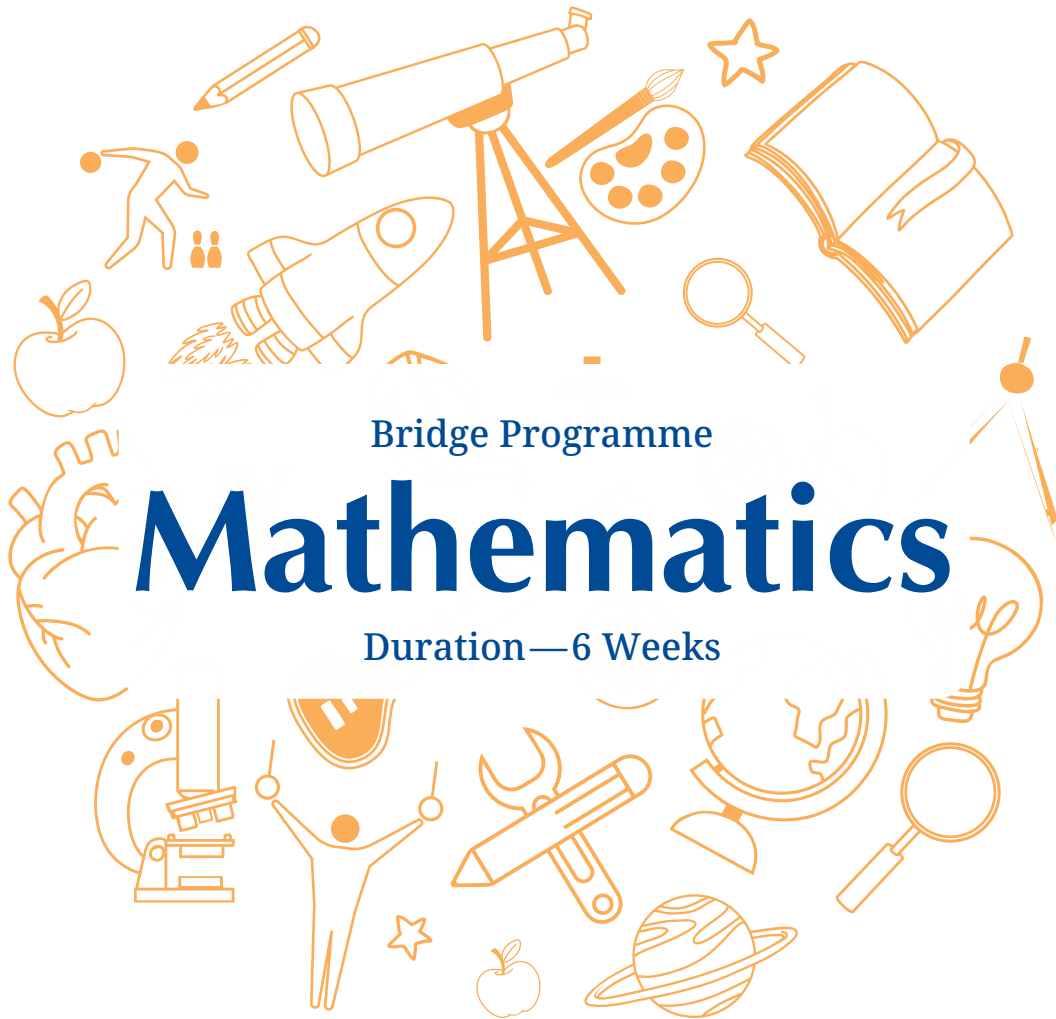


Bridge Programme Mathematics

FOR GRADE 5



Duration—6 Weeks



Bridge Programme

Mathematics

Duration—6 Weeks

GRADE 5

MATHEMATICS
BRIDGE PROGRAMME FOR GRADE 5

First Edition

March 2025 Chaitra 1947

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Research and Training, 2025**

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From the Director's Desk

Dear Students and Teachers,

The National Council of Educational Research and Training (NCERT) warmly welcomes all students stepping into Grade 5, the culminating year for the Preparatory Stage. This grade marks a significant transition, as we align our educational practices with the transformative vision of the National Education Policy (NEP) 2020 and the National Curriculum Framework for School Education (NCF-SE) 2023.

Our commitment is to provide a learning experience that is joyful, innovative, and deeply rooted in Indian ethos. The new syllabus and teaching-learning materials are designed for experiential, discovery-based, and inquiry-driven learning, making education a truly enriching journey. However, we know that our students are transitioning from the old curriculum that differed from this new approach. To bridge this gap and ensure a smooth and effective transition, we have developed a comprehensive six-week Bridge Programme across all subject areas, including Mathematics.

This Bridge Programme is designed to prepare students for the innovative pedagogical approaches and content that await them in Grade 5. It provides detailed guidelines for teachers and engaging activities for students, ensuring a holistic development. As Grade 5 serves as a bridge to the Middle Stage, it is vital for laying a strong foundation for future learning.

We believe that after successfully completing this Bridge Programme, students will be well-equipped to fully appreciate and benefit from the new textbooks and other teaching-learning material. I earnestly urge all teachers to embrace the spirit of NEP 2020, fostering a culturally rooted, experiential education that resonates with the ethos of *Vasudhaiva Kutumbakam* — “The world is one family.” This is the first step in our journey, and together, we can demonstrate to the entire education fraternity the power of collaboration and teamwork in delivering quality education to every student.

Let us embark on this journey with dedication and enthusiasm, ensuring that every student experiences the joy of learning and achieves their full potential.

DINESH PRASAD SAKLANI

Director

National Council of Educational Research and Training

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THE CONSTITUTION OF INDIA

PREAMBLE

WE, THE PEOPLE OF INDIA, having solemnly resolved to constitute India into a ¹**[SOVEREIGN SOCIALIST SECULAR DEMOCRATIC REPUBLIC]** and to secure to all its citizens :

JUSTICE, social, economic and political;

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

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

FRATERNITY assuring the dignity of the individual and the ²[unity and integrity of the Nation];

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

1. Subs. by the Constitution (Forty-second Amendment) Act, 1976, Sec.2, for "Sovereign Democratic Republic" (w.e.f. 3.1.1977)
2. Subs. by the Constitution (Forty-second Amendment) Act, 1976, Sec.2, for "Unity of the Nation" (w.e.f. 3.1.1977)

Mathematics

Introduction to the Bridge Programme for Mathematics (Grade 5)

Context

The transition from Grade 4 to Grade 5 marks a significant shift in a student's academic journey, particularly in Mathematics. With the introduction of new books in Grade 5, it is essential to ensure that students have a strong foundation in the fundamental concepts of Grade 4. The **Six-week Bridge Programme** aims to **reinforce and revisit** key mathematical concepts from Grade 4, allowing students to adapt smoothly to the new syllabus and pedagogical methods in Grade 5.

The National Curriculum Framework for Foundational Stage (NCF-FS) and National Curriculum Framework for School Education (NCF-SE) emphasise conceptual understanding over rote learning. This Programme is designed to reinforce fundamental mathematical skills, bridge content gaps, and develop a deeper understanding of concepts that will serve as the building blocks for Grade 5 Mathematics. The **reduction in the overload of concepts** in the new syllabus ensures that procedural knowledge follows conceptual understanding, making learning more engaging and meaningful.

Mathematics is a subject that builds upon previously learned concepts, making it essential to **identify and address learning gaps** before students transition to the next grade. The **new pedagogical approach** focuses on fostering an in-depth understanding of mathematical concepts rather than the memorisation of procedures.

Key reasons for implementing this Bridge Programme include:
Bridging Conceptual Gaps: Students may have varying levels of understanding of key mathematical concepts from Grade 4. This

Programme will help identify and address those gaps, ensuring they are well-prepared for Grade 5.

Smooth Transition to New Syllabus: The new curriculum introduces changes that require a shift in thinking and approach. This Programme will help students adjust and develop confidence.

Activity-based Learning: Engaging students through hands-on activities, games, puzzles, and thinking tasks will make mathematics enjoyable and help develop problem-solving skills.

Competency-Based Learning: Aligning the Programme with the competencies defined in the NCF-FS and NCF-SE ensures that students acquire the necessary skills before advancing to the new syllabus in higher Grades.

Structure of the Bridge Programme

The Six-week Bridge Programme is **systematically designed** to include the following components:

- Revisiting key mathematical concepts from Grade 4 through structured lessons.
- Engaging students with real-life applications, puzzles, and problem-solving exercises.
- Aligning activities with expected learning outcomes to ensure conceptual clarity.
- Provide students additional support and address individual learning needs through differentiated instruction and support.

The bridge Programme has a teacher's section and a student's section that highlighted the following aspects:

Teachers' Section

The Bridge Programme for Mathematics (Grade 5) is designed to facilitate a smooth transition and revisit essential mathematical concepts and competencies defined in the NCF-FS and the NCF-SE.

The emphasis is on conceptual clarity rather than rote learning, helping students build a strong foundation before engaging with the new books. The NCF-SE has emphasised better pedagogical processes that help teachers and students achieve curricular goals.

A structured weekly timetable and activities have been suggested to guide teachers in implementing the bridge programme, and achieving its objectives. Each week will focus on specific topics, incorporating engaging activities, puzzles, and problem-solving exercises. The plan includes weekly themes based on core mathematical concepts, hands-on activities to encourage active learning, puzzles, and thinking tasks to enhance problem-solving skills, real-life applications of mathematical concepts, and targeted interventions for students requiring additional support. The content is presented to integrate continuous assessment of students while they are engaged in learning.

