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

I pledge my devotion to my country and its people.

My happiness lies in their well-being and prosperity.

Price: ₹ 55.00

National Council of Educational Research and Training

Gujarat State Board of School Textbooks
'Vidyayan', Sector 10-A, Gandhinagar-382010
PREFACE

With a view to implementing ‘Equal Curriculum Policy’, Gujarat State Government and GCERT took a decision to implement directly the textbooks of NCERT, New Delhi, in Gujarat according to the proposal no. JSBH/121/Single file-62/N dated: 19-7-2017. Keeping this objective in view, this textbook of Mathematics, published by NCERT, is being implemented in Class 4. For this, the Gujarati translation of NCERT textbook was prepared first.

During the Gujarati translation process, minor changes have been made in proper nouns, numbers and chapters in accordance with present situation and Gujarat specific with NCERT’s prior approval. Now, the changes made in Gujarati version have been mandatorily incorporated in this English medium Mathematics Textbook. For this, expertise and experience of Shri Kinnari Dave has been secured by the Board. The Board is thankful to him for his noble contribution.

The Gujarat State Board of School Textbooks is also obliged to NCERT for their kind co-operation.

Creative suggestions for the enhancement of quality of the textbook are always welcomed by the Board.

P. bharathi (IAS)
Director
Executive President

Date: 13-12-2019
Gandhinagar

First Edition: 2019, Re-Print: 2020

Published by: P. Bharathi, Director, on behalf of Gujarat State Board of School Textbooks, ‘Vidyayan’, Sector 10-A, Gandhinagar

Printed by:
FOREWORD

The National Curriculum Framework (NCF), 2005, recommends that children’s life at school must be linked to their life outside the school. This principle marks a departure from the legacy of bookish learning which continues to shape our system and causes a gap between the school, home and community. The syllabi and textbooks developed on the basis of NCF signify an attempt to implement this basic idea. They also attempt to discourage rote learning and the maintenance of sharp boundaries between different subject areas. We hope these measures will take us significantly further in the direction of a child-centred system of education outlined in the National Policy on Education (1986).

The success of this effort depends on the steps that school principals and teachers will take to encourage children to reflect on their own learning and to pursue imaginative activities and questions. We must recognise that given space, time and freedom, children generate new knowledge by engaging with the information passed on to them by adults. Treating the prescribed textbook as the sole basis of examination is one of the key reasons why other resources and sites of learning are ignored. Inculcating creativity and initiative is possible if we perceive and treat children as participants in learning, not as receivers of a fixed body of knowledge.

These aims imply considerable change in school routines and mode of functioning. Flexibility in the daily time-table is as necessary as rigour in implementing the annual calendar so that the required number of teaching days are actually devoted to teaching. The methods used for teaching and evaluation will also determine how effective this textbook proves for making children’s life at school a happy experience, rather than a source of stress or boredom. Syllabus designers have tried to address the problem of curricular burden by restructuring and reorienting knowledge at different stages with greater consideration for child psychology and the time available for teaching. The textbook attempts to enhance this endeavour by giving higher priority and space to opportunities for contemplation and wondering, discussion in small groups, and activities requiring hands-on experience.

National Council of Educational Research and Training (NCERT) appreciates the hard work done by the Textbook Development Committee responsible for this book. We wish to thank the Chairperson of the Advisory Committee, Professor Anita Rampal and the Chief Advisor for this book, Professor Amitabha Mukherjee for guiding the work of this committee. Several teachers contributed to the development of this textbook; we are grateful to their principals for making this possible. We are indebted to the institutions and organisations which have generously permitted us to draw upon their resources, material and personnel. We are especially grateful to the members of the National Monitoring Committee, appointed by the Department of Secondary and Higher Education, Ministry of Human Resource Development under the Chairpersonship of Professor Mrinal Miri and Professor G.F. Deshpande, for their valuable time and contribution. As an organisation committed to the systemic reform and continuous improvement in the quality of its products, NCERT welcomes comments and suggestions which will enable us to undertake further revision and refinement.

Director
New Delhi
20 November 2006

National Council of Educational Research and Training
TEXTBOOK DEVELOPMENT COMMITTEE

CHAIRPERSON, ADVISORY COMMITTEE FOR TEXTBOOKS AT THE PRIMARY LEVEL
Anita Rampal, Professor, Department of Education, Delhi University, Delhi

CHIEF ADVISOR
Amitabha Mukherjee, Director, Centre for Science Education and Communication (CSEC), Delhi University, Delhi

MEMBERS
Anita Rampal, Professor, Department of Education, Delhi University, Delhi
Asha Kala, Primary Teacher, MCD School, Krishi Vihar, G.K. Part I, New Delhi
Asmita Varma, Primary Teacher, Navyug School, Lodhi Road, New Delhi
Bhavna, Lecturer, DEE, Gargi College, New Delhi
Dharam Parkash, Professor, CIET, NCERT, New Delhi
Hema Batra, Primary Teacher, CRPF Public School, Rohini, Delhi
Jyoti Sethi, Primary Teacher, The Srijan School, Model Town, Delhi
Kanika Sharma, Primary Teacher, Kulachi Hansraj Model School, Ashok Vihar, Delhi
Prakasan V.K., Lecturer, DIET, Malappuram, Tirur, Kerala
Preeti Chadha Sadh, Primary Teacher, Basic School, CIE, Delhi University, Delhi
Suneeta Mishra, Primary Teacher, N.P. Primary School, Sarojini Nagar, New Delhi

MEMBER–COORDINATOR
Inder Kumar Bansal, Professor, DEE, NCERT, New Delhi

ILLUSTRATIONS AND DESIGN TEAM

Nancy Raj, Chennai
Anita Varma, Bangkok
S. Nivedita, Chennai
Srivi Kalyan, Harvard University
Sujasha Dasgupta, Gurgaon
Sougata Guha, The Srijan School, Model Town, Delhi
Arup Gupta, New Delhi

Cover Design: Sujasha Dasgupta

Layout and design support:
Anita Rampal, Sadiq Saeed and Sandeep Mishra
ACKNOWLEDGEMENTS

National Council of Educational Research and Training (NCERT) thanks the following persons and institutions for their contribution towards this textbook. Special thanks are due to the Centre for Science Education and Communication (CSEC), Delhi University, for providing academic support and hosting all the textbook development workshops. The teams were fully supported by the staff, who put in tremendous effort through long working hours even on holidays.

The Council gratefully acknowledges the contributions of Sandeep Mishra for the voluntary technical support and of Sadiq Saeed (DTP Operator), Pratul Kumar Vasistha (Copy Editor), Binod Kumar Jena (Proof Reader) and Shakamber Dutt (Computer Station Incharge) in shaping this book.

This book has drawn upon ideas from existing materials such as Kunnimant — Mathematics Textbooks for Class III & IV (developed by DPEP, Kerala for the Government of Kerala, 1997). The Council acknowledges the support of the Chakmak team at Eklavya, Bhopal for the children’s drawings.

The Council also acknowledges the following teachers — P.K. Abdul Lathif and Cheggareddy F. C., Indira Ramesh, Sandhya Kumar — for participating in discussions and some book development workshops. The support offered by K.K. Vashisht, Head, Department of Elementary Education, NCERT is also gratefully acknowledged.

The Council gratefully acknowledges the photographs taken by the following:

Chapter 1 — Anita Rampal, Gulab, Kabir, Vajpeyi, Jugnu Ramaswamy, Y.K. Gupta, Seema K.K. The contribution of Vinyas Centre for Architectural Research & Design, New Delhi and Jagriti Public School, Murshidabad, W.B. is also acknowledged.

Chapter 2 — Y.K. Gupta (CIET, NCERT)
Chapter 3 — Mahesh Baseda, Sanchari Biswas, A.B. Saxena. Thanks are also due to Eklavya, Bhopal.

Chapter 4 — Swati Gupta
Chapter 5 — Suneeta Mishra, Y.K. Gupta (CIET, NCERT)
Chapter 6 — Nitin Upadhye. The Council also thanks the multimedia project 'Girl Stars', created by Going to School and supported by UNICEF, for the material on Kiran the 'Girl Star'.

Chapter 7 — Y.K. Gupta (CIET, NCERT)
Chapter 12 — Sujasha Dasgupta, Y.K. Gupta (CIET, NCERT)

The Council is grateful to Anup Rajput, Professor and Head, DEE and Dharam Prakash, Professor (Retd.), DEE, NCERT for reviewing and updating this textbook.
# Math-Magic

What is inside this book?

<table>
<thead>
<tr>
<th>Chapter</th>
<th>Title</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Foreword</td>
<td></td>
<td>iii</td>
</tr>
<tr>
<td>1</td>
<td>Building with Bricks</td>
<td>1</td>
</tr>
<tr>
<td>2</td>
<td>Long and Short</td>
<td>13</td>
</tr>
<tr>
<td>3</td>
<td>A Trip to Bhopal</td>
<td>23</td>
</tr>
<tr>
<td>4</td>
<td>Tick-Tick-Tick</td>
<td>35</td>
</tr>
<tr>
<td>5</td>
<td>The Way The World Looks</td>
<td>52</td>
</tr>
<tr>
<td>6</td>
<td>The Junk Seller</td>
<td>60</td>
</tr>
<tr>
<td>7</td>
<td>Jugs and Mugs</td>
<td>69</td>
</tr>
<tr>
<td>8</td>
<td>Carts and Wheels</td>
<td>81</td>
</tr>
<tr>
<td>9</td>
<td>Halves and Quarters</td>
<td>94</td>
</tr>
<tr>
<td>10</td>
<td>Play with Patterns</td>
<td>107</td>
</tr>
<tr>
<td>11</td>
<td>Tables and Shares</td>
<td>120</td>
</tr>
<tr>
<td>12</td>
<td>How Heavy? How Light?</td>
<td>133</td>
</tr>
<tr>
<td>13</td>
<td>Fields and Fences</td>
<td>149</td>
</tr>
<tr>
<td>14</td>
<td>Smart Charts</td>
<td>162</td>
</tr>
</tbody>
</table>
Building with Bricks

Brick Patterns for Jagriti School

This is the true story of Jagriti School in Murshidabad (West Bengal). When its building was being made, there was a plan to make brick patterns on the floor and walls. Jamaal, Kaalu and Piyaar were the masons for the brick work. They wanted to get new ideas for the school building. So they took their other friends to see the old tomb of Murshid Kuli Khan. (See photos.)

This building has a big floor with about two thousand beautiful brick patterns. These were made by masons long back – about three hundred years ago.

Look how the bricks are arranged in these five floor patterns.
Which floor pattern do you like the most? ____________
Have you seen such patterns anywhere?

The masons came back excited. Jamaal said — Ah! In those days they had made so many interesting brick patterns. We had forgotten these! Let us make some nice designs on the floor of this school.

Each mason made a different brick pattern. The school is proud to have such a beautiful building! Children play and sing on it and also make new patterns themselves.
Which pattern is made in a circle?
In which pattern can you show mirror halves? Draw a line.
Is any face a square?

- Draw the smallest face of the brick.

- Which of these are the faces of a brick? Mark a (√).

- Which of these is a drawing of a brick? Mark a (√).

- Make a drawing of this box to show 3 of its faces.

- Can you make a drawing of a brick which shows 4 of its faces?

![Images of various shapes and a brick]

**A Wall that will not Fall**

![Images of a cylinder, a pyramid, and a cube]

One day Muniya and Zainab are playing with bricks to make their walls. Each makes a different wall.
Zainab says her wall will not fall easily. Masons too do not put bricks one on top of the other, as Muniya has done.

What do you think? Which wall will be stronger?

Look for walls where you can see different brick patterns.

**Different Wall Patterns**

- Here are photos of three kinds of brick walls. Can you see the difference in the way the bricks are placed?
- Now match the photo of each wall with the correct drawing below:

**Looking Through a Brick 'Jaali'**

The masons who built Jagriti School had also made different 'jaali' patterns on the walls.
Looking Through a Brick 'Jaali'

The masons who built Jagriti School had also made different 'jaali' patterns on the walls.

How many different 'jaali' patterns can you see in these two photos?
This is a drawing of another beautiful 'jaali'.

✦ Now colour some bricks red and make your own 'jaali' patterns in the wall drawn below.

Can you see the window (jharokha) in this photo of the school?

✦ Now draw some jharokha patterns on the wall here. You can shade it black.
Have you seen bricks that look like triangles? Look at the bricks around the tree in this photo.

Do you see the arch in the photo?

This is from a school in Faizabad.

kinds of bricks. Some of these are shown in this photo.

✦ Which of these bricks have curved edges?
✦ How many faces do you see of the
longest brick?

Is there any brick

a) How long is it? ________________

b) How wide is it? ________________

c) How high is it? ________________
Muniya wants to make a wall 1 metre long. How many bricks
will she need to put in a line? _______

Bricks and Bricks — Hot and Fresh!
Ganesh and Sahiba live near a kiln where bricks are made.

Can you guess how high is the chimney here? Is it:
a) about 5 metres?
b) about 15 metres?
c) about 50 metres?

Ganesh and Sahiba love to look at the pattern of bricks in the
long, long lines kept out to dry. They also watch how bricks are
made.

Here are four pictures from the brick kiln. These pictures are
jumbled up. Look at them carefully.

