦ Whose birthdays are in April ?

✦ How many children were born in November ?

✦ In which month is Neeta's birthday ?

✦ In which month are there the most number of birthdays ?

✦ In which month does nobody have a birthday ?

For Teachers Conduct the same activity using photos in place of names. Conduct various such activities.

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Handling Data

✦ Use this year's calendar to complete the table below.

Month	Number of Days
January	
February	
March	
April	
May	
June	
July	
August	
September	
October	
November	
December	

CALENDAR

December 2013

Sun	1	8	15	22	29
Mon	2	9	16	23	30
Tue	3	10	17	24	31
Wed	4	11	18	25	
Thu	5	12	19	26	
Fri	6	13	20	27	
Sat	7	14	21	28	
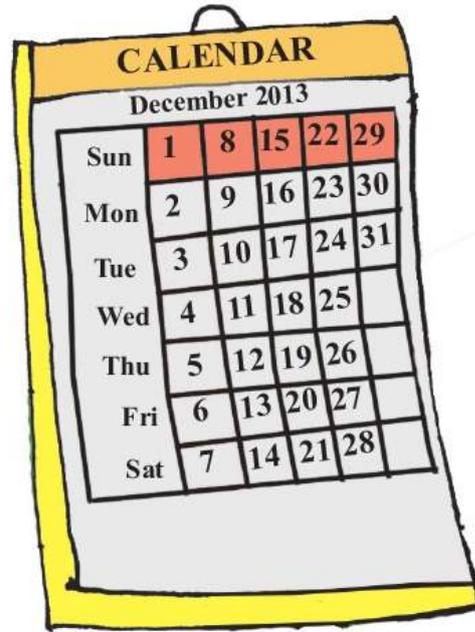
Use a calendar to find the answer.

✦ In which month is Diwali this year ?

✦ In which month is Christmas ?

✦ This year, in which month is Ramzan Eid ?

✦ In which month is Holi this year ?

✦ In which month is Raksha Bandhan this year ?

Look at the table above and write the answers.

✦ Name the months with 31 days.

✦ Name the months with 30 days.

✦ How many months have 30 days ?

✦ How many months have 31 days ?

✦ Which month has 28 or 29 days ?

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Word Problems

✦ Father planted 75 teak saplings. Uncle planted 22. How many saplings did they plant altogether ?

✦ Laxman harvested 57 sacks of groundnut from his field. Sharadabai harvested 25 sacks from her field. How many sacks of groundnut did they get in all ?

✦ Salma made 25 garlands. If Reshma made 32 garlands, how many more garlands did Reshma make than Salma ?

✦ Sagar made 47 *laddoos*. Amit made 19 *laddoos*. Then how many more *laddoos* did Sagar make than Amit ? How many *laddoos* did they make in all ?

✦ Mangal's mother bought a compass-box for 45 rupees and some other things for 38 rupees. How many rupees did she spend altogether ?

✦ There are 32 children in class. Of these, 17 are girls. How many boys are there in the class ?

✦ Anuradha could skip over the rope 51 times and Sameer skipped over 32 times. How many more times did Anuradha skip than Sameer ?

✦ Sudha sowed 16 beans. 9 of them took root and began to grow well. How many beans did not take root ?

✦ In a certain school, there are 35 children in Standard II and 28 children in Standard III. How many children are there in the two classes altogether ?

The Number Ladder : A Game

	+1	-11	-10	+4	-14	+3	-6
64	63	62	61	60	59	58	57
+12	-30	+11		-13	-14		+8
49	50	51	52	53	54	55	56
-8	-15	+18		-14	-9	+5	
48	47	46	45	44	43	42	41
-22	+17		-0		+13	-14	-38
33	34	35	36	37	38	39	40
-13		+12	-27	-12	+7		+9
32	31	30	29	28	27	26	25
+40		+0	+2	+24	-9	-12	-0
17	18	19	20	21	22	23	24
+16	+30		+17	+25		-3	+20
16	15	14	13	12	11	10	9
+2	+4	+9		+4	-3	+21	+32
1	2	3	4	5	6	7	8

(Use a dice and chips of different colours to play this game. Start from the number 1.)

✦ Throw the dice. What number does it show ?

✦ Move your chip the same number of places and do what is told in the square that you reach. Now, move your chip to the square which shows the answer you got.

For example : Suppose the chip is in square 1 and the dice shows 4. Move your chip to square 5. Add 5 and 4. The answer you get is 9. Move your chip to square 9.

✦ Let the next child play.

✦ The one who reaches 64 first, is the winner. Isn't that fun !