Teachers will facilitate the bridge programme using an activity-based approach, ensuring that students actively participate in their learning. Strategies include interactive discussions and collaborative learning, the use of manipulatives/kits, storytelling, and real-world problem-solving, as well as formative assessments through quizzes, worksheets, and reflective exercises. Continuous feedback will be provided to identify and address individual learning needs. The Bridge Programme will serve as a preparatory phase before students begin using the new Grade 5 textbooks. Teachers will guide students in making connections between the foundational concepts covered in the bridge programme and the advanced topics introduced in the new curriculum. This structured transition ensures that students feel confident and prepared to engage with the new learning materials.

Understanding Word Problems through Box Diagram

Many children struggle to solve word problems due to several reasons, such as

- (a) Difficulty in reading and comprehension
- (b) Lack of Mathematical Vocabulary
- (c) Weak Number Sense and Computational skills
- (d) Trouble Translating Words into Mathematical Equations
- (e) Poor Problem-Solving Strategies

(f) Over-Reliance on Keywords Instead of Understanding Meaning

(g) Instructional Gaps in Teaching Problem-Solving Techniques

Box diagrams help students to decode a word problem and find a strategy to solve the it. Therefore, the use of Box Diagrams has been introduce in Grades 3 and 4. This concept needs to be reinforced for Grade 5 children who have not studied these in earlier Grades. The following examples illustrate typical word problems involving addition and subtraction. The operation that needs to be carried out depends on which boxes are filled in any given problem.

The three types of problems are Combine, Compare, and Change.

Combine	Compare	Change
Combine problems involve putting two or more separate parts together to make a total.	Compare problems involve comparing two sets to find the difference.	Change problems occur when an amount increases (goes up) or decreases (goes down) due to a change in the starting number.

Combine Problems

Combine problems putting two or more separate parts together to make a total. Sometimes they are also called total or part-part-whole problems.

		Box Diagram
Whole Unknown	Sumedha has 3 books (part 1). Ali has 4 books (part 2). How many books do they have altogether (total)?	? 3 4
Part Unknown	There are 6 students (part 1) in the Classroom and some more students (part 2 – missing) in the playground. There are 20 students in all (total). How many students are in the playground?	? 6 20

Compare Problems

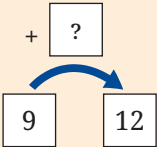
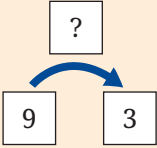
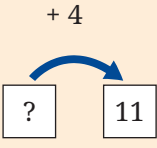
Compare problems are when two sets are compared to find the difference.

Difference Unknown	The small box has 3 oranges (lesser set). The large box has 7 oranges (greater set). How many more oranges does the large box have than the small box (difference – unknown)?	Kaya 7 Maya 3 ?
Greater Set Unknown	Kaya has 3 more pencils than Maya. Kaia has 7 pencils. How many pencils does Maya have?	Kaya 7 Maya ? 3
Lesser Set Unknown	Avi has 9 fewer points than Gaurav. Avi has 2 points. How many points does Gaurav have?	Kaya ? Maya 2 9

Change Problems

Change problems occur when an amount increases (goes up) or decreases (goes down) due to a change in the starting number.

	Increase (add to)	Decrease (take from)	Box Daigram
End Unknown	Sharli has 3 ribbons (start). Shray gives her 2 ribbons (change – increase). How many ribbons does Sharli have now (end – unknown)?	Sharli has 3 ribbons (start). She gave Shray 1 ribbon (change). How many ribbons does Sharli have now (end – unknown)?	

Change Unknown	Misha has 9 <i>laddoos</i> (start). Kaheen gave her some more <i>laddoos</i> (change – unknown). Now she has 12 <i>laddoos</i> (end). How many did Kaheen give her?	Misha has 9 <i>laddoos</i> (start). Misha gives Kaheen some <i>laddoos</i> (change – unknown). Now she has 2 <i>laddoos</i> (end). How many did she give Kaheen?	 
Start Unknown	Maya has some stickers (start – unknown). Madhav gave her 4 stickers (change). Now Maya has 11 stickers (end). How many stickers did Maya have to begin with?	Maya has some stickers (start – unknown). She gives 4 stickers to Madhav (change). Now Maya has 11 stickers (end). How many stickers did Maya have to begin with?	

Student's Section

The students section provides activities and tasks that help children develop problem-solving skills in a fun, and engaging manner. Completing the bridge programme ensures that students are well-prepared for the challenges of the new books. It equips them with the necessary skills to understand and apply mathematical concepts effectively, making learning in Grade 5 easier and more enjoyable.

The programme consists of various learning materials structured to make Mathematics engaging and accessible. These materials include fun mathematical puzzles, problem-solving tasks, and hands-on activities, contextual stories to introduce mathematical concepts engagingly, clear explanations of fundamental mathematical principles, and practical applications of mathematical concepts through mini-projects and collaborative exercises. Thought-provoking questions are included to encourage critical thinking and self-assessment.

By the end of the six-week Programme, students will have a strong grasp of fundamental mathematical concepts from Grade 4, enabling them to transition

smoothly into Grade 5. They will develop confidence in approaching the new syllabus and enhance their problem-solving and critical-thinking skills. Through interactive and hands-on learning experiences, students will gain a deeper understanding of mathematical applications, making learning more engaging and meaningful. Additionally, they will be better equipped to adapt to the new pedagogical approach and meet the learning expectations of Grade 5 with an in-depth conceptual understanding.

This Bridge Programme is a **necessary and timely intervention** to ensure students are well-prepared to navigate the transition from Grade 4 to Grade 5 with ease and enthusiasm. By making learning enjoyable and conceptually strong, this programme will lay a strong foundation for future mathematical learning and academic success.

Pedagogy and Assessment

The bridge programme will use an interactive, student-centered approach aligned with the pedagogical principles outlined in the NCF-FS and NCF-SE. Learning will be experiential, focusing on conceptual understanding, logical reasoning, and real-life applications. Teachers will facilitate learning through discussions, hands-on activities, and collaborative problem-solving tasks. Manipulatives, storytelling, and visual models will be integrated to make abstract concepts more tangible. The emphasis will be on strengthening the foundational skills and bridging learning gaps through engaging tasks that encourage critical thinking and active participation. This approach will ensure that students develop a strong mathematical mindset and are able to relate concepts with their everyday experiences.

Assessment in the bridge programme will be formative, continuous, and diagnostic, focusing on understanding rather than rote memorisation. Teachers will use a variety of tools, including observation of children's work in the Classroom, discussions/math talk, worksheets, games, puzzles, and reflective exercises, to monitor student progress. Peer discussions and group activities will serve as informal assessments, helping students articulate their understanding and learn from each other. Individualised feedback and targeted remedial strategies will be provided to support students who need additional guidance. By integrating assessment seamlessly into the

learning process, teachers can identify specific learning gaps and provide appropriate interventions, ensuring that every student is ready for the transition to the Grade 5 curriculum.

Some Examples

While teaching numbers and number operations: when children are engaged in various activities (group or in pairs or individually) observe them how are they interacting with other children, ask them probing questions and observe the answers they are giving. Questions in numbers operations can be: i) How did you find the answer, ii) Why did you use this method, and iii) Can there be other ways of solving it., etc.

Bridge Programme Weekly Plan

	Suggestive Activities	Nature of Activity
Week 1 Understanding Numbers	1. Dice game on place value 2. Estimating numbers 3. Making number with Flash cards 4. Adding using Dienes block 5. Subtracting using Dienes block 6. Making 4-digit numbers	Group activity Pair activity Individual and pair activity Individual and group activity Group activity Individual and group activity
Week 2 Number Operations	1. Making numbers with number cards/arrow cards 2. Making patterns 3. Combine, compare, and change problems 4. Recap questions on number operation 5. Jumpy bumpy tail	Group activity classroom activity Individual activity Individual activity Individual activity Group activity
Week 3 Shapes, Symmetry, and Pattern	1. Special numbers (Palindromic numbers) 2. Making multiplication tables by doubling and halving 3. Napier strips (Multiplication Table) 4. Shape activity 5. <i>Bolo bhai koun hoon main</i> 6. Fun with shapes	Individual activity Group activity Individual activity Individual activity Pair activity Individual activity

Week 4 Measurement	1. Rotational symmetry	Individual activity
	2. Rotational symmetry in shapes	Individual activity
	3. Recap of different types of patterns	Individual activity
	4. Pattern in number grid	Individual activity
	5. Draw patterns	Individual activity
Week 5 Fractions	1. Recap activities on measuring length	Individual activity
	2. Weighing balance and finding weight	Individual activity
	3. Recap activities on measuring capacity	Group activity
	4. Head or tail—Find the perimeter	Group activity
	5. Exploration of shapes and perimeter	Individual activity
	6. Time—Duration	Individual activity
Week 6 Puzzle	1. Reading calendar	Individual and group
	2. Quarters and halves by paper folding	Individual and group
	3. Finding equal parts	Individual activity
	4. Fraction—Worksheet	Individual activity
	5. Number puzzle	Individual activity

Week 1

1. Dice Game on Place Value

Competency Goals: CG-4.1

Duration: 30 mins

Nature of Activity : Group

Let us play!