Write the correct order. _____________________

How do you think a brick is made out of soil dug from the earth?
Look at the pictures and discuss in groups.

Have you seen a brick kiln? Did you try to guess the number of
bricks kept there?

There are many, many brick kilns in India — thousands of
them! More than one hundred thousand! Can you imagine how big this number is? This number is also called
one lakh. Can you try to write it? Ask your friends where they have heard of a lakh.

Find out

Look at these photos and guess how many bricks are carried by this truck.

Also find out from a truck driver how many bricks they can carry.
in one truck.

**Mental Math: Bhajan Buys Bricks**

Bhajan went to buy bricks. The price was given for one thousand bricks. The prices were also different for different types of bricks.

<table>
<thead>
<tr>
<th>Bricks Type</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>Old bricks</td>
<td>Rs 1200 for one thousand bricks</td>
</tr>
<tr>
<td>New bricks from Intapur</td>
<td>Rs 1800 for one thousand bricks</td>
</tr>
<tr>
<td>New bricks from Brickabad</td>
<td>Rs 2000 for one thousand bricks</td>
</tr>
</tbody>
</table>

Bhajan decided to buy the new bricks from Brickabad. He bought three thousand bricks. How much did he pay? ____________

* Guess what he will pay if he buys 500 old bricks.

Do this without writing!
Guess the distance between any two dots. How many centimetres is it? Now measure it with the help of a scale. Did you guess right?

Which two dots do you think are farthest from each other? Check your answer.

Which two dots are nearest to each other? Check your answer.

Children can play this game in pairs, making dots on a plain sheet and asking their partner to guess the distance. This can also be extended to estimating bigger distances on the floor. The border of this chapter should also be used as a scale.
The Shorter Line

Akbar was a famous king. He had a smart minister called Birbal. Once Akbar gave him a difficult question. He drew a line on the floor.

Look at the picture and explain how Birbal made Akbar’s line shorter.

Now can you be as smart as Birbal? Make his line shorter without erasing it. Just think — is there any longest line?

Try This

★ Make her right arm 1 cm longer than the left arm.

★ Draw a cup 1 cm shorter than this cup.

★ Draw a broom half as long as this broom.

★ Draw another hair of double the length.
How Tall Have You Grown?

Do you remember that in Class 3 you measured your height?
Do you think you have grown taller?
How much? _______ (cm)
Have your friends also grown taller?
Find out and fill the table below.

<table>
<thead>
<tr>
<th>Friend's name</th>
<th>Last year's height (in cm)</th>
<th>This year's height (in cm)</th>
<th>How many cm have they grown?</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Jalpa once read a list of the tallest people in the world. One of them was 272 cm tall! That is just double of Jalpa's height. How tall is Jalpa? _______ cm.

**Imagine**

★ Could that person pass through the door of your classroom without bending?
★ Will his head touch the roof of your house if he stands straight?

**The Long and Short of Your Family!**

★ Who is the tallest in your family? _____
★ Who is the shortest in your family? _____
★ What is the difference between their heights? _____
**Inter-School Sports Meet**

**Race**

This is a 100 metre race for girls. Arundhati is nearest the finishing line. She is about 6 metres from it.

Behind her is Rehana. Konkana and Uma are running behind Rehana. Look at the picture. To answer the questions below choose from these distances:

- 3 metres
- 6 metres
- 10 metres
- 15 metres

![Image showing Rehana's position](image)

a) How far is Rehana from Arundhati? ________

b) How far ahead is Rehana from Kavita and Uma? ________

c) How far are Kavita and Uma from the finishing line? ________

Have you heard about a 1500 m or 3000 m race? (You remember that 1000 metres make 1 kilometre and 500 metres make half a kilometre.)

☆ So you can say —

In a 1500 metres race people run _____ km
In a 3000 metres race people run _____ km
Have you heard about marathon races in which people have to run about 40 kilometres? People run marathons on roads

Here are the Indian Records and World Records for some jumps. Find out from the table —

1. How many centimetres more should Chandra Pal jump to equal the Men's World Record for high jump?

2. How many centimetres higher should Bobby A. jump to reach 2 metres?
   
   Remember that 1m = 100 cm
   
   Half metre = ?

3. Galina's long jump is nearly
a) 7 metres

<table>
<thead>
<tr>
<th>Sports</th>
<th>World Record</th>
<th>Indian Record</th>
</tr>
</thead>
<tbody>
<tr>
<td>High Jump (Men)</td>
<td>Javier S. (2m 45 cm)</td>
<td>Chandra Pal (2m 17 cm)</td>
</tr>
<tr>
<td>Long Jump (Men)</td>
<td>Mike P. (8m 95 cm)</td>
<td>Amrit Pal (8m 8 cm)</td>
</tr>
<tr>
<td>High Jump (Women)</td>
<td>Stefka K. (2m 9 cm)</td>
<td>Bobby A. (1m 91 cm)</td>
</tr>
<tr>
<td>Long Jump (Women)</td>
<td>Galina C. (7m 52 cm)</td>
<td>Anju G. (6m 83 cm)</td>
</tr>
</tbody>
</table>

b) 7 and a half metres
c) 8 metres

4. Look at the Women's World Records. What is the difference between the longest jump and the highest jump?

5. If Mike P. could jump _____ centimetres longer, his jump would be full 9 metres.

6. Whose high jump is very close to two and half metres?
   a) Stefka K.
   b) Chandra Pal
   c) Javier S.
   d) Bobby A.

**Running Exercise**

The doctor has told DeviPrasad to run 2 km every day to stay fit. He took one round of this field. How far did he run?

The field was very far from his home. So he chose a park nearby. The boundary of the park was about 400 metres long.

★ How many rounds of the park must DeviPrasad run to complete 2 km?

★ One day the weather was very good and a cool breeze was blowing. He felt so good that he kept jogging till he got tired after 8 rounds. That day he ran _____ km and ____
metres!

How Many Rooms High?

school? _________

How many children live less than 1 kilometre away from your school? _________

Is there anyone who lives more than 5 km away from the school? How do they come to school? ____________________________

______________________________

______________________________

Guess and Find Out

1. How long is the thread in a reel?

2. How long is the string of a kite reel? Can it be more than a
kilometre long?

3. If a handkerchief is made out of a single thread, how long would that thread be?

I Wish I Were!

Try to find out:

Which is the highest building that you have seen? About how many rooms high was it?

How high can a kite go? Can it go higher than the Qutab Minar?

How high can a plane fly? Can it fly higher than Mount Everest?

which is about 9 km high?

Have you ever seen clouds below you?
<table>
<thead>
<tr>
<th>Friend’s name</th>
<th>Distance of home from school</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Children will get a good idea of 1 kilometre distance if it is possible to take them for a 1 km walk, preferably along a straight path.
I wish I were a kite
So that I could rise
Above this building’s height.

I wish I were a bird
So that I could fly
And reach above that kite.

I wish I were a cloud
So that I could move
Above those little birds.

I wish I were a plane
So that I could rise
Above the clouds and the hills.

It would be useful here to discuss about children’s experiences, particularly when talking about clouds and their height, so that they get an intuitive feel of relative heights, and can begin to estimate large distances.
Today Sugandha is very excited. All the children of her school are going on a trip to Bhopal with their teachers. Ms. Meenakshi and Mr. Rakesh are talking about the number of buses needed.

Ms. Meenakshi — We will need 4 buses.

Mr. Rakesh — I think we need at least 5.

Ms. Meenakshi — Each bus has 50 seats.

Mr. Rakesh — Let us see how many children are going.

<table>
<thead>
<tr>
<th>Class</th>
<th>Number of children</th>
</tr>
</thead>
<tbody>
<tr>
<td>I</td>
<td>33</td>
</tr>
<tr>
<td>II</td>
<td>32</td>
</tr>
<tr>
<td>III</td>
<td>42</td>
</tr>
<tr>
<td>IV</td>
<td>50</td>
</tr>
<tr>
<td>V</td>
<td>53</td>
</tr>
<tr>
<td>Total</td>
<td></td>
</tr>
</tbody>
</table>

Do we need 4 buses? One bus can take 50 children, 4 buses can take 50 \times 4\ldots?\\

✧ So there are a total of_________ children going.
✧ If they get 4 buses, how many children will get seats? ______
✧ Will there be any children left without seats?

For just a few children, we can’t get another bus!

Children should be encouraged to estimate first and then find out the answer using any method they want. It is important to discuss the methods children use to solve a problem.
Waiting for the Buses

Sahiba jumps out of the line to see if the buses are coming. She shouts loudly — Hey! I can see them. Run! Grab the window seats.

Many children start jumping in excitement. But ..........

Stop! What is this? These buses are so small!

Now there is an argument.

We told you to bring big buses!

We did not have enough big buses. So we got many mini buses.

Each mini bus can take 35 students. How many mini buses are needed?
The Journey Begins

As the buses start moving, children sing at the top of their voices. Some look outside to enjoy the view of the green fields and the hills.

Indra — When will we reach Bhopal?

Ms. Asha — If we don’t stop anywhere, we should reach there in 2 hours, that is around ____ o’clock.

<table>
<thead>
<tr>
<th>Manjeet</th>
<th>Is it very far?</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mr. Bhimsen</td>
<td>It is about 70 km.</td>
</tr>
<tr>
<td>Ruby</td>
<td>Are we going to stop anywhere?</td>
</tr>
<tr>
<td>Mr. Rakesh</td>
<td>May be at Bhimbetka, about 50 km from here.</td>
</tr>
</tbody>
</table>

är

If they go to Bhimbetka, they will reach there
— Before 10 o’clock
— Between 10 o’clock and 11 o’clock
— After 11 o’clock

As they are talking, Bahadur shouts — Hey! look at the Narmada. Everyone looks out of the windows.

Ruby — Wow! it is sooo long and so wide!
Let us guess how wide it is.
Gopi — Uhmm---m, 100 metres? No, it is much more. Can't say.

Victoria — It must be more than half a kilometre.

Ms. Asha — Look, it is written – 'This bridge is 756.82 metres long'. So we can guess that the Narmada must be about 500 metres wide at this place.

Was Victoria right?

Sadaf — I just can't imagine 500 metres.

Ms. Asha — See, our bus is about 5 metres long. Imagine how many buses can stand in a line on this bridge.

Have you ever crossed a long bridge? About how many metres long was it? __________

Everyone looks down at the river.

Mr. Rakesh— The water level now is quite low. It must be about 40 metres below the bridge.

Ms. Asha — But in the rainy season, the water had risen. Then it was just about 15 metres below the bridge.

What is the difference between the water level of the Narmada in the rainy season and now? __________ metres.

The children discuss about the river for some time. ......
Suddenly, the bus stops with a jerk.

Oh! The petrol pump. Two buses need to be refilled.

The buses stand in a line. Children are sticking their necks out to see how diesel is filled in the bus. Some children have got down to look more closely.

✦ Each bus takes about 15 minutes to refill and there are two buses to be refilled. So they stop there for about _______ minutes, which means they are late by about _______ minutes.

Hey it has such a big tummy!
It has already taken 100 litres.

So we have to pay 5500 Rupees for the diesel!!

✦ Look in the picture and find the price of 1 litre of diesel. _______

As the buses are being refilled, some children go to the toilet near the petrol pump.

How much time did Aman take to come out of the toilet? ________
To Bhimbetka

After the buses are refilled, the journey starts again. Now the children are told that they are stopping at Bhimbetka.

Anjan — What is Bhimbetka?

Ms. Raina — It’s a place with lots of caves and cave-paintings made by people ten thousand years ago.

Sumit — Ten tho....uu....saa....nd years! I cannot even think of one thousand years back!

Gopi — Oh! one thousand years is a big thing, I can’t even think of one hundred years.

Gauri — I can think of 100 years because my father’s grandmother is 100 years old.

Manjeet — That means those caves are almost hundred great grandmothers old!!

Everybody bursts into laughter – Ha! Ha! Ha!

Now the children are really excited to see the cave-paintings. It is about 11 o’clock when they reach Bhimbetka.
Shankar — This painting also has very big bison. Hey, I got an idea. I will count the bison and you count the deer in the paintings.

Bina — I will count people. Let us see which are the most — bison, deer or people.

How many more deer are there than bison? ____________

But Bina is the happiest because the number of people is even more than the number of deer and bison together. Her count is less than 200.

How many people must Bina have counted?
214 / 154 / 134 / 177

The guide tells them that there are 600 cave-paintings in all. It is time to leave Bhimbetka.

They have spent 1 hour there. What time is it? ____________

They are now moving towards Bhopal. They should reach there in less than 1 hour, at about __________ o'clock.
Lunch Time

The children are hungry by this time so they take out their lunch-packs. Biscuits, oranges and bananas are also distributed in all the buses.

Each child is to be given 1 orange, 1 banana and 5 biscuits.

All the children take oranges and biscuits but 38 children do not take bananas.

How many oranges, biscuits and bananas are distributed?

Manjeet and Bhanu quickly finish their lunch and start asking puzzles to pass the time.

Manjeet — Tell me the number which is exactly between 100 and 150.

Bhanu — 120 ... no, 130 ... no it is 125.

Manjeet — Right. OK! You ask now.

Other children join in. Everyone is asking puzzling questions.