Divide the Grade into four groups A,B,C, and D, respectively. Follow the steps:

Step 1: Group A will roll the die. This group will get 3 chances to roll the die to make one 3-digit number

Step 2: The group will choose the ones, tens, hundreds or thousands places of the number that comes on the die.
The team will form two such 3-digits numbers

Step 3: Now, the group which will make the largest 3-digits number will be the winner of the round.

Step 4: Let the groups play five such rounds. Each group will then add all the numbers they have made.

Step 5: The group with the largest total of the numbers will be the winner. [But here is a condition that the maximum score shouldn't exceed 9999]

Extension/Variation

You can try with any score as well as place value as unit, tens and hundreds.

You can try this game at your home with some twists like the team who gets the least score, will be the winner.

2. Estimating Numbers

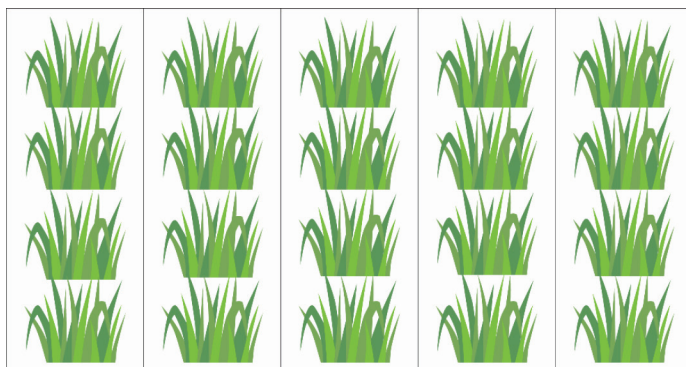
Competency Goal: CG- 3.1

Duration: 30 mins

Nature of Activity: Group

Salman along with his Abbu has gone for namaz. He asks his father, "Abbu! How many people are there in namaz? His father replied, "Around 200."

He say, "There are approximately 20 people in one row, and roughly there are 10 rows. So, I multiplied 20 by 10 and got 200 approximately."



Then, they came out of the mosque. They see a garden with a pattern of saplings.

Salman's father asks him, "Without counting the saplings, can you find the total number of saplings?"

He says "Yes! There are 20 saplings."

Can you guess in the following situation?

- Guess the number of children standing for morning assembly in your school. Share how you calculated this.
- Guess and write the weight of any of your friends. _____

Now, ask and write your friends' actual weight? _____

Now, see how close was your guess to the actual weight.

(iii). Guess and write the distance of your school from your home in metres? _____

Now, find out the actual distance? _____

How did you calculate the actual distance: using footsteps or by a metre scale or using an inch tape or any other way?

Now, see how close was your guess to the actual distance.

(iv). Can you quote more such situations from your daily life where you can make estimations?

3. Making Number with Flash Cards

Competency Goals: CG-1.1 and CG-1.3

Duration: 30 mins

Nature of Activity : Individual

Make flash cards with one-digit numbers (0–9).



Put them in a cloth bag or paper bag (not transparent). Ask children to take out two cards from the bag. Let them make two different 2-digit numbers from the cards taken out using Dienes blocks.

- Write 2-digit numbers formed: _____, _____
- Write the number in expanded form using Tens and Ones: _____, _____
- Write the number names: _____, _____
- Write sum of two numbers: _____
- Write difference of two numbers: _____

Repeat the activity for 3-digit numbers.

Let children add and subtract the numbers.

- Write 3-digit numbers formed: _____, _____
- Write the number in the expanded form using hundreds, tens and ones: _____,
- Write the number names: _____, _____
- Write sum of any two numbers: _____
- Write difference of any two numbers: _____

My number cards: Teachers can make number cards, or help students make their own. Play rapid-fire rounds to fill the number card. The Group that completes it first, will be declared the winner.

4. Addition using Dienes Blocks

Competency Goal: CG-1.3

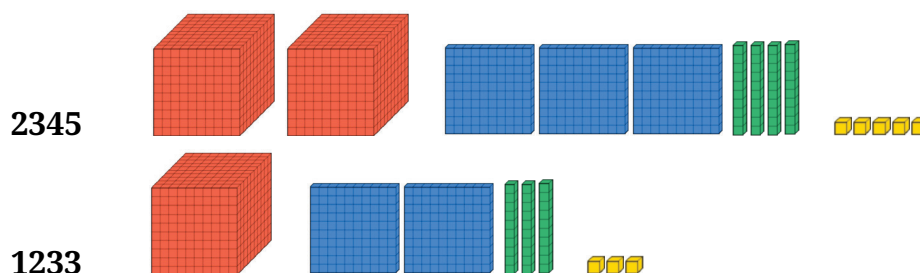
Duration: 30 mins

Nature of Activity: Individual

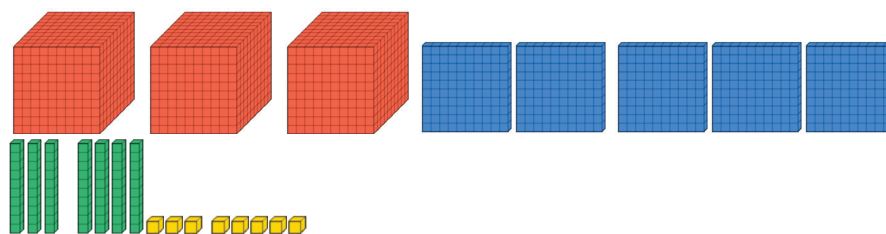
Encourage students to add and subtract using Dienes Blocks. Teacher can make or arrange wooden blocks from the market and bring them to the Classroom.

Let us add 2345 and 1233 by using Dienes Blocks:

Step 1. Take Dienes blocks corresponding to the numbers to be added as shown below:



Step 2: Combine all the blocks to add the numbers.



Step 3: Count all the respective blocks. We have 3 thousands, 6 hundreds, 5 tens, and 6 ones.

Step 4: Write the corresponding number, i.e. 3656.

Now do the following using Deins Blocks:

- (i) $2365 + 6574$ (ii) $4355 + 4217$ (iii) $7231 + 1234$

5. Subtraction Using Dienes Blocks with Regrouping

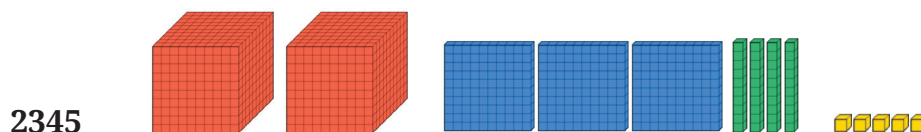
Competency Goal: CG-1.3

Duration: 30 mins

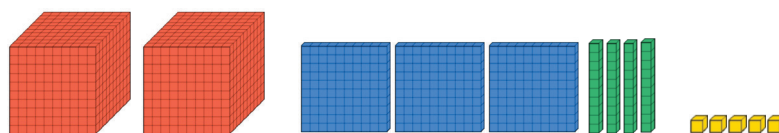
Nature of Activity: Individual

Let us subtract 1273 from 2345, i.e. $2345 - 1233$ or we can say let us take away 1233 from 2345 using Dienes Blocks.

Step 1. Take Dienes blocks for the corresponding number as shown below.



Step 2: Take away all the blocks corresponding to 1273 from the number 2345



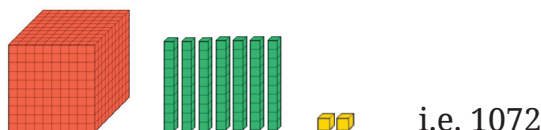
Take away 3 ones from 5 ones. We will be left with two ones.

Now 7 tens cannot be taken away from 4 tens. For this we will have to regroup one hundred into 10 tens. So, now we will have 2 hundreds and 14 tens. Taking away 7 tens will leave us remaining with 7 tens.

Take away 2 hundreds from remaining 2 hundreds and we will be left with 0 hundreds.

Finally take away 1 thousand from 2 thousands and we will be left with 1 thousand.

So, after taking away 1273 blocks from 2345 blocks we will be left with



i.e. 1072

This way students must be provided many such situations to add and subtract numbers using Dienes Blocks.

Now do some problems by using Dienes Blocks

(i) $7656 - 3562$

(ii) $4563 - 1322$

(iii) $5494 - 2765$

6. Making 4-digit Numbers

Competency Goal: CG-1.3

Duration: 30 mins

Nature of Activity : Pair/Group

Teacher can make number cards (100, 200, 300,... 10, 20, 30,... 1, 2, 3,...). Ask a group of 4–5 students to select some number cards and form a number. Ask questions to each group,

1. Form a 4-digit number in which 3 comes at hundreds place.
2. Form a 4-digit number in which 3 comes at thousands place.
3. Form a 4-digit number in which 8 comes at ones place.
4. Form a 4-digit number in which 3 comes in hundreds place and it is less than 2000.
5. Form a 4-digit number in which 9 comes at the tens place and the numbers is less than 1000.

1: Pick up two cards whose sum is 600.

Students can collectively decide and form the number 600.

And ask other groups to show to each other by placing the number cards. Similarly, do the same, Pick up any two cards whose sum exceeds 800. And ask other groups to show each other by placing the number cards.

2: Pick up any two 3-digits whose difference is 52.

Give enough time to all the groups so that they can discuss, decide, and form the number.

Note for the teacher: Through such activities Students get opportunities to see and play with thousands of numbers and expand their understanding.

The teacher can form other questions that help the students to build their better understanding of numbers.

Week 2

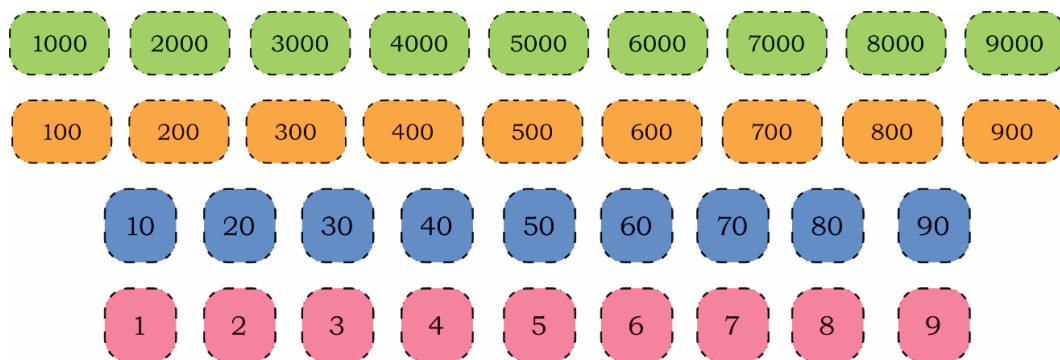
1. Making Numbers with Number Cards/Arrow Cards

Competencies Goal: CG-1

Duration: 30 mins

Nature of Activity: Group

The teacher can ask each group of 4–5 Students to prepare a set of number cards as shown below.



Let us Recall

In 375, the number of ones are 375.

The digit at the ones place is 5.

The number of tens is 37.

The digit at the tens place 7.

The number of hundreds is 3.

The digit at the hundreds place is 3.

The teacher can show a 4-digit number and ask each group to arrange the number cards accordingly. For example, to represent the number **2730**, students arrange the numbers cards as:



Now answer the following questions.

1. How many ones are there in 2730?
2. How many tens are there in 2730?
3. What are the digits at the ones and tens place?

All the groups can arrange their cards and place them on the table and show them to the teacher and their peer groups.

- The teacher gradually increases the number, starting with 3000, then 3990, 3009, 3010 followed by 4000 thousand and so on till 9999.
- Initially, some students will face challenge, but by showing and identifying the number cards, they will develop an understanding of numbers. Sharing the understanding will help other learners and also strengthen the learning of all students.

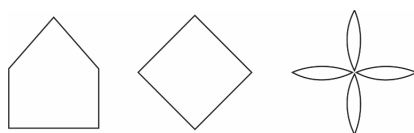
2. Making Patterns

Duration: 30–35 min

Nature of Activity: Individual

Competency Goals: CG-2 → C-2.4

Can you make some patterns using the shapes given below and colour them?



Make your own pattern using leaves and tiles.

Extension and Variation

- Draw some patterns for your dress.
- Design your own clothes using some repeating unit and another with non-repeating unit. What difference do you observe?

3. Combine, Compare and Change problems

Activity 1: Identify the given problems as Combine, Compare, or Change problems. Draw box diagrams for each of the problems.

- A school library had 320 books. The librarian bought 150 more books. How many books are there now?
- An elephant weighs 1200 kg, while a giraffe weighs 850 kg. How much heavier is the elephant than the giraffe?
- There were 45 mangoes in a basket. After giving away 18 mangoes, how many are left?
- A gardener planted 25 rose plants and 35 tulip plants. How many plants did he plant in total?
- Rahul has ₹750. After spending ₹275 on a cricket bat, how much money is left with him?

Activity 2: Create Your Own Word Problems

Write your own word problem for each type. Draw box diagrams for each of the problems.

- Combine Problem: $34 + 52 = \underline{\hspace{2cm}}$

b. Compare Problem: $18 + \underline{\hspace{1cm}} = 35$

c. Change Problem: $\underline{\hspace{1cm}} + 12 = 45$

Activity 3: Spot the Mistake

The following problems are incorrectly labelled. Identify the mistake and write the correct type.

- a. Neha had ₹500. She spent ₹200 on a book. How much money does she have now? — **Compare**

Correct type: (____)

- b. A farmer collected 30 apples in the morning and 25 apples in the evening. How many apples did he collect in total? — **Change**

Correct type: (____)

- c. A boy has 20 chocolates, and his sister has 12 chocolates. How many more chocolates does he have than his sister? — **Combine**

Correct type: (_____)

Activity 4: Math Storytelling

Write a short story that includes at least **one problem from each category** (Combine, Compare, and Change). Underline the problem in your story and mark it as Combine, Compare, and Change.

Example:

“A school planned a picnic. 45 students joined from Grade 5 and 40 from Grade 6. (____) They had 200 sandwiches, and 80 were eaten. (____) The teacher had 10 balloons, while a student had 5. (____)”

Now, write your own story: _____

Activity 5: Identify, draw, and solve word problems

Identify whether the given problem is Combine, Compare, or Change. Draw a box diagram to represent the problem visually. Solve the problem.

- A toy factory produced 2175 cars in January and 3624 cars in February. How many cars were produced in total?
- A farm has 8920 cows and 6475 buffaloes. How many more cows are there than buffaloes?
- A shopkeeper had 5600 bags of rice. He sold 2850 bags. How many bags of rice are left in the shop?

- d. A book publisher printed 7825 books. Later, they printed 2410 more books. How many books do they have in total now?
- e. A school library had 12450 books. Due to damage, 1295 books were removed. How many books are left in the library?

4. Revision of Number Operations

Competency Goal: C-4.1

Duration: 30 min

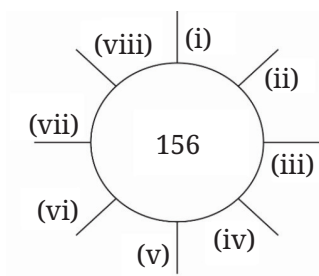
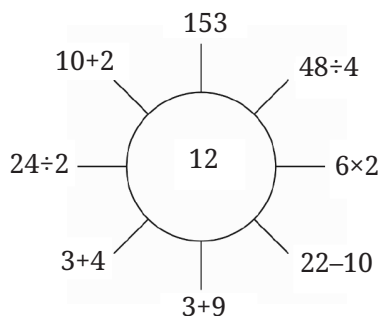
Nature of Activity: Group

1. Solve the questions:

$$\begin{array}{l}
 165 = \square + \square \\
 = \square + \square + \square \\
 = \square + \square + \square + \square \\
 = \square + \square + \square + \square + \square
 \end{array}$$

$$\begin{array}{l}
 25 = \square - \square \\
 = \square - \square - \square \\
 = \square - \square - \square - \square \\
 = \square - \square - \square - \square - \square
 \end{array}$$

2. See the following example and show the following numbers in different ways.



1. Add one 2-digit and one 3-digit number to get 156.
2. Add two double-digit numbers to get 156.
3. Multiply three-digit numbers by one number to get 156.
4. Divide two numbers to get 156.
5. Divide 3-digit numbers by a 1-digit number to get 156.
6. Subtract 3-digit numbers from a 3-digit number to get 156

Extension and Variation

You can think of some numbers and obtain those number by different operations.

5. Jumpy-Bumpy Tail

Competency Goals: C–1.3 , C–1.4 and CG–4

Duration: 30 min

Nature of Activity: Group

Bano and Fauzia study in Grade 4. Their teacher has drawn number blocks on the floor. Bano and Fauzia start jumping on the number blocks. Fauzia jumps two steps at a time with a total of 12 jumps and then stops. Bano jumps three steps at a time with a total of 9 jumps and then stops.

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

Bhaskar, who was watching them, said “Fauzia has jumped 12 times so she has covered more distance than Bano.”

The teacher can now scaffold the learners to reason out whether Bhaskar’s observation is correct or not. Let children use their own strategy to arrive at the correct conclusion.

Note: Let the students play this same game with different numbers.

Week 3

1. Special Numbers (Palindromic Numbers)

Competency Goal: C-4.1

Duration: 30 min

Nature of Activity: Group

Solve the following after interpreting the signs.

$\begin{array}{c} + \\ - \end{array}$	111	222	333	444	555
111	$\begin{array}{c} 222 \\ 12321 \end{array}$				
222					
333					
444					
555					

Now, solve the following questions:

- a. How many Palindromic numbers will form from the above numbers? Write down these numbers.

- b. Write down the numbers in which one digit is repeating 3 times?

- c. Write down the numbers in which one digit is repeating 2 times?

Extension and Variation

You can prepare your own grid of numbers and use for operations ($-$, $\div$)

2. Making Multiplication Tables by Doubling and Halving

Competency Goal: CG -1.3

Duration: 30 min

Nature of Activity: Individual/pair

The teacher can discuss with students that since they know the mathematical tables they have the numbers 2,3,5,7,9, and 11.

- a. The student should try to form new mathematical tables by using the doubling of these tables (Tables of 2, 3, 5,7,9, and 11),

7	14
14	28
21	42
20	56

- b. Also, try to see if we can make new mathematical tables by doing half of the bigger number's tables.

Assessment: Facilitate students and assess the (doubling and halving) of numbers while constructing new mathematical tables.

3. Napier Strips (Multiplication Table)

Competency Goals: CG -1.3 ,CG-4

Duration: 40 min

Nature of Activity: Individual/pair

Napier Strips: These can be constructed in the Grade using a rectangular strip measuring 2×20 . It is divided into 10 squares vertically. Multiples of digits (1–9) are written on each strip. A diagonal is drawn in each square to separate the digit at ones place and tens place.