A I gave four toffees each to four of my friends and three toffees are left with me. How many toffees did I have?

B What numbers can you make using 3, 5 and 7? You can make 357 and 537. What others?

C A number becomes double if it is increased by 8. What is the number?

Children can be asked to solve many more similar questions or puzzles, both orally and in writing. They should also be encouraged to explain the strategies they use.
Can you solve these? Try them out.

**Which Boat do We Take?**

They are so lost in puzzles that they do not notice they have reached the lake. It is a very big lake with a small island in it.

The lake looks very beautiful at this time. There are a lot of ducks making a loud noise. Some children give them popcorn.

Now comes the exciting part! It is time to go for boating. They have to choose which boat to take. But that is not easy.
There are different kinds of boats. Each has a different ticket price, and also different trip times.

<table>
<thead>
<tr>
<th>Name of the Boat</th>
<th>Ticket-price</th>
<th>Trip-time</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Double-decker</td>
<td>Rs 30</td>
<td>45 minutes</td>
</tr>
<tr>
<td>2. Paddle-boat</td>
<td>Rs 15</td>
<td>30 minutes</td>
</tr>
<tr>
<td>3. Motor-boat</td>
<td>Rs 25</td>
<td>20 minutes</td>
</tr>
<tr>
<td>4. Boat with oars</td>
<td>Rs 15</td>
<td>45 minutes</td>
</tr>
</tbody>
</table>

Four of us will take a paddle boat and race with Gauri and her group.

We will take the motor-boat. It is costly but fun — Zoooo...m!

Based on the table showing ticket rates, trip time etc. some questions are given in the book. Children should be motivated to make many more questions themselves.
* Indra and Bhanu first went in the motor-boat, and then took the oar-boat.
  How much did they pay for both the boats? Rs __________
  How much time did they get for both rides? __________

* One group of children went for the double-decker trip. They paid Rs 450 in total. How many children went for the double-decker trip? __________

* Which boat makes two trips in 1 hour?

* Which boat takes less than half an hour to complete a trip?

* Which boat gives them the most time taking the least money?

* Javed went twice for boating. He paid a total of Rs 40, and boated for 50 minutes. Which two boats did he take? _______

**Time to Return**

Children enjoy different boat rides till 4 o'clock. It is time to return. Now they will not stop anywhere and reach back in two hours.

So, they should reach Hoshangabad by __________o'clock.
Find out
Have you ever been on a school trip? How many children were there in all? How did you go and how far? How much time did it take? Try to find out the cost of travel for each child.

Practice Time

1. There are four very old cave-paintings. Mark the oldest.
   a) 4200 years old  
   b) 1000 years old  
   c) 8500 years old
   d) 1300 years old

2. One bus can carry 48 children. How many children can three buses carry? About —
   a) 100
   b) 200
   c) 150

3. Which pair of numbers add to make more than 500?
   a) 152 and 241
   b) 321 and 192
   c) 99 and 299
   d) 401 and 91

   ✿ Crossed the Narmada bridge  3:00  p.m.
   ✿ Looked at Bhimbetka paintings  6:00  p.m.
   ✿ At the petrol pump  9:10  a.m.
   ✿ Boating in the lake  12:30  p.m.
   ✿ Had lunch  11:30  a.m.
   ✿ Returned to Hoshangabad  9:30  a.m.
Pankaj and Saniya were discussing whose home is farther from school.

I have to walk for 5 minutes to reach school.

I just walk for 2 minutes to reach school.

Impossible! Your home is farther from school.

But I checked my watch.

I start for school at 7 o’clock.

When I reach school, the minute hand points at 2.

So shouldn’t it be 2 minutes past 7 or 7:02?
Practice Time

1) Three friends read time from a clock. Who is right?

<table>
<thead>
<tr>
<th></th>
<th>Cheeku</th>
<th>Bittu</th>
<th>Pinki</th>
</tr>
</thead>
<tbody>
<tr>
<td>[Clock Image] 12:03</td>
<td>12:15</td>
<td>3:00</td>
<td></td>
</tr>
<tr>
<td>[Clock Image] 7:25</td>
<td></td>
<td>5:07</td>
<td>5:35</td>
</tr>
<tr>
<td>[Clock Image] 3:35</td>
<td>7:03</td>
<td></td>
<td>7:15</td>
</tr>
</tbody>
</table>
2) Show the following times in the clock:

3:10  
6:40  
4:45  
2:20  
3:15  
7:35

Do you like sky watching? If yes, then this one should interest you:

a) At what time does the sun rise at your place? ———

b) When does the sun set? ———

Dose the sun rise and set at the same times every day?

Look at a newspaper and see the time of sunrise and sunset in different months.
Look at the photo and guess the time at this place.

This photo was taken in Paris, France. In Paris the sun sets after 9 pm at night during summer. This photo was taken at night! But in winter it becomes dark here by 4 pm in the evening.

3) **Find out**

* How long will it take the minute hand to move from

a)

b)

c)

d)
* Draw where the hands will be:

a) 20 minutes after 6 o'clock
   ![Clock 1]

b) 30 minutes after 8 o'clock
   ![Clock 2]

c) 10 minutes after 7 o'clock
   ![Clock 3]

d) 15 minutes after 5 o'clock
   ![Clock 4]

* How long does your school assembly take? _______

How long is your lunch break? _______

How long is your games period? _______

Is it the same as all the other periods? _______

The games period and lunch break seem very short! Aren't they?
How many minutes can these activities take? Make a guess and then check at home.

Boiling 1 litre milk

Filling a bucket

Sweeping your room

Activity Time

In one minute, how many times can you —

a) Snap your finger
b) Skip a rope
c) Jump up and down
d) ____________________

Write more such fun activities in this column.

Here is another challenge for you. How long can you —

a) Speak non-stop ____________________
1. __________________
2. __________________
3. __________________
4. __________________
5. __________________

How long does it take to cook dinner at home?

More than an hour/less than an hour.

Ask your father if he can cook as fast as your mother does. Yes / No

Which games take less than an hour to finish?

_________________________

How long does a football match take?

Rani’s Diary

Here are some pages from Rani’s Diary —

Mark these in the correct order on Munny’s Timeline:

* Munny got her first tooth in September. How many months old
Was she then? How many months have passed from March to

Come let’s go to see my new baby sister.

Maa I have brought sweets for Mummy.

But she can’t eat. She is too small!

And she doesn’t even talk!

She will start doing all this slowly as she grows up!
* How old was Munny, when

\[ 5/3/05 \]

Was born

(a) she first sat up? ________________

(b) she got her first tooth? ________________

* What did she do first — 1) walking/eating a banana?

2) crawling/standing

Rani had a pet puppy. After 2 weeks it opened its eyes. She watched it grow like this:

* Now make a time-line of this dog’s life in your notebook.
Note the differences between Munny and Rani's puppy:

**Find out**

After 3 weeks it got its first teeth and started eating.

After 4 weeks — it started walking around but was still wobbling.

It had a full set of teeth by the time it was 7 months old.

After 1 year, it was a grown-up dog and got its own puppies.

Do all animals grow at the same speed?

Discuss about the growth of —

<table>
<thead>
<tr>
<th>Positions</th>
<th>Munny (age)</th>
<th>Puppy (age)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Started walking</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ate food for the first time</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Got the first tooth</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
1. A hen  
2. A cow  
3. A bird  

Draw pictures of the baby animal and the big animal.  

Here are the pictures of grandfathers. Draw a barograph. Who looks the oldest to you?  

* How much older is Appu’s grandfather than Rani’s grandfather?  

* Will Chuchoo’s grandfather ever grow as old as Appu’s grandfather?  

Elephant Appu’s grandfather (95 years old)  

Chuchoo rat’s grandfather (2 years old)  

Rani’s grandfather (70 years old)  

* How much younger is Chuchoo rat’s grandfather than Rani’s grandfather?  

Holidays are Fun!  

Atif’s holidays had begun. He was very excited. He had made some wonderful plans and wanted to tell his cousin Shabana. So he wrote
her a letter —
Shabana who stays in Nagpur, got this letter on 13/05/18. She wrote back to Atif —

Dear Shabana aapa,

Hello!
How are you? I am fine here. Aapa, my holidays have started from today! I am going to my Nani’s place on 10/05/2018. I will be back on 20/5/2018. My school will reopen on 30/6/06. When does your school close? Why don’t you come here? We will have great fun!

Bye for now

Ali

Ali wrote his letter on 07/05/18. You remember how we write a date in numbers?

Dear Ali,

Hello!
I am doing well here. I got your letter yesterday. Happy holidays! My school will close on 1st June 2018. It will reopen on 10th August. I will go on a school trip to Goa and will return on 7/6/18. I will try to come to Ajmer after that. Bye

Shabana

07/05/18 is 7 May 2018.
Now write which dates these stand for —
10/5/18

__________________________
20/5/18  
7/6/18  10 May 2018  
1/6/18  

Write these dates in numbers.
1 June 2006  
30 May 2006  
10 Aug 2007  

* How long did it take the letter to reach from Ajmer to Nagpur? _______  
* How many days will Ali spend at his Nani’s place? _______  
* Fill in the table:

Who has got longer holidays — Shabana or Ali?

<table>
<thead>
<tr>
<th></th>
<th>Dates</th>
<th>Number of days</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>From</td>
<td>To</td>
</tr>
<tr>
<td>Shabana's holidays</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ali’s holidays</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

* Which long holidays do you get in school? Fill the table.

On 15 May 2017 Chandran went to a shop to buy butter. He
checked the packet to see if this butter was safe to eat. It was written on the packet — Best before 180 days from the date of packing.

Then he checked the date of packing. It was 15/01/17. Help him find out if he should buy this butter or not.

— In which month was the butter packed?  
— Which month will it be 180 days after 15/01/17?  
— Can Chandran eat it on 15th May 2017?  

Do you ever check the date of packing of things you buy? Have you seen medicines which have the expiry date written on them? It tells you after which date it is unsafe to take the medicine.

Find Out

* Which are the other things that come with an expiry date?

On a cough syrup it was written:

Mfg. date 07/17
This shows it was made in July 2017.

Exp. date 07/18
This shows the month and year till when it is safe to take.

* What month and year is written as 07/18?  
Would it be safe to take the cough syrup in September 2018?  

Tapu Missed the Train

Children are not expected to know the words 'manufacturing' or 'expiry' dates, but only to recognise these as symbols that show when the medicine is made and till when it is safe to take. Teachers could encourage children to read and observe more such dates on different products.
Tapu’s school had closed for the summer holidays. He went to his grandma’s place. He met a lot of his cousins there. He was enjoying himself and didn't want to go back home.

Tapu and his parents reached the station at 5:15. But guess what? They had actually missed the train!

Can you guess why they missed the train?
Actually the train had left at 5:30 in the morning! Tupu’s parents were upset. They asked the station master —

Our ticket says 5:30. But Sir, this means 5:30 in the morning. Oh yes. How could I forget that?
The Railways will write 17:30 for 5:30 in the evening.

Why?? Because they use a 24-hour clock.

Look at this chart. It tells the difference between your watch and a 24-hour clock. Try to complete it.

<table>
<thead>
<tr>
<th>Time by your watch (12-hour clock)</th>
<th>Time by a 24-hour clock</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 o’clock in the afternoon</td>
<td>13:00 hours</td>
</tr>
<tr>
<td>2 o’clock in the afternoon</td>
<td>14:00 hours</td>
</tr>
<tr>
<td>3 o’clock in the afternoon</td>
<td>____________</td>
</tr>
<tr>
<td>3:30 in the afternoon</td>
<td>15:30 hours</td>
</tr>
<tr>
<td>6 o’clock in the evening</td>
<td>____________</td>
</tr>
<tr>
<td>9 o’clock in the evening</td>
<td>____________</td>
</tr>
<tr>
<td>12 o’clock at midnight</td>
<td>____________</td>
</tr>
</tbody>
</table>
Now can you tell why a 24-hour clock is called so?

Suppose a train leaves at 8:30 at night. The time written on the Railway ticket would be ____________.

In a 12-hour clock, each time comes twice in a day.
So 5:30 in the morning is 5:30 am.
5:30 in the evening is 5:30 pm.

What about 12:30 in the afternoon?

That is 12:30 pm. After 12 o'clock at noon we use pm till midnight.

You must have noted the time of sunrise and sunset.
Write here using am and pm.

<table>
<thead>
<tr>
<th>Time of Sunrise</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Time of Sunset</td>
<td></td>
</tr>
</tbody>
</table>

Where have you seen a 24-hour clock being used?

1. ________________
2. ________________
3. ________________
Gappu’s Air Journey

Gappu was a brave little mouse. One day, he saw children playing with a huge gas balloon. The balloon went up and touched the roof. Gappu was thrilled. He got an idea. Next day, when the children went to school, Gappu climbed up the string of the balloon. He could see the blades of the fan from above.

✧ Draw how the fan looks from below.

Gappu looked down. He could see the bed, the chair, one table with books on it and the other table with a bottle, a jug, fruits etc.

✧ Look for these things in the photo.

The story demands a high level of imagination and children need adequate discussion about how things look differently in shape and size when you see them from different views and distances. However, the story should not lose its fun element.
Can you think why Gappu could see the cheese on the jug but Chinky could not?