For example, a Napier strip for multiplication table of 3, can be constructed in the following way.

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

Let us see how to use the Napier strip for building a multiplication table.

0	1	2	3	4	5	6	7
0	1	4	6	8	1	2	4
0	1	6	3	1	2	1	8
0	1	8	1	2	1	6	2
0	1	1	0	1	5	2	0
0	1	1	2	1	8	2	4
0	1	1	4	2	1	2	8
0	1	1	6	2	4	3	2
0	1	1	8	2	7	3	6
0	1	2	0	3	0	4	0

Teacher can construct Napier strips for numbers 0–9 as shown above.

Note:

- Create one Napier strip with diagonals drawn but without writing any numbers. Take multiple photocopies of this strip with only diagonals drawn. You can use these strips now for writing multiples of numbers 0–9. Keep extra photocopies of these strips for future use. This will also ensure uniformity in appearance of Napier strips.
- Encourage students to make Napier strips for multiples of numbers 0–9.

Instruction to Use Napier strips:

1. Napier strips can be used to construct a multiplication table of any 2- or 3-digit numbers.
2. Let us make a multiplication table of 32. Place the Napier strips of 3 and 2 side by side as shown:
3. One child from each groups will come and pick two cards from the bag. The group needs to make two 2-digit numbers from the one-digit numbers picked by reversing the digits. Let them make a multiplication table of both the numbers using Napier strips.

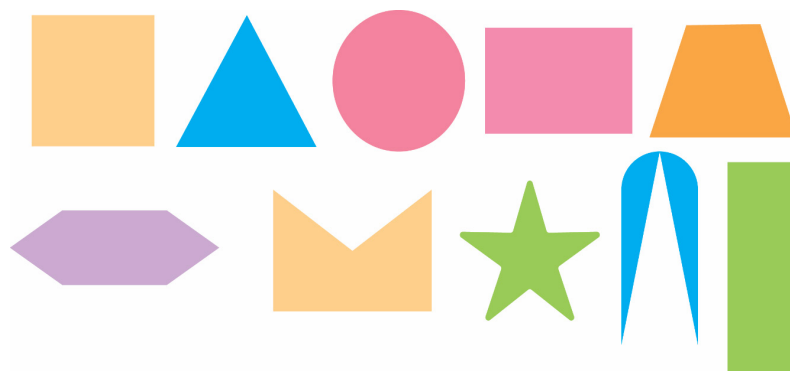
4. Shape Activity

Competency Goal: CG-2.1

Duration: 30 min

Nature of Activity: Individual/pair

A small project for students aligned with CG.2 (Competency Goal C2.1). The teacher to draw a few shapes on board and ask students to draw them in their notebook as well.



The students would be asked to find various objects and write their names whose at least one face would resemble the shapes drawn by the teacher, and try to draw these shapes as well.

This could be given as a learning extension as well. The students would learn to relate views of objects with 2D shapes.

5. Bolo Bhai Kaun Hun Main?

Competency Goals: CG -2.1,CG -2.2

Duration: 30–40 min

Nature of Activity: Individual/pair

The teacher to encourage students to write a few poems on 2D shapes and 3D shapes while describing their attributes in the poems. For example:

बोलो भाई, कौन मैं हूँ?
चपटी-सी पर खास मैं हूँ।
लंबाई - चौड़ाई का हूँ खेल,
गहराई नहीं, बस यही मेला।
वृत्त, त्रिभुज और है वर्ग, आडे-टेढे, छोटे-बड़े रंग।
चित्रों में मुझको पाओ।
कागज पर मुझको बनाओ।

Assessment: See and guide students to use the right properties (attributes) of shapes while making poems.

6. Fun with Shapes

Competency Goals: CG-2.1, CG-4.1

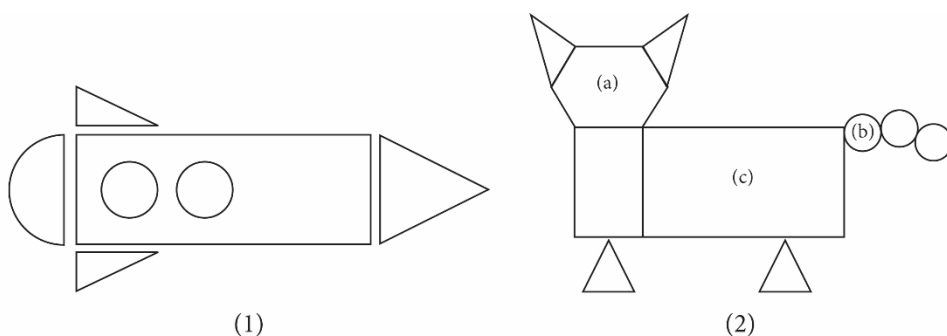
Duration: 35–40 Min

Nature of Activity: Individual

Material required: 3D objects in surrounding, ink pad, colours.

Steps

- Show the image (a complex 2D image freed by combination of different 2D shapes) to the students.
- Ask students to recreate/make similar images individually, with the help of 3D shape stamps (different objects).
- Explain to students that they can use different 3D objects to recreate the outline of the targeted 2D shapes.
- Encourage learners to think about which 3D shape might leave a 2D face that matches the 2D shapes in the given pictures. For example,



- In Fig (2), to get a stamp of shape (c) a child can use a cubical eraser and stamp it.
- for (b) — child can use the end of a pencil to stamp.
- for (c) — cut lady finger and stamp it.
- Encourage learners to identify and choose the appropriate 3D stamp/shape and use an ink pad/colours to create the target shape by stamping faces of the 3D shapes.
- Encourage them to experiment with different stamp orientations (edges, corners...) using 3D shapes to create desired 2D outlines.
- Have students share their drawings with the whole Grade.

Assessment and Extensions

- Observe students' participation and understanding during the shape identification.
- Evaluate their understanding of 3D object attributes (faces, edges, and vertices)
- Provide students with different 2D shapes/tangrams/building blocks to create structures by combining them.

Week 4

1. Rotational Symmetry

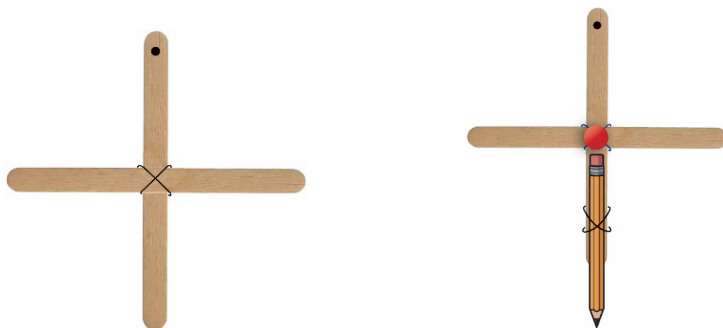
Competency Goal: CG-2.1

Duration: 35–40 Min

Nature of Activity: Individual

Material Required: Ice-cream sticks, rubber band, sketch pen, or marker.

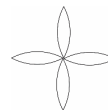
1. Take two ice-cream sticks and tie them together with a rubber band in the shape of a plus sign, as shown. Mark a dot on one of the edges using a marker. (*The dot is for reference only to indicate direction of rotation.*)



2. On a notice board or wall, drill a thumb pin and hang this plus sign. Alternatively, you can fix a pencil in the rubber band vertically so that the plus sign can be rotated easily.
3. Now, start turning the plus sign step by step. Ask students to observe the shape in each turn. The dot can be used as a reference:

 $\frac{1}{4}$ turn $\rightarrow$  $\frac{1}{4}$ $\rightarrow$  $\rightarrow$, and so on.

4. Ask children to count how many times the shape appeared exactly the same during rotation. The number of times the shape appeared exactly the same as the initial position is the order of rotational symmetry. Here, the order is 4.
5. Repeat the activity with a '×' sign or any other shape.
6. Repeat the activity with alphabets, such as S, H, etc.



2 . Rotational Symmetry in Shapes

Competency Goal: CG-2.1

Duration: 35–40 Min

Nature of Activity: Individual

1. Take an equilateral triangle cut-out and mark one dot on any side for reference. Insert a wooden craft stick through its centre so that it can rotate. Ask students to find its degree of rotational symmetry. 
2. Repeat this activity with a square. 
3. Repeat it with a regular hexagon (all sides equal)  and a regular pentagon. 
4. Encourage the students to establish a relationship between the number of sides in a regular shape and its order of rotational symmetry.
5. Ask them to find the order of rotation for a circle. Let them perform the activity to arrive at the conclusion.

3. Revision of Different Types of Patterns

Competency Goal: C-2.4

Duration: 30–35 min

Nature of Activity: Pair

Material Required: Paper, Pen (Whiteboard)

Recapitulation of different types of patterns—repeating, growing, from daily lives, etc. (number patterns, shape patterns, word patterns, and patterns in daily routines, etc.)