Just then a strong wind pushed the balloon out of the room. The balloon flew up and Gappu started going up in the sky. As he looked down, he could see his house.

As he went higher he could see things around his house — the park, the Gurudwara, the railway-line, a sweet-shop and Suhasini’s house with the big water-tank on its roof...

Who is that, on the railway track? Is it that fat cat Monty? Ha! Ha! Ha! From here it looks like a big white mouse. This must be the Gurudwara where Amarjeet goes every day.

I did not know there is a sweet shop here! Yummy!
Imagine how your classroom looks from above. Try to draw it and mark the benches, blackboard, doors, windows etc.

The balloon went up, up and up. Gappu kept wondering how big the world is! Now he could see lots of houses, streets, roads and buses.

Suddenly, there was a loud sound ... *phatt!* The balloon burst and started falling down ... down ... and everything started looking bigger and bigger. *Dhapp*! --- Gappu fell on the railway-track. He ran to save himself from the cruel Monty who ran after Gappu and the other rats on the railway track.

When Gappu saw the railway-track from above, it looked like this —
But when he fell on the track, the railway line looked like this.

Oh! Things look so different when you look at them from the top and from the side.

Look at these pictures and discuss why things look wide and big at this end but narrow and small at the other end.

Match Two Views of the Same Pose
This is a top view of a girl in a yoga pose.
Only one of the photos below is the correct match of the same yoga pose. Mark it.
These are two different views of the same bowls.

✶ In which photo are the bowls upside down? __________
Look at the side view in photo 3 to find the answer.

✶ Draw lines to match the side view with the top view of
  — A pipe
  — A funnel

✶ Try to draw pictures of a shoe from the side, top, front etc.

It would be exciting for children to imagine and find out how different things can look from different angles. It also helps to improve their spatial understanding.
The Park behind Gappu's House

Do you remember the park behind Gappu's house?
Here is a bigger picture of that park. Look at it carefully and answer the questions.

- Mark the gate nearest to the sweet shop.  A / B / C / D
- Which gate is nearest to Gappu's house?
- If you enter from gate B, the green bench will be to your — Left / Right / Front
- When Suhasini entered the park, the flower bed was to her right. Which gate did she enter from?
- Which of these is nearest to you if you enter from gate C?
  1. Basketball court  
  2. Flower bed
  3. Green bench  
  4. See-saw

Young children tend to think of directions like left, front etc. in absolute terms. It is important for the development of spatial understanding to make them aware that directions are relative to one's position. Something that is towards the left from one position can be towards the right from another position. More activities can be done in the class based on this concept.
Ismail's Home

On the phone Ismail told Srijata the route to his house from her house. The route map is shown here.

This is what Ismail told Srijata:

"From your house, reach the milk-booth and then take a left turn. From the second crossing take a right turn and go over the bridge. Go straight and then take the first right turn. After about 100 metres you will see a big park.

When you cross the park you will come to a side lane. My house is the first house in that lane.

Did Ismail go wrong somewhere? Can you correct him?

Show where Srijata will reach if she takes the route he told her.

Write the directions for going from Ismail's house to Srijata's house.
**Gibli and the Big Box**

Do you remember Gibli the ant in the Math-Magic Book 3?

Well, one day Gibli saw a big box on her way. It looked like this.

Gibli moved across and turned left. Now she could see the other face of the big box.

Gibli was confused. What was this box? She climbed up and tried to see from there. The box looked like this.

Can you guess what that box-like thing was?

The numbers on the opposite faces of this box add up to 7.

✦ Which number was on the opposite side of 5?
✦ In the picture, which number will be at the bottom?
✦ Which number will Gibli see if she again turns left from 5?
✦ What will this box look like if you opened it up? Mark the correct picture.

**Try it out**

Draw a shape like this on a thick paper. Cut it out and colour the different faces in different colours.

Can you use this box to play a game?
Have you ever met a *Kabariwali* – a woman who sells junk? This is a true story told by Kiran, who has a junk shop in Patna.

I studied in a Hindi medium school in my village. My father wanted girls to study like boys. I loved Hindi and Science, but I hated Maths! Today Maths is most useful for my work. I could never imagine this in school.

What about you? Do you also find Maths difficult?

What is the most difficult thing in your Maths book? _______

What do you think is the easiest lesson? _______

When I was young, my father died in an accident. So my mother worked as a servant in some houses. We had a difficult time. I had to leave school after Class VIII. I wanted to study more but my mother got me married.

My husband’s family lived in a mud house. His two brothers and his sister did not go to school. He had a tea stall.
Find out: how much for a cup of tea?
Ask people and find out the cost of a cup of tea
★ at a tea stall __________
★ at a hotel ____________

If a person who runs a tea stall earns Rs 30 in a day,
how much will he earn in 10 days? __________
And in a month? ________________
How did you get the answer? Discuss.

I thought of starting my own business. I thought I should open
a bangle shop or a tailor shop. But my uncle said that we
could earn a lot by opening a junk shop.

In 2001, my mother-in-law and I opened a junk shop. We took
a loan of Rs 8000 for the shop.

Find out: what is a loan?
★ Have you ever heard of someone taking a loan?
   For what? __________
★ How much loan was taken? __________
★ How much money was paid back? __________
Hariya and Babu want to buy a handcart for Rs 300.

<table>
<thead>
<tr>
<th>Hariya</th>
<th>Babu</th>
</tr>
</thead>
<tbody>
<tr>
<td>I have taken a loan of Rs 300 from a bank for six months. I will pay Rs 51 every month to the bank.</td>
<td>But I have taken a loan of Rs 300 from Chunnial. After six months, I will pay back Rs 360.</td>
</tr>
</tbody>
</table>

Who has to pay back more — Hariya or Babu? __________
People laughed and teased us about our work. They called it *ganda kaam* or 'dirty business'. But I did not think so. I knew this idea would work.

Now we have a *pucca* house with electricity. We have a fridge, a TV and a gas stove. My husband's brothers, sister and also my daughter go to school.

I have 9 rickshaws of my own. I give the rickshaws on rent, each for Rs 20 a day. On Sundays I do not take any money for them.

**How Much does Kiran Earn from 9 Rickshaws in a Day?**

For 1 rickshaw she gets Rs 20 per day.

So, for 9 rickshaws she will earn Rs ________.

How did you do it?

Hey! I will do it like this —
9 times 2 is 18.
So, 9 times 20 is 180.

But I find this easier.
For 10 rickshaws she will get
Rs 20 × 10 = Rs 200.
So, for 9 rickshaws, she will get Rs 200 - ___ = ___.

Think of some other ways to do it.

Encourage children to use their own strategies to solve such problems. There should be discussion on how they arrived at their answers.
In a week how much does Kiran earn from one rickshaw?

**Do it mentally and write the answers.**

\[
\begin{align*}
2 \times 6 &= \underline{_______} & 4 \times 80 &= \underline{_______} \\
20 \times 6 &= \underline{_______} & 4 \times 81 &= \underline{_______} \\
2 \times 60 &= \underline{_______} & 9 \times 25 &= \underline{_______} \\
3 \times 42 &= \underline{_______} & 31 \times 9 &= \underline{_______}
\end{align*}
\]

I have my own small junk shop. I buy junk from junk collectors. They go from house to house and bring junk on handcarts. I then sell it at the big shop.

**How Much to Pay for this Junk?**

Kiran has bought some junk from junk collectors.

Look at the next page the rate list to see today’s rates. Help Kiran to find out the cost of the junk.

* How much will Kiran pay for 31 kg newspaper?

This exercise encourages children to use different strategies (other than the standard algorithm) for doing multiplication.
How much will Kiran pay for 42 kg newspaper?

Also find the cost of:

a) 22 kg of plastic
b) 23 kg of waste paper
c) 12 kg of iron

Can you do this without writing?

Smart Kiran Sells the Junk

Kiran sells her junk to a big shop. She checks the prices on her mobile phone and sells only when she gets a good price.

Today she has gone to sell plastic, newspaper, iron and brass at Dinu’s big shop.

Dinu weighs 32 kg iron, 4 kg brass, 152 kg newspaper, 63 kg plastic.
A. How much will Dinu pay for 63 kg plastic?

The rate of 1 kg plastic is Rs 11. So the cost of 63 kg plastic will be Rs 11 × 63.

Remember, you used boxes to multiply two numbers in Class III.

Dinu’s Rate-List

<table>
<thead>
<tr>
<th>Kind of Junk</th>
<th>Price of 1 Kg</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Newspaper</td>
<td>Rs 17/-</td>
</tr>
<tr>
<td>2. Iron</td>
<td>Rs 24/-</td>
</tr>
<tr>
<td>3. Brass</td>
<td>Rs 280/-</td>
</tr>
<tr>
<td>4. Plastic</td>
<td>Rs 11/-</td>
</tr>
<tr>
<td>5. Waste Paper</td>
<td>Rs 8/-</td>
</tr>
</tbody>
</table>

10
60
60 × 10
600
3 × 10
30
2
60
60 × 1
3 × 1
3

11 × 63 means 11 times 63. 11 times 60 is 660. So, the answer is more than 720. Also the answer is less than 800. Can you tell why?

Dinu added the numbers in the boxes:

\[
\begin{align*}
600 \\
+ & \quad 60 \\
+ & \quad 30 \\
+ & \quad 3 \\
\hline
693
\end{align*}
\]

So, for 63 kg plastic, Dinu will give Rs 693.

*Kiran bought 1 kg plastic for Rs 10, but sold 1 kg plastic for Rs 11. How much money does she earn on selling 1 kg plastic? Rs ________

So, how much money does she earn for 63 kg? Rs ________
B. Kiran sells 32 kg iron

* How much money will Dinu pay for 32 kg iron?
* Kiran buys 1 kg iron for Rs 11, but sells it for Rs 24.

How much does she earn when she sells 32 kg iron? Rs ________

C. What will Dinu pay for 152 kg newspaper?

The rate of 1 kg newspaper is Rs 8. So the cost of 152 kg newspaper is Rs 8 x 152.

Dinu writes:

<table>
<thead>
<tr>
<th></th>
<th>100</th>
<th>50</th>
<th>2</th>
</tr>
</thead>
<tbody>
<tr>
<td>8</td>
<td>100 x 8</td>
<td>50 x 8</td>
<td>2 x 8</td>
</tr>
</tbody>
</table>

8 x 100 = 800. So, the answer is more than 600. Is the answer less than 1000? How did you guess?

Then he adds the numbers in the boxes:

\[
\begin{array}{c}
800 \\
+ 400 \\
+ 16 \\
\hline
1216
\end{array}
\]

So, for 152 kg newspaper he will give Kiran Rs 1216.

D. What does Dinu pay for brass?

How much money will Dinu pay for 4 kg brass? ________
First guess the answer and then calculate:

a) \(37 \times 18 = \)

c) \(142 \times 5 = \)

b) \(45 \times 24 = \)

e) \(382 \times 3 = \)

d) \(69 \times 52 = \)

f) \(2 \times 175 = \)

g) \(77 \times 55 = \)

h) \(4 \times 206 = \)

Fill My Diary

Kiran bought some junk from the junk collectors. She paid them Rs 841. She sold the junk at Dinu’s big shop and Dinu gave her these notes and coins.

6 notes of \(200\) rupees notes

3 notes of \(100\) rupees notes

8 notes of \(50\) rupees notes

50 coins of \(1\) rupee coins

6 notes of \(20\) rupees notes

Kiran wrote the record in her diary.

<table>
<thead>
<tr>
<th>11 March 2018</th>
</tr>
</thead>
<tbody>
<tr>
<td>Money I paid — Rs 841</td>
</tr>
</tbody>
</table>

| Money I got | |
|———|———|
| — Rs 600      | |
| — Rs 150      | |
| — Rs 140      | |
| — Rs 60       | |
| — Rs 40       | |
| — Rs 4        | |

Total Rs 994

Rs 994

— Rs 841

Money I earned : Rs 153
Later she paid Rs 919 to the junk collectors. When she sold the junk she got these notes and coins from Dinu.

28 coins of 1 coin

5 notes of Rs 200

1 note of Rs 500

18 notes of Rs 100

9 notes of Rs 10

Now you make a record in her diary.

Find out how much she earned this time.

18 March 2018
Bunny and Banno Celebrate their Wedding Anniversary.

Do you remember the wedding in Bunny’s family last year? (See Math-Magic Class III page 153). Bunny and Banno decided to have a party one year after their wedding.

They invited their family and friends. They made a special sweet dish — kheer.

All the animals came — running, hopping and even crawling!
The elephant is drinking 50 litres of kheer.
The giraffe is drinking _____ litres.
The cow is drinking _____ litres.
Then came the squirrel. She said — I can't drink 1 litre of kheer, please give me only 500 millilitres.
The donkey asked — 500 millilitres of kheer? Isn't that more than a litre?
The fox said — Come on, don't behave like a donkey! One litre is 1000 millilitres, so 500 millilitres is half a litre.
The frog hopped along with nine other friends. He said — Oh, we only want 100 millilitres each!

OK., here is your *kheer* — said the cat, while serving the *kheer*. She took 10 glasses and poured 100 millilitres *kheer* in each glass.

The donkey looked confused and asked — Ten glasses of 100 mL each. How much is that?