Explain the rules of the activity:

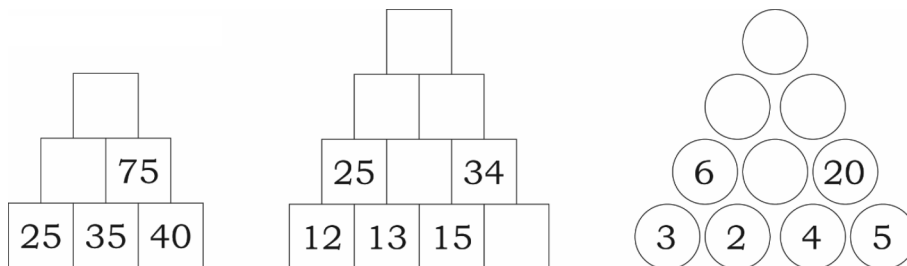
1. Students will work in pairs. One student will create a pattern, while the other identifies the rule and extends it. Then, they will switch roles. Each correct answer earns a point. The child with the most points at the end wins.
2. Round 1:
Student A creates a pattern. Student B analyses the pattern, identifies rules and extends the pattern for at least four more turns. They explain the rule verbally to their partner.
3. Round 2:
Roles are reversed. Student B creates a pattern, and Student A identifies the rule and extends it.
4. Continue this process for 10 rounds (5 rounds per student). Encourage students to incorporate a variety of patterns and increase the challenge with each step. Also, encourage them to think about patterns they observe in their surroundings.
5. Each pair counts their points. Announce the winners.

Extension: Student can go on a ‘pattern hunt’ at home or in their neighbourhood, looking for, writing and drawing different types of patterns they find.

Worksheet

Extend the Patterns:

- a. ABACADAEAF _____
- b. 123321123 _____
- c. 9, 18, 27, _____
- d. 6A7, 7B6, 8C5, _____, _____, _____, _____
- e. 10AB, 20BC, 30CD, 40DE, _____, _____, _____



4. Pattern in Number Grid

Competency Goal:

Duration: 30–35 min

Nature of Activity: Individual

Let us see the number grid given below:

1	2	3	4	5	6	7	8	9	10
11	12	13	14	15	16	17	18	19	20
21	22	23	24	25	26	27	28	29	30
31	32	33	34	35	36	37	38	39	40
41	42	43	44	45	46	47	48	49	50

It can be seen that green colour is already filled in some of the boxes in the grid:

Write the pattern it follows

1, 5, 9, ____, ____, ____

Continue the pattern ____, ____, ____, ____

Extension and Variation

Now fill the number grid in red colour to create different patterns in the grid given above. Write those numbers below:

____, ____, ____, ____, ____, ____, ____

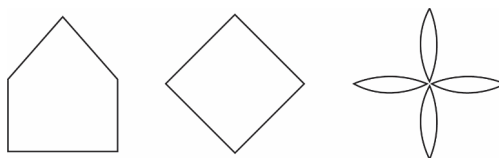
5. Drawing Patterns

Competency Goal: CG-2.4

Duration: 30–35 min

Nature of Activity: Individual

Can you draw some patterns using the shapes given below and colour them?



Make your own pattern using leaves and tiles.

Extension and Variation

- Draw some patterns for your dress.
- Design your own skirt using some repeating unit & now design one more skirt using some non-repeating unit.
- What difference do you observe?

Week 5

1. Revision Activities on Measuring Length

Competency Goal: CG-3, C-3.2

Duration: 30–35 min

Nature of Activity: Individual

Each student can make their own 1 metre, $\frac{1}{2}$ metre, and half of half metre measuring tape.

Activity 1

Teacher to estimate and write the name of the object that measures less than 1 metre. Next, the students can be asked to measure things which are more than 1 metre.

Activity 2

Mark 1 metre length on the floor and estimate the number of steps the students take for 1 metre.

For example: If they take 2 steps for 1 metre write your finding in the table given below.

Number of steps	Converting into metre
2	1 m
4	2 m
10	5 m
20	10
:	:
:	:
100	50
200	100 metre

Once they have some walking experience of 100-metre distance, the students can be encouraged to find out:

- Name of places, things around them, and objects that measure a distance of less than 1 kilometre. (As you remember that 1000 metres make 1 kilometre and 500 metres make a half a kilometre)
- Mark a distance of 1 kilometre in the school playground or in a nearby place. (“Basic idea is to experience or gain the sense of distance 1000 metre/1 km)

Assessment

Once students have some physical experience of 1 km distance teachers can prompt such questions to the students.

- Who among you lives nearest to the school? _____
- Who lives farthest from the school? _____
(How far could it be in kilometres?)
- How many kilometres away is their home:
 - from the school? _____
 - from the park? _____
 - from the closest shop? _____
 - from the hospital? _____
 - from the milk booth? _____

Extension Variation

Now try to find out the length of your room. Fill in the answer using the unit, you used to find the length.

Length of my room	
By foot	

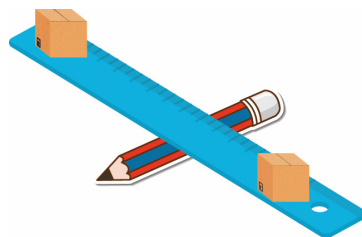
2. Weighing Balance and Finding Weight

Duration: 30 min

Nature of the Activity: Group

Competency Goals: C-3.1, CG-4.1

In this activity, students are paired up & guided to make their own weighing balance out of simple stationery and household items. A foot ruler or wooden stick is balanced on a pencil. Empty matchboxes are stuck to the ends of the ruler & act as the pans of the balance.



Students should then be asked to propose ways to compare and measure the weight of matchsticks, grains, pulses, a pencil, sharpener, etc. For example, students can weigh a pencil sharpener in terms of the number of matchsticks required to balance it.

	How many matchsticks	How many grains
My Eraser		
My Sharpener		

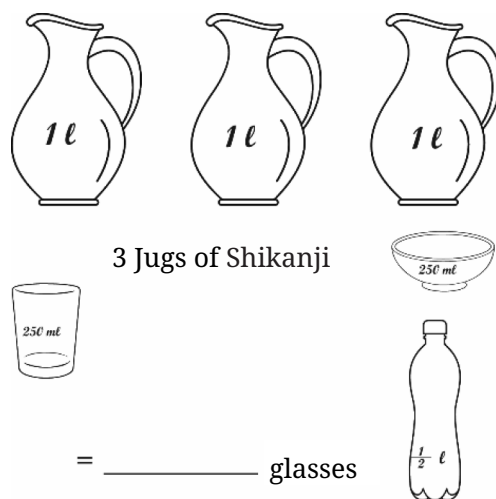
3. Revision Activities on Measuring Capacity

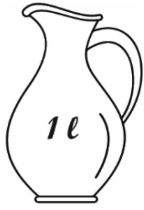
Competency Goal: CG-3.7

Duration: 30 min

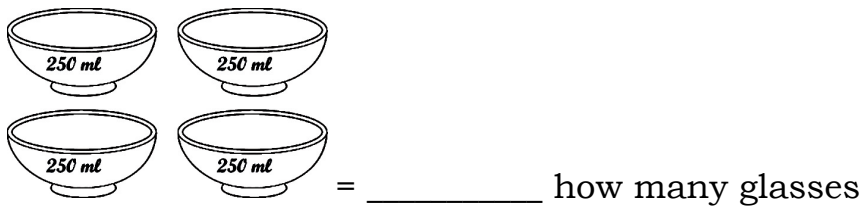
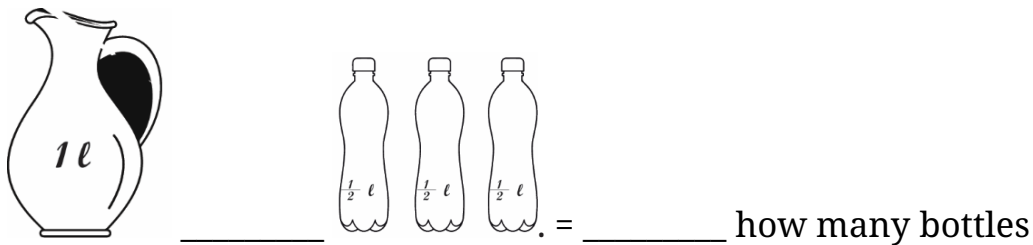
Nature of the Activity: Group

There is a 'Shikanji Party' going on in the class. There are 30 students who are attending the party. The teacher makes 3 jugs of *shikanji*. Ask the students that their opinion, how many glasses (each holding 250 ml) can be filled with these jugs?



	How many glasses	How many bottles	How many bowls
			

Now observe and tell which one is bigger?



4. Head or Tail — Find the Perimeter

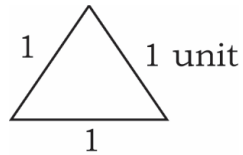
Competency Goal:

Duration: 30 min

Nature of the Activity: Group

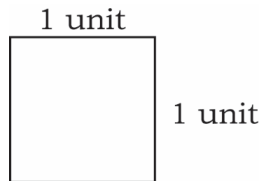
Instructions for conducting the game:

- Divide the whole Grade in two groups.
- This game will have 10 rounds.
- Each group is supposed to toss coins. If they get 'Head', they will be getting a triangle, on getting 'Tail', they will be getting a square.
- They are supposed to join triangles and squares.
- The winning team will be the one who has framed the shape that has a lesser perimeter.



(Equilateral triangle having length 1 unit)

All triangles and rectangles are similar in size and shape. Also, joining means sharing a vertex or a full common side.



(Square of side 1 unit)

5. Exploration of Shapes and Perimeter

Competency Goals: CG-2, CG-4

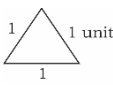
Duration: 30 minutes

Nature of activity: Individual

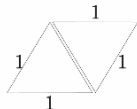
Activity 1

Make equilateral triangles of dimension 1 cm, 2 cm, and 4 cm each (around 6 equilateral triangles) using pastel sheets.