Don’t worry, they won’t drink much. Each of them will take only one millilitre. That is all. I will share my *kheer* with them — the elephant said and wiped the cat's tears with his ear.
How many are you all together? — the elephant asked.
We are only one thousand — said the ants.
The cat said — Oh no, one thousand! We have to give kheer to 1000 ants!
After thinking the elephant said — No problem, I can manage.
Each ant drinks 1 millilitre of kheer.
So, 1000 ants drink: $1000 \times 1 \text{ mL} = \underline{\hspace{2cm}} \text{ mL}$.
Ah! they will need the same as the ten frogs — said the donkey.
All the ants drank the kheer. Everyone was happy. They sang and danced to celebrate the wedding anniversary.

**Who can have 1 Litre Kheer**
Do you like kheer? What do you call it at home?
How much *kheer* can you have?
Can you drink 1 L water at one time?
The donkey is trying to look for different ways to add up to 1 litre. Help him complete the chart.

**Look Around**

I think I can drink one litre.

I can drink 400 mL.

<table>
<thead>
<tr>
<th>mL</th>
<th>mL</th>
</tr>
</thead>
<tbody>
<tr>
<td>___</td>
<td>250</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>mL</th>
<th>mL</th>
</tr>
</thead>
<tbody>
<tr>
<td>500</td>
<td>500</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>mL</th>
<th>mL</th>
</tr>
</thead>
<tbody>
<tr>
<td>100</td>
<td>___</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>mL</th>
<th>mL</th>
</tr>
</thead>
<tbody>
<tr>
<td>___</td>
<td>___</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>mL</th>
</tr>
</thead>
<tbody>
<tr>
<td>___</td>
</tr>
</tbody>
</table>
Look at these pictures. Now look for some other things we get in packets or bottles like these. Make your own list.

**My Litre Bottle**

<table>
<thead>
<tr>
<th>Packet</th>
<th>How many mL or L?</th>
</tr>
</thead>
<tbody>
<tr>
<td>Milk</td>
<td>500 mL</td>
</tr>
</tbody>
</table>

Have you seen a one-litre water bottle?

Collect a 1-litre bottle and some other small bottles. Guess how many times you have to pour from each of the small bottles to fill the litre bottle.

Check if your guess is correct and fill the table.
Look what Aaditya is saying.

<table>
<thead>
<tr>
<th></th>
<th>Bottles</th>
<th>My guess</th>
<th>My measure</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bottle 1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bottle 2</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bottle 3</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

How much water does his small bottle hold?  

I poured two small bottles of water to fill this 1-litre bottle.

Aaditya

To fill the 1-litre bottle I need to pour water 5 times from my small bottle.

Leela

does Leela’s bottle hold?  

Ramu’s Measuring Bottle

Ramu got an empty 250 mL coconut oil bottle. Look at the picture and discuss what he did to make his big measuring bottle.
**My Measuring Bottle**

Find your own way to make a bottle which can measure 200 mL.

<table>
<thead>
<tr>
<th>My Guess</th>
<th>My Measure</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mug</td>
<td></td>
</tr>
<tr>
<td>Glass</td>
<td></td>
</tr>
<tr>
<td>Pot</td>
<td></td>
</tr>
</tbody>
</table>

I think it's a little less than 750 mL.

I think this can carry between 250 mL and 500 mL.
How much medicine will she need for one day?
How much medicine in all for 5 days?

**How much do we use at a time?**

- Eye drops
  - We use less than 1 mL at a time.
- ________
- ________
- ________

List things we use more than one litre at a time.
- Water for taking bath
- ________
- ________
- ________
- ________
Practice Time

1. Amina’s water bottle holds one litre of water. She drank 250 mL of water and her friend Govind drank 150 mL. How much water is left in her bottle?

2. Yusuf runs a tea shop. For making a glass of tea he uses 20 mL of milk. Yesterday he made 100 glasses of tea. How much milk did he use?

3. Radha’s grandma was ill. The doctor gave her a bottle with 200 mL of medicine. She has to take the medicine every morning for 10 days.

How many millilitres of medicine does she have to take every morning? ____
**Water - Water**

The table shows the water used in one day by a family of 5 people. They live in Goodallur village.

<table>
<thead>
<tr>
<th>Activity</th>
<th>Water in litres (L)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cooking and drinking</td>
<td>30 L</td>
</tr>
<tr>
<td>Washing clothes</td>
<td>40 L</td>
</tr>
<tr>
<td>Cleaning pots, pans</td>
<td>20 L</td>
</tr>
<tr>
<td>Bathing</td>
<td>75 L</td>
</tr>
</tbody>
</table>

Total water used by them ________

How many litres of water does your family use in a day? Guess and fill in this table.

<table>
<thead>
<tr>
<th>Activity</th>
<th>Water used (in buckets)</th>
<th>Water used (in litres)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cooking and drinking</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Washing clothes</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cleaning pots, pans</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Drops and Drops Make an Ocean**

Is there any tap in your school or your home which is leaking?

How much water do you think we waste through a leaking tap?

Place your litre jar below the leaking tap so as to catch all the drops in the bottle. Note the time. After one hour check how much water is in the bottle.
Find out how much water is wasted in a day. ________
In a week? _________
In a month? _______
In a year? _________

Anand village has a milk society. Geeta and Ami went there to buy 4 litres of milk. But the man could not find the one litre measure. He had only a 3 litre and a 5 litre bottle with him. But he gave them exactly 4 litres of milk.
Explain how he did this.
Hey! See, how big this wheel is! I have never seen a wheel like this.

You must have seen many such round things around you. List some more in your notebook.
Round Bangle

Have you ever gone to a bangle shop?

* I cannot wear these bangles. These are too small.

* Guess which of these bangles is of your size.

* Take a wire and make a bangle for yourself. Can your madam or mother wear this bangle? __________

* A bangle can be used to trace a circle. What are the other things around you that you can use to trace a circle?

______________________________
______________________________

* Trace a circle with the help of some of these things in your notebook or on the ground.

Which thing makes the smallest circle?
Which thing makes the biggest circle?
Games with Circles

Children are playing some

Game 1

make it by tracing. So, Archana tries to draw a circle with a stick.

Chippu and Naina — It does not look like a circle at all.

Archana — OK! Why don’t both of you try?

Chippu and Naina both make circles on the ground.

* Is any of these a good drawing of a circle?
Discuss.

* Can you draw a circle on the floor with a chalk? Try.
* Also draw a circle in your notebook using a pencil.

* Look at the circles drawn by your friends. Who has drawn the best circle?

**Making a Circle with a Rope**

Archana decided to use nails and a thread to make a circle on the ground. She took a thin rope and tied nails on both ends of the rope. Then she made a circle with the help of her friend. Look at the picture and see how they are making the circle.

Can you also make a circle with a rope and nails like Archana?

* Do the activity in small groups. Each group should take a rope

The purpose of this exercise is to give opportunities to each child to make freehand circles. They can also make circles on the ground with a stick. They can compare different drawings to get an intuitive sense of the shape of a circle.
of a different length. See the circles made by different groups.

✶ Which group made the smallest circle? __________
How long was their rope? __________

✶ Does a longer rope make a bigger circle? __________

Why is it so?
Now see what your friends have drawn. Discuss the length of the radius they measured. Is it the same as yours?

✶ What was the radius of the smallest circle? __________

✶ Draw the radius of this bangle using a ruler. Measure the length of the radius.

✶ Draw the radius of these circles.
Guess which circle has the longer radius.____
Measure the radius of both the circles using a ruler.

The length of rope used is equal to the length of the radius of the circle.

Write the length of their radius.

The purpose of this exercise is to help children make different circles, measure the lengths of their radii and see how the size of a circle changes with its radius.
Radius of the green circle _______
Radius of the blue circle _______

**Find out**

* Measure the radius of the wheels of a bicycle or a bullock-cart.

![Circular shapes]

You can use a thread or a measuring tape.

Are all the wheels of a bicycle or a bullock cart of the same radius? _______

* Have you seen a tractor or a road roller?
* Which is the biggest wheel you have ever seen?
* Are all wheels of a tractor or road roller of the same radius?
* Lali and Kali are tied to a pole with ropes. Kali has a longer rope. Who can look for more grass to eat? _______

**Daljeet's Design**

Daljeet has made these designs using a compass.

His sister came and started making more designs with him.

Do you want to make such designs?

---

Children need a lot of interesting exercises of making and measuring the radius of circles of different sizes. They can also make wheels and carts.
To make such designs you will need to use a compass.

**Using a Compass**

✶ Have you seen a compass before? How will you use this to make a circle?
— Open your compass.

— Press the tip of the compass on the paper. Hold the compass from the top
— Without moving the tip, try to move the pencil around.
— Do you get a circle?
Look for a mark where you had kept the tip of the compass.

This mark is the **centre** of your circle.

※ Is this circle better than the one you made earlier without a compass? Draw the radius of this circle and measure it.

※ Now you can make your own designs like Daljeet had made. How many did you make?

Guess how this design has been made. Use a compass to make a similar one in the box.

**Is It a Circle?**

Naina was making a circle.
Ravi asked her for an eraser. She kept her compass and gave him the eraser. Then she started again to complete her circle. But she got this.

---

Encourage children to explore their own designs with a compass. This will also give them more practice in drawing circles with a compass.
**Guess**

* Why did Naina get such a drawing? Discuss.

Can a circle have more than one centre?

Another day Naina was using a compass to make a circle. But it came out like this.

* Did any one of you ever get a shape like Naina’s?

**Find the Centre**

Sadiq and Sameena want to make circles for themselves.

Then they cut their circle.

Oh! The screw of the compass is loose .......... Let me tighten it ........... Now my compass will not slip ......
She folded her circle into half.
Then she folded it again like this.

I will make it with a compass.  
No, I will trace it with a bangle.

She opened the folded circle.

See, my circle has a centre. But where is the centre of your circle?

Don’t worry. See how I find it.

* Now you trace a circle on a paper using a bangle. Cut it. Then
find its centre like Sameena did.

We can also make the design on a folded paper like this. How did you do it?

Can you see the two creased lines crossing each other?

Yes

See, I put a point where these lines cross. This is the centre of my circle.

Balancing Act

Can you balance a plate on your finger?

You also try to balance a plate or a round lid on your finger. Where does it balance?
Spin the Top

Zakir, Appu, Naina and Guddu were getting bored. It was raining. So they could not go out to play.

Suddenly Appu said — Let’s each make a top.

They took a piece of cardboard traced a circle on it. Then they made a hole and put a matchstick in it.

Now everybody was excited to spin their tops which looked
like this.

**Guess**

- Whose top will not spin at all? ________
- Whose top will spin a little? ________

- Whose top will spin the best? ________
- In whose top is the stick nearest to the centre? ________

**Make Your Own Top**

You also make your own top and play this game.
- To make the top spin well, where will you make the hole?
Mintu cat and Mottu cat were friends. Once they stole a chapati from Malini’s kitchen. I will take it — said Mintu. No, I will take it — said Mottu. While they were quarrelling, there came Tittu Monkey. Hi! What is the problem? why are you quarrelling? — he asked. “We don’t know how to divide this chapati between us — the cats said. OK! don’t worry. I will divide the chapati equally for both of you — he said. Clever Tittu divided the chapati like this:

These are not equal, the left part is bigger — Mintu and Mottu said. Oh, no problem, I will make it equal — Tittu said. He then cut a part of the left piece and ate it.

Oh! Now the right part is bigger — the cats cried. I am sorry — said Tittu. He cut a part from the bigger piece and ate it. When there was only a small piece remaining, he said — This is my share for the work. Tittu then quickly ate the last piece and climbed the tree.
Half-Half

If the cats ask you to divide the chapati equally, how will you divide it?

If you do not cheat like Tittu, the cats will have these parts.

Half of Half

If two more cats come for food, how will you divide one chapati equally for four cats?

Each of us got a quarter of the chapati. You are a good 'divider'. Ha!

Half of Many Pieces

Rani got a chocolate. She divided it
Many Shapes from a Half Sheet

Ha! Half a chocolate is as tasty as a whole chocolate!

Take a piece of paper. Cut the sheet into two triangles so that each triangle is equal to half of the sheet.

Shade the two triangles with different colours.

★ Draw different shapes using these triangles. One such shape is shown here.

Many Ways to Cut into Half

In how many different ways can you cut a rectangle into half?

I have made a rectangle into two equal parts like this. Each part is half.

We write it as $\frac{1}{2}$. It means 1 part out of 2. You can check if these parts are equal. Try keeping one on top of the other.
Many Ways to Make Quarters

In how many different ways can you cut a rectangle into four equal parts? Draw 5 different ways.

Can you check if they are equal?

Cutting the Cake

Rajni’s father brought a cake. She divided the cake into 4 equal
parts — for herself, her brother Raju, her father and her mother.

- Colour each share with different colours.
- How much does each get? ________

- Mother gave her share of cake to Rajni. Now colour the total part that Rajni will get.

- Out of 4 parts Rajni will get _____ parts, which is equal to half of the cake.
  
  So she can write it as ______ or \( \frac{1}{2} \).

Before Rajni’s mother gave her share to Rajni, she had only \( \frac{1}{2} \) of ‘half the cake’, which was \( \frac{1}{4} \) of the total.

- Colour the share Raju got.

- How much of the cake do Rajni and Raju together get? Colour their total share.

  Altogether they get 3 parts out of 4, so we can write it as \( \frac{3}{4} \).

**Greedy Kundan**

Kundan is a greedy man. Whenever he goes to the market, he wants to get more and more but doesn’t want to spend much
money.

One day he wants to eat pumpkin *haliwa* (sweet dish). He tries to buy a big pumpkin with only Rs10. He asks the first pumpkin seller the price of a big pumpkin.

First pumpkin-seller — $\frac{1}{4}$ of this pumpkin is for Rs 10.

✦ This full pumpkin will cost Rs__________.

Kundan — Eh! For Rs 10, you should give me $\frac{1}{2}$ of this pumpkin.

First pumpkin-seller — Then you go to the next seller, he can give you $\frac{1}{2}$ of such a big pumpkin for Rs 10. I keep only good quality pumpkins.

Kundan walks to the next seller and looks for a pumpkin of the same size.

Kundan — How much of this pumpkin will I get for Rs10?

Second pumpkin-seller — Half.

✦ This full pumpkin will cost Rs__________.

Kundan—Eh! Why not give me $\frac{3}{4}$?

Second pumpkin-seller — Run away! Go, get your pumpkin from that man. He sells such bad vegetables that he will even
give you a full pumpkin of this size for Rs 10.

The greedy Kundan walks to the next pumpkin seller. He looks at a pumpkin of the same size and asks him — will you give me this big one for Rs 10?

Third pumpkin-seller — Why don’t you climb the roof of that house? You can get pumpkins free from the plant itself!

Kundan is very happy. He climbs the roof of that house and then ..................

**Using a Price List**

a) How much does $\frac{1}{2}$ kg of tomatoes cost?

b) Which costs more — $\frac{1}{2}$ kg of onions or $\frac{1}{4}$ kg of carrots?

c) What is the price of $\frac{3}{4}$ kg of potatoes?

d) Kirti is going for shopping. She has only Rs 20 with her. Can she buy all the things in her shopping list?

e) Make two questions yourself from the price list.

1. 

2. 

**Practice Time**

a) What part of the whole is coloured? Write below each shape.

b) Colour that part of the shape which is
written below.

c) **Cut in half**

Draw a line which divides these shapes into half.

d) Colour half the number of shapes as shown here.

e) Colour $\frac{1}{4}$ of these shapes.
f) Match the coloured part as shown.

g) Make the other half

\( \frac{1}{2} \) of the picture is drawn here. Can you complete the picture
by drawing the other half?

h) This is a quarter of a picture. Can you complete it? How many more quarters will you draw to complete it? ________________

Half and Quarter of a Metre

Using your metre scale, cut a string of one metre.

✦ On this string, mark the length $\frac{1}{2}$ metre, $\frac{1}{4}$ metre and $\frac{3}{4}$ metre.
✦ Using your string, draw a line of length $\frac{1}{2}$ metre on the floor. How many centimetres long is the line? __________

So

Remember, 1 metre = 100 cm
\( \frac{1}{2} \) metre = \ldots cm
\( \frac{1}{4} \) metre = \ldots cm
\( \frac{3}{4} \) metre = \ldots cm
Can you see that when we add \( \frac{1}{2} \) and \( \frac{1}{4} \) we get \( \frac{3}{4} \)?

**Sharing Milk**

This bottle is full of milk and it holds one litre. The milk is put into 4 other bottles so that each bottle has \( \frac{1}{4} \) litre of milk.

✦ Shade the bottles to show the level of milk in each.

✦ How many millilitres of milk does each bottle have? _________

![Image of bottles]

Remember, 1 litre = 1000 millilitres

Shyan poured 1 litre of milk into two bottles so that the first bottle holds \( \frac{3}{4} \) litre and the other holds \( \frac{1}{4} \) litre.

✦ Shade the level of milk in each bottle.

✦ How many millilitres of milk does each bottle hold?
Balance the Weight

Choose from the weights above to make the two pans equal. In how many ways can you do it?

a) Draw the weights in the empty pan.

Remember, 1kg = 1000 g

b) In how many different ways can you balance this weight of $\frac{3}{4}$ kg?

1) ................................
2) ................................
3) ................................
Why is It Wrong?

Kanan shaded some parts as shown. But his friend Mini says that it is wrong. Explain why it is wrong.

Practice Time

- There are 60 mangoes. $\frac{1}{2}$ of them are ripe. How many mangoes are ripe?
- There are 32 children. $\frac{1}{2}$ of them are girls. How many children are boys?
- There are 20 stars. A quarter of them are red. How many stars are red?

  How many are not red?

- Ravi wants a pencil. It costs Rs 2. He gives a one-rupee coin, one half-rupee coin and one quarter-rupee coin. Is it enough?
Tinu used this block to make a sari.

Next he made this bedsheet with the same block.
He also made this *dupatta* with the same block.

Can you see how Tinu has made different patterns using the same block? Now you too make 3 different patterns using 🍌.

**Pattern 1**

```

```

**Pattern 2**

```

```

**Pattern 3**

```

```
Yamini has used her blocks to make a few patterns. Help her to take these patterns forward.

We can also make patterns with numbers and letters. Below are a few examples. Can you take them forward?

Now write your own number patterns.
Make a pattern without numbers.

No Number Comes Twice
Look at the number box. Can you see a pattern?

No number comes twice in any line!

Now you try writing the letters — A, B, C in the box so that no letter comes twice in any line.

We have not used the terms row or column here, but using the word 'line' teachers may discuss the idea of rows and columns.
**Magick Patterns**

Look at the pattern of numbers 1 to 7. See how each line adds up to 12!

Now you fill these stars. Use numbers 1 – 9 and the **rule** that the numbers on each line add up to 15.

**Magic Triangles**

Look at this number pattern.

Rule: Numbers on each side of the triangle add up to 9.

$$3 + 4 + 2 = 9$$

See if the other sides of the triangle also add up to 9.
Now use numbers 1 – 6 to make your own magic triangle.

Rule: Numbers on each side must add up to 10.

**Number Towers**

Numbers can be arranged as a tower. We start from below and get this number pattern.

```
  80
 30  50
 10  20  30
```

Can you see the rule for this pattern?

Rule: We add 2 numbers below to get the number in the box above them.

```
  80
 30  50
 10  20  30
```

\[20 + 30 = 50\]

```
  80
 30  50
 10  20  30
```

\[30 + 50 - 80\]
Using the same rule, complete these number towers.

The Same Sum Rule

Some friends are playing with number cards. See how they add.

Can you see the rule which gives us the same sum each time?

Rule: We get the same sum when we add the two numbers —
First from left and First from right
Second from left and Second from right
Third from left and Third from right

Now you write any number and the three numbers after that. Make a pattern using the rule.
See if you get the same sum.
Patterns with Addition

\[
\begin{align*}
1 + 2 + 3 &= 6 \\
2 + 3 + 4 &= 9 \\
3 + 4 + 5 &= 12
\end{align*}
\]

Oh! The sum grows by 3 each time.

\[
\begin{align*}
1 + 2 + 3 + 4 &= 10 \\
2 + 3 + 4 + 5 &= 14 \\
3 + 4 + 5 + 6 &= 18
\end{align*}
\]

Here, the sum grows by 4 each time.

Now, you try to make such a pattern with 5 numbers in order.

\[
\begin{align*}
\boxed{} + \boxed{} + \boxed{} + \boxed{} + \boxed{} &= \boxed{} \\
\boxed{} + \boxed{} + \boxed{} + \boxed{} + \boxed{} &= \boxed{} \\
\boxed{} + \boxed{} + \boxed{} + \boxed{} + \boxed{} &= \boxed{} \\
\boxed{} + \boxed{} + \boxed{} + \boxed{} + \boxed{} &= \boxed{} \\
\boxed{} + \boxed{} + \boxed{} + \boxed{} + \boxed{} &= \boxed{}
\end{align*}
\]

Does the sum grow by 5 each time?
Yamini explained the rule — Numbers have been used for letters. For example, ‘J’ is 10, ‘P’ is 16. So JUMP is 10 21 13 16.

* Complete this list of letters and numbers to help you.

<p>| | | | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>B</td>
<td>C</td>
<td>D</td>
<td>E</td>
</tr>
<tr>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
</tbody>
</table>

* Teenu wants to write to his friend 'Good Morning'. What will he write by using the same rule?

* If we change the rule and write 1 in place of 'B', 3 in place of 'D' and so on, then how will we write 'Let Us Dance'?
Shobhana and Jaggu are playing a game. They are writing some secret messages. But Komal is not able to understand them. So Jaggu explained the rule —

Jaggu – You see, we have changed each letter by its next letter. That is, we write 'G' in place of 'F', 'O' in place of 'N'. So 'YES' becomes 'ZFT'.

Komal – Oh! Now I understand.

Komal – See what I have written XF BSF GSJFOET

✦ What was Komal’s secret message? ___________________________

✦ What did Shobhana and Jaggu write? ___________________________

✦ Use the same rule to write — ’Meet me on the moon’. ___________________________

✦ Make different rules and ask your friends to crack the secret message.
Upside Down

Anisha is playing. She is showing her friends that she can stand on her head.

Now, Anisha is playing with this card. Draw what it will look like when upside down.

Floor Patterns

Have you ever seen a floor with tiles of these shapes?

These designs are made by covering the floor completely with tiles that fit into each other without any gaps.
a) Now, you cover this floor with this tile.

Can you make such a floor design with a tile like a circle?

b) Try with this green tile without leaving a gap. Could you do it? Discuss with your friends.

c) Complete this tiling pattern.
d) Ram has made a wall with his blocks. Can you complete this for him?

![Wall Diagram]

e) Renu began to paint this wall. Now you help her to complete it.

![Wall Diagram]
Tables and Shares

Shyama’s Garden

Shyama has planted sunflower, rose and marigold plants in her garden. She has planted them in three flower-beds. Her garden looks like this.

See, how I planted 18 plants in each flower bed!

Each flower-bed has a different arrangement.

See how the roses are planted.

18 = 6 × 3  So there are 6 rows with 3 plants each.

What are the ways in which the sunflower and marigold are planted?

18 = ____ × _____  So there is ___ row with ___ plants.

18 = ____ × _____  So there are ___ rows with ___ plants each.

You too can make your own garden. Draw a garden, showing flower-beds with 48 plants. Each row should have the same number of plants.

The concept of multiplication can be related to the arrangement of things in an array. Some other problems, based on contexts like the arrangement of chairs, children in the school assembly, etc., can also be discussed.
Jars in the Shelf

Bheema made a shelf for 30 jars. This is a long shelf with two rows. Each row has the same number of jars.

Can you think of other ways to make a shelf to keep 30 jars?

* Draw a shelf. Show how many jars you will keep in each row. How many rows are there?

  Have your friends drawn it in different ways?

Easy Tricks

* I do not know the multiplication table of 7.

  I know the tables till 5 but there is an easy trick.

  I can make the table of 7 with the tables of 2 and 5.

Children will enjoy building new multiplication tables for themselves instead of only memorising them.
Help Bunty to make the table of 7, using tables of 4 and 3.

Table of 7

Which two tables will you use for writing the table of 12?
How Many Cats?

Some of Gayatri's cats were playing in a box. When she tried to count, all she could see were legs. She counted 28 legs. How many cats are there in the box?

8 legs mean 2 cats.
12 legs mean _____ cats.

<table>
<thead>
<tr>
<th>How many legs?</th>
<th>4</th>
<th>8</th>
<th>12</th>
</tr>
</thead>
<tbody>
<tr>
<td>How many cats?</td>
<td>1</td>
<td>2</td>
<td></td>
</tr>
</tbody>
</table>

So 28 legs mean ________ cats.

* Mina has kept his chickens in a box. He counted 28 legs. How many chickens are there?

* Leela has not gone to school for 21 days. For how many weeks was she away from school?

Encourage children to fill in the table and also proceed towards making generalisations. For example, they should be able to see that 48 legs would mean there are 12 cats, or vice versa. In fact, this forms the foundation for algebraic thinking in later years.
**Jumping Animals**

Do you remember the jumping animals of Class III?

A **frog** jumps 3 steps at a time starting from 0.

* Count the jumps he takes to reach 27.
  So, he has taken $27 \div 3 = \underline{9}$ jumps.

* He has taken ______ jumps, if he is at 36.
* If he is at 42, he has taken ______ jumps.

Starting from 0, a **rabbit** jumps 5 steps at a time.

* In how many jumps does he reach 25? ___________
* He reaches ______ after taking 8 jumps.
* He needs ______ jumps to reach 55.

**Practice Time**

1) $28 \div 2 =$  
2) $56 \div 7 =$  
3) $48 \div 4 =$  
4) $66 \div 6 =$  
5) $96 \div 8 =$  
6) $110 \div 10 =$

Children have done similar kinds of exercises for multiplication and division in Class III. Refer to pages 173-176, Math-Magic Class III, NCERT.
**Sea Shells**

Dhruv lives near the sea. He thought of making necklaces for his three friends. He looked for sea-shells the whole day. He collected 112 sea-shells by evening. Now he had many different colourful and shiny shells.

I will make a necklace of 28 shells. Will these shells be enough to make necklaces for all my friends?

He took 28 shells for one necklace.