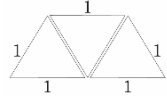
Instructions

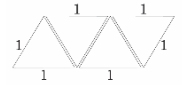
1. First, ask the students to paste one equilateral triangle in their notebook as . Its perimeter will be 3 cm.

2. Ask them to add one more triangle to the above figure as



. Its perimeter should be 4 cm.

3. Ask them to add one more triangle to the figure as . Now, the perimeter will be 5 cm.

4. Add one more triangle to the above figure as . The perimeter will be 6 cm.

Now, let students find the relation between the number of triangles and their perimeter.

Number of triangles	Perimeter
1	3 cm
2	4 cm
3	5 cm
4	6 cm
10	

Extension and Variation

- Teacher can use matchsticks instead of equilateral triangle cut-outs.
- Replace the equilateral triangle of dimension 1 cm with the equilateral triangle of 2 cm, 4 cm, etc., and let children tabulate the data.

Assessment

The teacher can observe the children while they are working in groups and observe how they generalise the rule. Assess their prediction skills and spatial understanding when they make the same pattern with an equilateral triangle of 2 cm.

6. Time or Duration

Competency Goals: CG-3 and CG-3.7

Duration: 30 min

Nature of Activity: Group

Instruction

The teacher to ask and discuss about the time taken or duration by students for doing the following activities:

- Making the bed
- Watching television
- Drinking a glass of water

- Having lunch
- Having dinner
- Walking in a park
- Finishing the homework
- Speaking nonstop
- Standing on one leg
- Reaching school

The teacher can give them options, such as less than one minute, 15 min, 30 min, 45 min, 1 hour, whole day, whole night.

Discussion: The teacher to ask students to find which activity is taking the longest/ shortest Span/duration and why?

Further, this activity can be multidisciplinary and interdisciplinary if the teacher asks questions like it taking long durations to watch television or take a bath can have any social or emotional impact on the students, their family or their community.

Week 6

1. Reading the Calendar

Competency Goal: CG-2.4

Duration: 30 min

Nature of the Activity: Individual and Group

Material required: A big calendar for class and individual calendars (small) for students

1. Showing the calendar in the Grade ask the students:
 - a. What is it?
 - b. Do you use a calendar? If yes, then for what purpose?
2. Point to the days of the week listed at the top/side of the calendar and discuss questions like
 - a. What comes just after Sunday?
 - b. What comes just after Tuesday?
 - c. What comes just before Saturday?
 - d. Can you see any pattern here?
3. Guide them to recognise the repeating cycle of the days of the week. As it repeats again and again.

- Now ask students to identify the patterns in the calendar. (vertically, horizontally, diagonally, in boxes, others, if any.)
- Have students share their observations and explain the rule of pattern they found.
- Encourage them to create their own patterns.

Extension: Encourage learners to create magic squares, etc.

2. Quarters and Halves by Paper Folding

Competency Goal: CG-1.2

Duration: 30 min

Nature of the Activity: Individual and Group

Material: Newspaper, crayons or colours

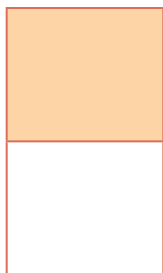
Objective: To see how many quarters are there in half by paper folding.

Instruction

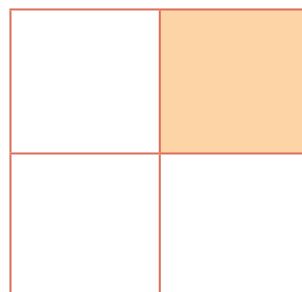
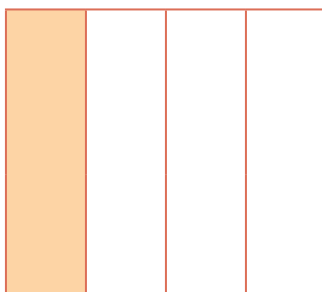
Make pairs/groups of 3 or 4 students. Provide some newspapers and crayons to each group.

Procedure

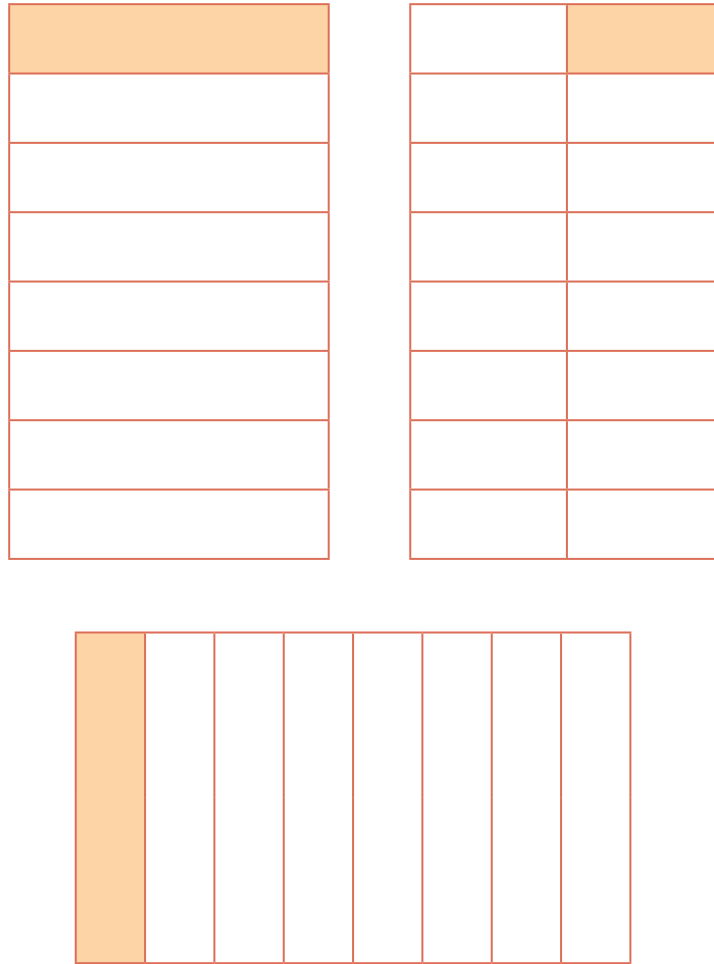
- Ask the students to fold the newspaper into two equal parts, and shade/colour half of the paper.



- Ask the group to take another newspaper and fold it twice to get four parts of the paper and to colour the quarter or one-fourth part of the paper.



3. Now ask them to overlap both the coloured papers.
4. And ask them “How many quarters can the complete cover and a half.
5. And let them do so and see that there are two quarters in half.
6. Extend the same activity for making eight equal parts of the newspapers and ask them to colour eight parts of the newspaper.



7. Ask them to overlap with half-coloured paper and see how many one-eighth parts are there in half part, and also in quarters.
8. Ask the students to explore that two one-eighth covers quarters and then half.

Assessment: Students can be prompted to fold the newspaper into 3 equal parts, then 6 equal parts and Colour/Shade One-third and one-sixth part respectively. Then , this indicates students can make parts and see the fractions.

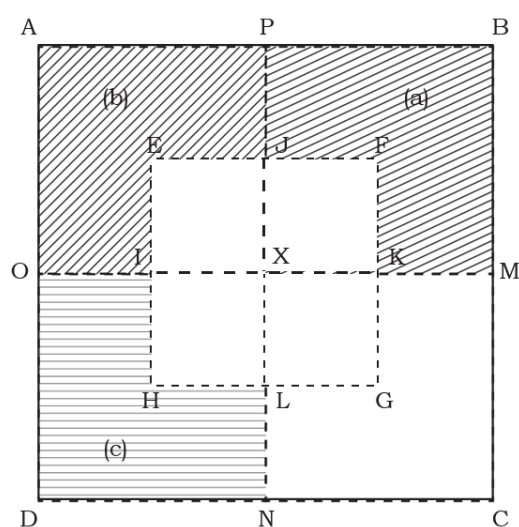
3. Finding Equal Parts

Competency Goals: CG-3 and CG-4

Duration: 30 min

Nature of the Activity: Individual

Consider the following figure:



ABCD is a square. Cut EFGH which is also a square out of ABCD such that I is the midpoint of OX.

K is the midpoint of XM.

L is the midpoint of XN.

J is the midpoint of XP.

- Now, you are supposed to divide the shaded portion in (a) into two equal parts.
- Divide the shaded portion in (b) into three equal parts.
- Divide the shaded portion in (c) into four equal parts.

[Teacher can see how they are dividing in equal parts and discuss]

4. Fractions — Worksheet

Competency Goal: CG-1.2

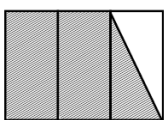
Duration: 30 min

Nature of the Activity: Individual

Misconceptions in Fractions: Students many a times write fractions in the standard form but may not understand the relevance of equal parts of a shape or a collection. The following questions assess as well as strengthen the conceptual understanding of fractions.

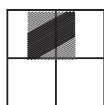
Worksheet

1. Teachers can help students recall the fractions like $\frac{1}{2}$, $\frac{1}{4}$, $\frac{1}{8}$ using paper folding activity.
2. Teacher can also help them recall the concept of equivalent fractions using pictures, paper folding activities and superimposition.
3. The following questions can be used for assessment. The teacher can create similar questions and many more questions depending upon the learning levels of the students.
 - a. Aman draws $\frac{3}{4}$ in the following way.