$112 - 28 = 84$

Now he was left with 84 shells. Again he took 28 more shells for the second necklace.

* How many shells are left now? ________

Then he took shells for the third necklace.

* So he was left with ________ shells.

* How many necklaces can Dhruv make from 112 shells? ________

* Are the shells enough for making necklaces for all his friends? ________

**Try these**

A) Kannu made a necklace of 17 sea-shells. How many such necklaces can be made using 100 sea-shells?

Encourage children to solve questions based on division with large numbers, for which they do not know multiplication tables, using repeated subtraction. More problems based on real life contexts can be given.
B) One carton can hold 85 soap bars. Shally wants to pack 338 soap bars. How many cartons does she need for packing all of them?

C) Manpreet wants 1500 sacks of cement for making a house. A truck carries 250 sacks at a time. How many trips will the truck make?

A driver charges Rs 500 for a trip. How much will Manpreet pay the driver for all the trips?

**Gangu’s Sweets**

Gangu is making sweets for Id. He has made a tray of 80 *laddoo*.

- Are the sweets in the tray enough to pack 23 small boxes? __________

- How many more sweets are needed? __________

For solving this problem, encourage children to use their own strategies — of making groups in the tray, using multiplication to do division or repeated subtraction, etc.
Gangu also has a bigger box in which he packs 12 laddoos. How many boxes does he need for packing 60 laddoos?

Practice Time

1) Neelu brought 15 storybooks to her class. Today 45 students are present. How many children will need to share one book?

2) A family of 8 people needs 60 kg wheat for a month. How much wheat does this family need for a week?

3) Razia wants change for Rs 500.
   
   How many notes will she get if she wants in return —
   
   (a) All 100 rupee notes? _______________
   
   (b) All 50 rupee notes? _______________
   
   (c) All 20 rupee notes? _______________
   
   (d) All 5 rupee notes? _______________

* You have to distribute 72 tomatoes equally in 3 baskets. How many tomatoes will there be in each?

* There are 350 bricks in a hand-cart. Vinod found the weight of a brick to be 2 kg. What will be the weight of all the bricks?
**Children and their Grandfather**

Rashi, Seema, Mridul, Rohit and Lokesh asked their grandfather to give them money for the Fair.

I have 70 rupees in my pocket. Tell me how to share money equally among all of you. If you are right, you get this money!

**One method**

Rashi and Seema thought for a while and said — We know how to do 70 ÷ 5.

Seema starts writing and says —

\[
\begin{array}{c}
  5 \\
  \hline
  70 \\
  \hline
  50 \\
  \hline
  20 \\
\end{array}
\]

First I give Rs 10 to each one of us.

So, I have distributed 5 × 10 = 50 rupees.

20 rupees are still left.

Rashi completes it like this. She says —

\[
\begin{array}{c}
  5 \\
  \hline
  70 \\
  \hline
  50 \\
  \hline
  20 \\
  \hline
  0 \\
\end{array}
\]

I give 4 rupees more to each. So I have distributed 20 rupees.

Now nothing is left. And all the money is divided equally.

So, each gets 10 + 4 = 14 rupees.

This method is actually about how children divide when they distribute some objects repeatedly. In this case, they might first give Rs 10 each to five people and then next distribute the remaining money in the second round. They could as well distribute it by first giving Rs 5 to each. Children can, thus, use any way to complete the process of division. This is the beauty of this method.
Another Method

Mridul and Lokesh are trying $70 \div 5$ in a different way.
Lokesh writes —
First, I give Rs 5 to each.
I have distributed $5 \times 5 = 25$ rupees.
Next, I give Rs 6 more to every one.
I have distributed 30 rupees more.
Now I am left with _______ rupees.

How will Lokesh distribute the rest of the money? Complete it.
So, each child gets $5 + 6 + _______ = _______ rupees.

Your Method

* Now use your own method to divide Rs 70 equally among 5 people. If you want you can start by giving Rs 2 to each. Or you can even start with Rs 11 to each.

Try Doing These

a) $5 \sqrt{65}$  
b) $84 \div 2$  
c) $3 \sqrt{69}$  
d) $90 \div 6$

e) $4 \sqrt{72}$  
f) $9 \sqrt{108}$  
g) $232 \div 2$  
h) $2 \sqrt{428}$
i) Meera made 204 candles to sell in the market. She makes packets of 6. How many packets will she make? If she packs them in packets of 12, then how many packets will she make?

j) On Sports Day, 161 children are in the school playground. They are standing in 7 equal rows. How many children are there in each row?

**Story Problems**

Srishti's grandma is asking her to make problems.

Look at the picture and make a question on it.

There are 3 crates. Each crate has 24 bottles in it. My question: How many bottles are there in all?

Now you look at the other pictures and make questions like Srishti.
1. There are 8 packets of rakhis.
   Each packet has 6 rakhis in it.

Your question:

2. There are 10 packets of sugar.
   Saurabh paid 110 rupees for all the packets.

Your question:

3. There are 35 students in 7 rows. Each row has the same number of students.

Your question:
4. Hari, Seema, Chinku and Lakshmi are going to Guwahati. The cost of one rail ticket is Rs 62.

Your question:

5. One metre of cloth costs Rs 20. Shyamu bought some cloth and paid Rs 140.

Your question:

Also guess the answers.
Het and Mannu were shifting house. They loaded all their things on a horse-cart. There were many things like — a water tank, five sacks of wheat, three tables, an almirah, four chairs, two mattresses, three sacks of rice, a bamboo ladder, pots and pans.

When they were ready to move, the horse refused to start. They wondered why. Their father said that this horse was not well and would not pull a load heavier than 700 kg. Oh! But how heavy is this load? — they asked.
Father gave them some idea of the weight of each thing.

※ Find out the total weight they had loaded on the cart.

Now they decided to remove a few things from the cart.

※ Which things should be removed so that the weight of the load is not more than 700 kgs?

<table>
<thead>
<tr>
<th>Thing loaded</th>
<th>Weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>A sack of wheat</td>
<td>100 kg</td>
</tr>
<tr>
<td>A sack of rice</td>
<td>35 kg</td>
</tr>
<tr>
<td>Water tank</td>
<td>50 kg</td>
</tr>
<tr>
<td>Almirah</td>
<td>70 kg</td>
</tr>
<tr>
<td>A table</td>
<td>10 kg</td>
</tr>
<tr>
<td>A chair</td>
<td>5 kg</td>
</tr>
<tr>
<td>A mattress</td>
<td>20 kg</td>
</tr>
<tr>
<td>Bamboo ladder</td>
<td>10 kg</td>
</tr>
<tr>
<td>Pots and pans</td>
<td>10 kg</td>
</tr>
</tbody>
</table>

The things which were loaded on the cart were big in size and also very heavy. To measure the weight of such heavy and big things, we need a big balance.

But Jaiju and Mannu wanted to make their own balance. They collected a few things — a stick, two lids and a thick thread. They made this balance.

※ Now you also make your own balance. Write down how you made it. Also draw a picture of your balance in the box below.
**Activity**

Mannu and Het put a pencil and a geometry box in the two pans of the balance. Which pan will go down? Why? Draw a picture to show it.

**What is heavier?**

- Make pairs of different things and use the balance to decide which is heavier. First guess which thing will take the pan down and then check with your balance.

**What is the heaviest?**

- Make groups of three things. For example — eraser, ball and paper. Use the balance to arrange them in order of weight — the lightest, the one with in-between weight, the heaviest. Complete the table with at least five examples.

<table>
<thead>
<tr>
<th>Lightest</th>
<th>In-between weight</th>
<th>Heaviest</th>
</tr>
</thead>
<tbody>
<tr>
<td>Paper</td>
<td>Eraser</td>
<td>Ball</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

- Can you find your own weight using this balance?

> The balance children make will not be very accurate but will be good enough to compare weights which are different from each other.
**Making Weights**

Do this activity in pairs. You need a balance, weights, a cake of soap, plastic packets, sand and rubber bands. You can also take help of an older person.

Get a new cake of soap. The packet will have the weight written on it. You can use this soap to make your own different weights.

The soap weighs ___________ grams (g).

Take a small plastic packet.

Put it in one pan of the balance. Put the soap in the other pan.

Slowly add sand to the packet till the pans are balanced.

Close the packet with a rubber band or string. Now stick a strip of paper and write '___ g' on it.

If you put the soap and the weight you just made together in a pan, how many grams will both these weigh? ______

Now make different weights — 150 g, 200 g and 250 g. You can use soaps of different weights for this.

Also make some bigger weights of 500 g, 1000 g, and 750 g.

* Use your weights to weigh different things and write in your notebook.
Practice Time

* Which pan of the balance will go down? Show by drawing an arrow.

* Is the weight on any of the pans equal to 1 kilogram? Mark it.

* How many grams are there in 1 kg?
Grams and Kilograms

Name 5 things that we usually buy —

<table>
<thead>
<tr>
<th>In grams</th>
<th>In kilograms</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>1.</td>
</tr>
<tr>
<td>2.</td>
<td>2.</td>
</tr>
<tr>
<td>3.</td>
<td>3.</td>
</tr>
<tr>
<td>4.</td>
<td>4.</td>
</tr>
<tr>
<td>5.</td>
<td>5.</td>
</tr>
</tbody>
</table>

Which is Heavier?

Which is heavier — one kilogram cotton or one kilogram iron?

Sir, she threw a heavy watermelon at me!

He threw a one kg pillow of cotton. So, I threw a one kg watermelon! Yesterday you said that the weight of 1 kg cotton and 1 kg melon is equal.
Dinesh Went Shopping

Dinesh went to a shop and bought some things.

His younger brother cut the end of the bill where the weights were written.

* Guess and write the weight of each thing he bought – in g or kg.

<table>
<thead>
<tr>
<th>Items</th>
<th>Weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rice</td>
<td>5</td>
</tr>
<tr>
<td>Sugar</td>
<td>1</td>
</tr>
<tr>
<td>Mustard seeds</td>
<td>10</td>
</tr>
<tr>
<td>Wheat</td>
<td>3</td>
</tr>
<tr>
<td>Dal</td>
<td>500</td>
</tr>
<tr>
<td>Tea</td>
<td>250</td>
</tr>
<tr>
<td>Pepper</td>
<td>25</td>
</tr>
</tbody>
</table>

Car and Tractor

Ritu is weighing her toys. She wants to know if her tractor is heavier than her car. How would you help her to find out quickly?

Guess which is the heaviest — a real car, a bus or a tractor?

Which is the heaviest thing you have seen?
Elephant’s Weight

Once a king had pain in his stomach. None of the palace doctors could cure his pain.

The king then said:

Anyone who cures my pain will get gold equal to the weight of an elephant.

On hearing this, doctors from all over the country came. But only Dr. Vaidika could cure him.

Oh great! My pain has gone. Thank you, Dr. Vaidika.

So, can I have my reward now, sir?
But, the greedy king didn't want to give her the gold. So, he thought of a trick.

Vaidika was unhappy when she reached home. She told her daughter the whole story.

How can I weigh an elephant? Where will I get such a big balance?

Don't worry Ma. I have an idea ..... tell the king to arrange an elephant and a big boat.

Next morning, Dr. Vaidika invited the king near a river. The king came with an elephant and a big boat.

I think she is a fool. How will she weigh an elephant with a boat!
Vaidika’s daughter went into the river. She marked on the boat how much it sank in the river.

Then she asked them to bring the elephant into the boat. The boat sank deeper. So she marked the new water level on the boat.

Now imagine what happened next and complete the story. Discuss with your friends how Vaidika’s daughter found the weight of the elephant.
How Much the Chair Weighs

Anamika wants to weigh this chair using the weighing machine.

Can you suggest a way for doing this?

Broken Stones

Abdu sells firewood. There was a stone in his shop which weighed 13 kg. He used it to weigh firewood.

One day the stone fell down and broke into three pieces which weighed – 2 kg, 5 kg and 6 kg.

But Abdu was very smart. He used those three pieces to weigh firewood of all weights — from 1 kg to 9 kg.

Here is how Abdu weighed 1 kg of firewood —
Now you show how Abdu will use these stone pieces to weigh —

a) 4 kg of firewood

b) 3 kg of firewood

c) 7 kg of firewood
**Post Office**

Have you ever been to a post office? ________

What different things do people go there for?

How much does a postcard cost? ________

How much does an inland letter cost? ________

---

**Postal Rates**

<table>
<thead>
<tr>
<th>Postal Items</th>
<th>Postal Rates (in Rs)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Single post card</td>
<td>0.50</td>
</tr>
<tr>
<td>Printed post card</td>
<td>6.00</td>
</tr>
<tr>
<td>Inland Letter</td>
<td>2.50</td>
</tr>
<tr>
<td>Letter weighing –</td>
<td></td>
</tr>
<tr>
<td>i) 20 grams or less</td>
<td>5.00</td>
</tr>
<tr>
<td>ii) For every additional 20 grams</td>
<td>2.00</td>
</tr>
<tr>
<td>Parcel weighing –</td>
<td></td>
</tr>
<tr>
<td>i) 50 grams or less</td>
<td>5.00</td>
</tr>
<tr>
<td>ii) For every additional 50 grams</td>
<td>3.00</td>
</tr>
</tbody>
</table>

Look at the postal rates given in the chart.