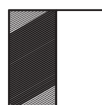


Explain whether Aman has represented $\frac{3}{4}$ correctly or not?

- b. Swati draws the following figures:



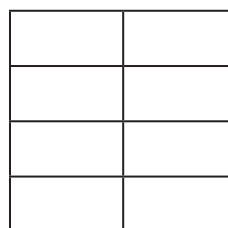
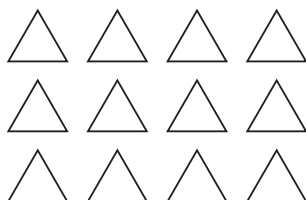
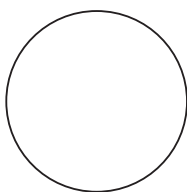
$\frac{1}{4}$



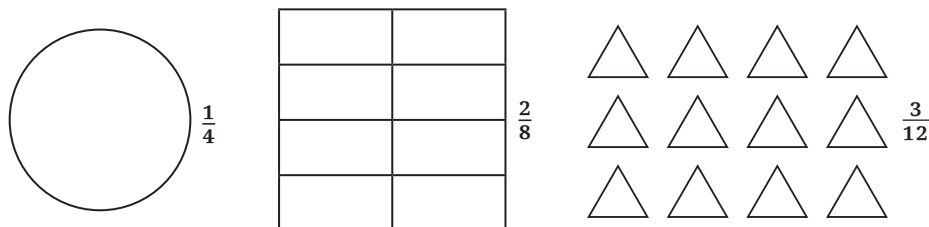
$\frac{1}{2}$

She says, since the area of shaded square is greater than the shaded rectangle, therefore, $\frac{1}{4} > \frac{1}{2}$. What is wrong with Swati's argument?

- c. Represent $\frac{1}{4}$ in the following figures by shading the appropriate part.



Now, represent the fractions written against each figure by shading them appropriately.



What do you observe? Explain.

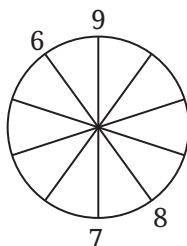
4. Number Puzzles

Competency Goal: CG-1, CG-2, CG-4

Duration: 30 min

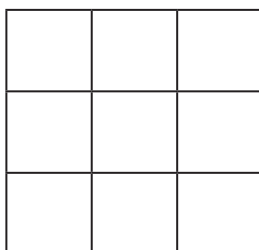
Nature of the Activity: Individual

1. Arrange the numbers 1 to 10 around the boundary of the circle so that the sum of any two adjacent numbers is the same as the sum of the two numbers on the other ends of the lines. (No number can be repeated.)



For example $9 + 6 = 15$
 $7 + 8 = 15$

2. Arrange numbers 1 to 9 by using each number only once in a 3×3 square grid such that:
 - a. Sum of numbers in each row, column and diagonal is 15. Observe the position of number 1 in arrangement. What do you observe?



[Hint – Could you place 1 in any of the corners? Why]

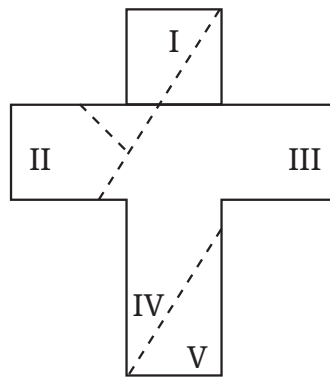
3. Look for a pattern in the two given number grids and use the pattern you have observed to fill in the missing numbers of the third grid.

21	7	3
3	1	3
7	7	1

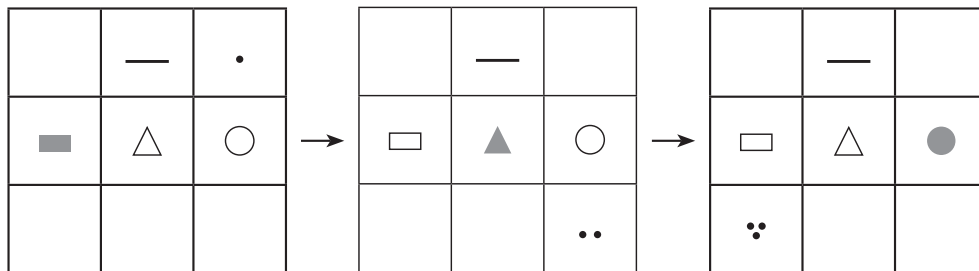
72	36	2
8	4	2
9	9	1

60	6	
		5
2		

4. Trace the following figure and cut it into five pieces along the dotted lines indicated. Rearrange the pieces to form a square. You must use all the five pieces with no gaps or overlaps and you cannot turn the pieces over.

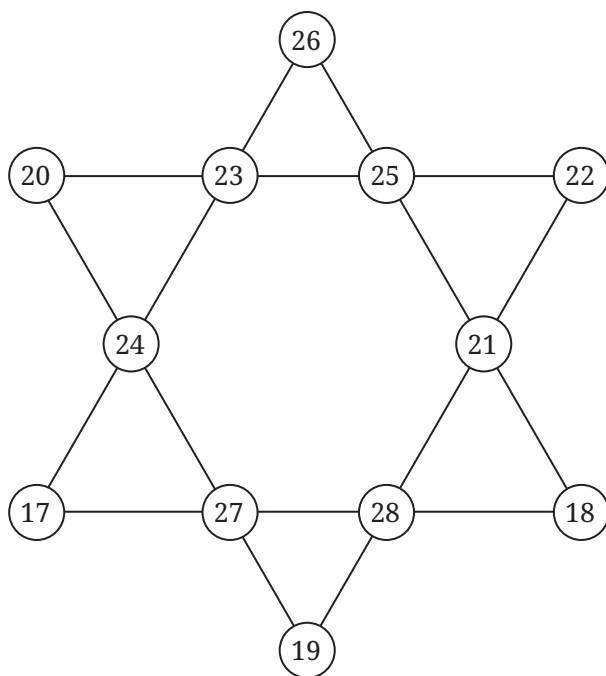


5. Draw the figure that is next in each sequence:



What do you observe? Explain.

6. What is the magic in the “Magic Triangle” ?



Curricular Goals and Competencies Preparatory Stage

CG-1 Understands numbers (counting numbers and fractions), represents whole numbers using the Indian place value system, understands and carries out the four basic operations with whole numbers, and discovers and recognises patterns in number sequences	C-1.1 Represents numbers using the place value structure of the Indian number system, compares whole numbers, and knows and can read the names of very large numbers C-1.2 Represents and compares commonly used fractions in daily life (such as $\frac{1}{2}$, $\frac{1}{4}$) as parts of unit wholes, as locations on number lines and as divisions of whole numbers C-1.3 Understands and visualises arithmetic operations and the relationships among them, knows addition and multiplication tables at least up to 10×10 (Pahade) and applies the four basic operations on whole numbers to solve daily life problems C-1.4 Recognises, describes, and extends simple number patterns such as odd numbers, even numbers, square numbers, cubes, powers of 2, powers of 10, and Virahanka–Fibonacci numbers.
CG-2 Analyses the characteristics and properties of two- and three-dimensional geometric shapes, specifies locations and describes spatial relationships, and recognises and creates shapes that have symmetry	C-2.1 Identifies, compares, and analyses attributes of two- and three-dimensional shapes and develops vocabulary to describe their attributes or properties C-2.2 Describes location and movement using both common language and mathematical vocabulary; understands the notion of map (<i>Najri Naksha</i>) C-2.3 Recognises and creates symmetry (reflection, rotation) in familiar 2D and 3D shapes C-2.4 Discovers, recognises, describes, and extends patterns in 2D and 3D shapes

CG-3 Understands measurable attributes of objects and the units, systems, and processes of such measurement, including those related to distance, length, weight, area, volume, and time using non-standard and standard units	C-3.1 Measures in non-standard and standard units and evaluates the need for standard units C-3.2 Uses an appropriate unit and tool for the attribute (like length, perimeter, time, weight, volume) being measured C-3.3 Carries out simple unit conversions, such as from centimetres to metres, within a system of measurement C-3.4 Understands the definition and formula for the area of a square or rectangle as length times breadth C-3.5 Devises strategies for estimating the distance, length, time, perimeter (for regular and irregular shapes), area (for regular and irregular shapes), weight, and volume and verifies the same using standard units C-3.6 Deduces that shapes having equal areas can have different perimeters and shapes having equal perimeters can have different areas C-3.7 Evaluates the conservation of attributes like length and volume, and solves daily-life problems related to them
CG-4 Develops problem-solving skills with procedural fluency to solve mathematical puzzles as well as daily-life problems, and as a step towards developing computational thinking	C-4.1 Solves puzzles and daily-life problems involving one or more operations on whole numbers (including word puzzles and puzzles from ‘recreational’ areas, such as the construction of magic squares) C-4.2 Learns to systematically count and list all possible permutations or combination given a constraint, in simple situations (for example, how to make a committee of two people from a group of five people) C-4.3 Selects appropriate methods and tools for computing with whole numbers, such as mental computation, estimation, or paper-pencil calculation, in accordance with the context
CG-5 Knows and appreciates the development in India of the decimal place value system that is used around the world today	C-5.1 Understands the development of zero in India and the Indian place value system for writing numerals, the history of its transmission to the world, and its modern impact on our lives and in all technology