1. How much will you have to pay for stamps on a letter weighing 50 grams? ________

2. Akash wants to send a parcel of the Math Magic textbook to his friend Rani in Chennai. The book weighs 200 g. See the chart to find the cost of posting the book. ________
3. Read the weight shown in the picture. Find out the cost of sending a parcel of that weight.

![Weight Scale]

Parcel weight = ______
Cost of stamps = ______

**How Many Stamps?**

Rahul needs stamps of Rupees 25 for his parcel. He went to the post office. Only stamps of Re 1, Rs 2, Rs 5 and Rs 10 were there at that time. Using those stamps in how many different ways can he make Rs 25?

Can you show five different ways? What is the heaviest parcel he can send using stamps of Rs 25?

**Our Weight Together**

A frog was struggling to escape from the mouth of a crow. How can I escape? — the frog thought. Suddenly a trick came to his mind. He asked the crow — Are you good at arithmetic? If yes, then I will ask you a problem.

Your weight is 650 g and I am only 145 g. How much do we weigh together?

The crow was good at mathematics, so he happily opened his beak to answer.

What happened after that? So what was the answer the crow wanted to give? __________
Am I Fit or Fat?

The chart shows the height and weight of children between 6 and 10 years old.

<table>
<thead>
<tr>
<th>Name</th>
<th>Age</th>
<th>Height</th>
<th>Weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>Temshula</td>
<td>6</td>
<td>3 feet, 7 inches</td>
<td>16 kg</td>
</tr>
<tr>
<td>Sreekunth</td>
<td>10</td>
<td>4 feet, 3 inches</td>
<td>23 kg</td>
</tr>
<tr>
<td>Rabiya</td>
<td>6</td>
<td>3 feet, 10 inches</td>
<td>17 kg</td>
</tr>
<tr>
<td>Vineet</td>
<td>8</td>
<td>3 feet, 11 inches</td>
<td>19.5 kg</td>
</tr>
<tr>
<td>Kavita</td>
<td>9</td>
<td>3 feet, 10 inches</td>
<td>20 kg</td>
</tr>
</tbody>
</table>

Now, you also fill the table by finding out the age, height and weight of any five friends.
**Puzzle**

**How Many Oranges?**

All oranges have equal weight. The two papayas have the same weight. The weights in the first and second balances are equal. How many oranges balance the weight in the third?

**Find That Marble**

There are 3 marbles of the same size but one marble is slightly heavier or lighter than the other two. Can you find which is that marble and if it is heavier or lighter? You can use a balance only two times.
Rahmat is a farmer. He grows wheat in his field.

Rahmat needs to find the length of the boundary of the field. Can you find it from this picture? See the length of each side written near it.

Rahmat bought a roll of 70 m wire for the fence.
How much wire did Rahmat give to Ganpat? ________

Ganpat thanked Rahmat and started fencing his own field. But he needed to get more wire.

★ How long is the boundary of Ganpat’s field? ________
★ How much more wire will Ganpat need for his field? ________
Practice Time

1. Here are pictures of some more fields. Find out which one has the longest boundary.

   a) Boundary = ________ metre

   b) Boundary = ________ metre

   c) Boundary = ________ metre

   d) Boundary = ________ metre
2. Chandu's father is called the 'young old man' in his village. At 70 years of age, he is fully fit. Do you know his secret? He goes for a walk around the field every morning. Everyday he takes four rounds of Chandu's field.

* What is the total distance he covers?

\[ 4 \times \underline{\text{______}} = \underline{\text{______}} \text{ m} = \underline{\text{______}} \text{ km} \]

3. Ganpat's wife works in a tailor's shop. She has to fix lace around a table cloth.

She bought a 100 metre roll of lace.

* Look at the picture of the table cloth and tell how much lace is used for one table cloth. ________________

* How much lace will be used in 3 such table cloths? _______

* How much lace will be left in the roll? ________________
Activity

1. Find out the length of the boundary of these shapes. (Hint :- You can use a thread)

Now count the squares to find out:

- How many squares are there in each shape?
- Which shape covers the least number of squares?
- Which shape covers the most number of squares?

2. Take a 20 centimetre long thread. Make different shapes by joining the ends. Place on the squared sheet on the next page. Find out:

- How many squares are there in each shape?
- Which is the biggest shape?
- Which is the smallest shape?
- How long is the boundary of each shape?

Children could be asked to ignore a square if it is less than half, but count it as 1 if is more than half. This will give them a feel for ‘rounding off’.
3. How many different shapes can you make by joining two squares? Draw them on the squared sheet given below. How long is the boundary of each shape?

Try this activity with three squares also.
Practice Time

1. A square has a boundary of 12 cm.
   a) From the corner of this square, a small square of side 1 cm is cut off. Will the boundary of B be less or more? Find its length.
   b) If you cut a 1 cm square to get shape C, what will be the length of the boundary of C?

2. a) Find the length of the boundary of square D.
   b) 8 squares of side 1 cm are cut out of the square D. Now it looks like shape E. What is the length of the boundary of shape E?
   c) The boundary of this is ___ + ___ + ___ + ___

Can we also say that the boundary is $4 \times 1$ cm?
3. A hockey field is 91 metres 40 cm long and 55 metres wide. How long is the boundary of the field?

4. Usha and Valsamma are running a race. Usha is running on the inner circle. Valsamma is running on the outer circle.

Valsamma runs faster than Usha. But still she loses the race. Can you guess why? ____________

Have you seen any race where runners start from different places — like in this picture? Guess why?
School Garden

The students of Class III and IV thought of making a vegetable garden. They chose a place which looked like this.

Students of both the classes thought that garden 1 was bigger. So both wanted to take garden 1. Suddenly Neetu said –

I think both gardens are equally big.

Quite possible! Let us find out if you are right.

How will Neetu find out if the two gardens are equally big?
**Activity**

1. Look at the table in your classroom. Guess how many Math-Magic books you can place on it.
   
   (Remember — The books should not overlap. Do not leave gaps between the books.)
   
   Write your guess here. _________
   
   Now check if your guess was right. How many books could you place? _________
   
   What is the difference between your guess and the actual number of books? _________

2. Now look for another table.
   
   a) Is this table bigger than the last table? Yes/No
   
   b) Make a guess how many Math-Magic books can be kept on this table. _________
   
   c) Check if your guess was correct.
      
      How many Math-Magic books could you keep? _________
   
   d) The difference between the sizes of the two tables is _________ books.

3. a) How many Math-Magic books can be covered with one sheet of newspaper?

   b) Try covering your Math-Magic book with half a sheet of newspaper.

   c) Can you cover your book with a smaller sheet?
d) Find the smallest sheet which can cover your book. Check if your friend used a smaller sheet than you did.

4. a) Which is the biggest leaf in this picture?

b) Collect some leaves from the garden. Place each of them here on this squared sheet. Trace out their edges and check how many squares there are in each leaf.

c) Which is the biggest leaf?

d) Which is the smallest leaf?
5. a) How many small squares of size 1 cm are there in this big green square?

b) Can you think of a faster way to know the total number of small squares without counting each?

6. Guess how many squares of one centimetre can fill this blue rectangle.

Write your guess here. ________________

Check your guess by filling it with small squares.

7. Look at the picture. Can you divide it into 4 equal pieces? Each piece should have the same number of squares.
Puzzle: A House and the Well

Raghavan has a piece of land.

There are 4 houses on his land and in the middle there is a well. He wants to divide this land equally among his four children. Each should get one house and be able to use the well without entering the other’s land. Can you help him divide the land?

Give different colours to each one’s share.
How Many Hours?

All of us enjoy watching television (TV) or listening to the radio.

How much time do we spend in this?

- Note the time you spend in front of a TV or radio every day. Do this for one week. The time spent in a week is ________ hours.

So in a month you spend about 30 × ___ = ____ hours.

- Find out from your friends the time they spend in a week.

<table>
<thead>
<tr>
<th>How many hours they watch TV or listen to the radio (in a week)</th>
<th>Number of children</th>
</tr>
</thead>
<tbody>
<tr>
<td>More than 6 hours</td>
<td></td>
</tr>
<tr>
<td>Six hours</td>
<td></td>
</tr>
<tr>
<td>Five hours</td>
<td></td>
</tr>
<tr>
<td>Four hours</td>
<td></td>
</tr>
<tr>
<td>Three hours</td>
<td></td>
</tr>
<tr>
<td>Two hours</td>
<td></td>
</tr>
<tr>
<td>One hour</td>
<td></td>
</tr>
<tr>
<td>Zero hour (do not watch)</td>
<td></td>
</tr>
</tbody>
</table>
From your table

Watching TV/listening to the radio...

✧ _______ children spend more than 6 hours in a week.
✧ _______ children spend no time at all.
✧ Most children spend _______ hours in a week.
✧ _______ children spend more than 3 hours.

Which Programme?

There are different types of programmes on TV or radio such as cartoons, news, sports, music, plays, serials. Juhi’s father likes watching serials. Her mother likes sports. Juhi likes news programmes.

(1) Ask people in your family to name one programme they like and one programme they dislike. Make a table.

<table>
<thead>
<tr>
<th>Family member</th>
<th>Programme they like</th>
<th>Programme they dislike</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mother</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Father</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

The kind of programme most family members like _________
The kind of programme most family members dislike _______
2) Find out from 20 friends the programmes they like and dislike, and write in a table.

<table>
<thead>
<tr>
<th>Kind of programme</th>
<th>Number of children liking it</th>
<th>Number of children disliking it</th>
</tr>
</thead>
<tbody>
<tr>
<td>News</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Serials</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cartoons</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Comedy shows</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sports</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

❖ Which kind of programme is liked by most children?
❖ Which kind of programme is disliked by the least number of children?
❖ How many children like sports programmes?
❖ Is there any kind of programme not liked by any one? Yes / No
  If yes, which one? ______________.

Who is my friend?

I've a friend with me always,
In the nights and through the days.
When I run he runs with me,
Sometimes I lead, sometimes he.
When it's dark he can't be seen,
Do you know which friend I mean?
Read the poem carefully and answer these questions:

a) Which word comes most often in the poem?

b) Which letter has been used most?

c) Which letter comes the least?

Take a paragraph you like from your language textbook. Read carefully and find out:

a) Which word comes most often? _______
   How many times? _______

b) Which word comes least often? _______________

c) The letter used most often is _______________

d) The letter used least often is _______________

Food We Eat

Children were talking about what things they eat in the morning — made of rice, wheat, maize, barley, etc.
Find out from your classmates and fill the table:

<table>
<thead>
<tr>
<th>Main food</th>
<th>Number of persons</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rice</td>
<td></td>
</tr>
<tr>
<td>Wheat</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Look at the table and tell:

- Most children eat food made from ____________.
- Compared to children who eat rice, those who eat wheat are more/less/equal.
- Compared to those who eat wheat, children eating _ragi_ are more/less.

**Preparing for the Class Drama**

All children of a class are getting ready for a drama. Some children are acting. Some are busy collecting the dresses. Some are bringing tables and chairs to make the sets.
a) How many children are acting in the drama?
b) Which are more — children making the sets or those acting? 
c) What is being done by most of the children?
d) How many children are collecting dresses?

Whose Head is Bigger?
Cut long paper strips from waste paper.

Give one strip to each of your friends. Now put the paper strip around your head and tear off the extra strip. On a big sheet, paste these paper strips along a line.
Some children had pasted their strips and made a chart like this.

Your chart should also look like this.

- Use a scale and find out from your chart:
  The length of the longest strip is _______ cm.
  So __________ has the biggest head.

  The smallest strip is _________ cm long. It belongs to _________.

**Chapati Chart**

All children of a school take part in different clubs:

The *Chapati* Chart shows the number of children in different clubs.
From the picture we can see that:

a) Half the children in the class take part in the Games Club.
b) One fourth of the children are members of the Garden Club.
c) The Drawing Club has one fourth of the children of the class.

If there are 200 students in the school, look at the above *Chapati* Chart and tell the number of members in each club:

- The Games Club has _____ members.
- The Garden Club has _____ members.
- There are _____ members in the Drawing Club.

**Getting Wet in the Rain**

Who likes to get wet in the rain? A child made this *Chapati* Chart after asking his friends.

See the *Chapati* Chart and tell:

1) How many children like to get wet in the rain?
   a) half       b) one-fourth       c) three-fourth

2) How many children do not like to get wet in the rain?
   a) half       b) one-fourth       c) three-fourth
If the number of children in the class is 28, then tell the number of children

- who like to get wet in the rain _________
- who do not like to get wet in the rain _________

**Tea, Coffee or Milk**

Some children were asked which of these they liked most — Tea, Coffee or Milk.

<table>
<thead>
<tr>
<th>The drink they like</th>
<th>Number of children</th>
</tr>
</thead>
<tbody>
<tr>
<td>Milk</td>
<td>20</td>
</tr>
<tr>
<td>Coffee</td>
<td>10</td>
</tr>
<tr>
<td>Tea</td>
<td>10</td>
</tr>
</tbody>
</table>

Total Number of children _______

Find out from the table:

- Children who like milk are $\frac{1}{2} / \frac{1}{4}$ of the total children.
- Children who like coffee are $\frac{1}{2} / \frac{1}{4}$ of the total children.

Show the liking for Tea, Coffee or Milk in a *Chapati Chart*. 