

CLASS-I

Mathematics (Class I)




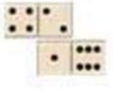
Learning Outcomes	Resources	Week-wise Suggestive Activities (to be guided by Parents with the help of teachers)
<p>Child</p> <ul style="list-style-type: none"> Classifies objects into groups based on a few physical attributes such as shape, size and other observable properties including rolling and sliding Recites number names and counts objects up to 20, concretely, pictorially and symbolically Describes the physical features of various solids/shapes in her own language. For example- a ball rolls, a box slides etc. Works with numbers 1 to 20. Counts objects using numbers 1 to 9 Compares numbers up to 20. For example tells whether number of girls or number of boys is more in the class 	<p>NCERT Textbook/ State developed Textbook in Mathematics for Class -I</p>	<p>WEEK -1</p> <p>Theme- Pre-number vocabulary:</p> <ul style="list-style-type: none"> The student can be asked to observe different contexts and situations from the immediate environment, such as things that are inside/outside their room/ kitchen/ house, etc. The student may be encouraged to use spatial vocabulary/ concepts like top-bottom, on under, inside-outside, above-below, near-far, before-after, thin- thick, big-small, etc. The student can be asked to identify and compare things around them for example the things which are near-far, tall-short, thick-thin, etc. The student can identify the differences and similarities between objects through different senses such as touching, hearing, and seeing and not limited to one sense. The student can also be given worksheets emphasising such activities. These worksheets should give students multiple ways of expressing themselves and engaging with the objects around them. <p>WEEK -2</p> <p>Theme-Classification</p> <ul style="list-style-type: none"> The student may be asked to collect a few objects on a table like pens, pencils, colors, erasers, sharpeners, or other material of cloth, paper, wood, glass, plastic, grains, pulses, spoons, magazines, etc. It must be ensured that these objects are of different colors and shapes. The

		<p>student can be asked to classify them into several groups. The student may categorize objects on the basis of colors, shapes, sizes, utility or any other features that are observable and accessible by them.</p> <ul style="list-style-type: none"> • The student may be asked why they have placed an object in a particular group. This will help the student in describing the criterion on the basis of which he/she has made that classification. • The classification may also include segregating three-dimensional objects based on their physical properties like round, flat, having corners, rolls or slides, etc. • Let the student now form only two groups of all the above objects. Ask the criterion on the basis of the formation of such groups. One such example can be that of objects belonging to a student's school bag placed in one group and the rest in another. A second example would be that one group has objects of a particular colour in one group and rest in another group, etc. <p>WEEK-3</p> <p><i>Theme-One-to-one correspondence</i></p> <ul style="list-style-type: none"> • The student can be asked to take out as many bowls/spoons/plates as there are members in the house. • The student may be asked to button up a shirt focusing on the one-to-one correspondence with the button and the buttonhole. • The student can be asked to make two groups and say which group has more /less /equal objects. The student may do this on the basis of one-to-one correspondence, or just by observation. <p>WEEK-4</p> <p><i>Theme-Counting and Developing Number Sense:</i></p> <ul style="list-style-type: none"> • The student may be asked to arrange the objects in a linear order and demonstrate the counting of objects
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		<p>by reciting number names and pointing to one object at a time. Ask the student to repeat the same. This will help the student in remembering the number names in order and also to initiate the process of counting.</p> <ul style="list-style-type: none"> Form a group by adding one object at time and counting. For example in an empty plate put one grape or any other available fruit/candy, etc. and say 'One' aloud. Now put one more and say 'One, and one more, make two!' Again put one more object and say aloud 'Two, and one more, make three!' Such experiences will help the student in developing number sense: that five is one more than four, or two more than three, or four more than one. <p>Note- Up till now the numberness and number sense is developing by listening and speaking. <i>Please avoid engaging the student in writing the numerals till she/he gets a clear understanding of numbers up to twenty.</i></p> <ul style="list-style-type: none"> Provide opportunities for the student to make a group of objects having a given number. Like making groups of three colours each, or drawing ten dots on a sheet of paper, floor, etc. Provide opportunities to count objects, for instance, the student may take out objects up to 9 objects from a given collection of objects such as picking any 8 spoons/4 beads/6 ice-cream sticks etc. from the given box and to take out objects up to 20 objects from a given collection of objects. The student can be asked to count objects in the vicinity like the number of glasses in the kitchen, the number of chairs in the room, the number of family members, etc. (less than 20). Show a number chart or number card to the student and read the numeral. Also, ask the student to take out the card having the symbol for a particular number from one to nine. Teacher may send the following link to the WhatsApp of the student's parent, so that the student can enjoy an
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		<p>interactive activity on the following link: https://diksha.gov.in/play/collection/do_3129697450928209921438?contentType=TextBook&contentId=do_312936473250848768165</p> <ul style="list-style-type: none"> • Make groups of objects and ask which group has more or less. Now let the student use numbers to tell the answer. For example if a group has 7 and another group has 10 objects let the student now say that group with 10 objects is bigger than the group having 7 objects and that one group has three more or three less objects than the other group. The comparison of numbers is now being done by the student on the basis of her/his understanding of number sense. • Provide opportunities to the student to count and compare the number of objects in different groups up to twenty. Make this task more realistic, interesting, and accessible for all students. Avoid making artificial groups for the student to count and compare. Such tasks should be from the student's daily life experiences and situations. For example the student may enjoy an interactive activity on the following link: https://diksha.gov.in/play/collection/do_3129697450928209921438?contentType=TextBook&contentId=do_312936473371713536166
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<i>Learning outcomes</i>	<i>Resource(s)</i>	<i>Week-wise suggestive activities (to be guided by parents with the help of teachers)</i>
<p>The learner</p> <ul style="list-style-type: none"> • works with numbers 1 to 20. • compares numbers up to 20. • Develops the concept of zero. • applies addition and subtraction of numbers 1 to 20 in daily life . <p>☞ constructs addition facts up to 9 by using concrete objects. For example, to find $3+3$ counts 3 steps forward from 3 and concludes that $3+3=6$.</p>	<p>NCERT/State developed textbook</p> <p>Chapter 1 Shapes and Space</p> <p>Chapter 2 Numbers from one to nine</p> <p>Chapter 3 Addition</p> <p>Chapter 4 Subtraction</p> <p>Chapter 5 Numbers from ten to twenty</p> <p>Number Cards</p>	<p>Week 5</p> <p>Theme Reading and writing of numerals from 1 to 5</p> <ul style="list-style-type: none"> • Teacher/Parent should ensure that before the children attempt to read and write numerals 1 to 9, they should be very confident in counting up to nine. • Use number cards to introduce numerals and then can be encouraged to write once the child is familiar with the numerals • Children could be given a set of 9 cards, each card having a numeral from one to 9 on one side and that many dots on the other. Since the children can count the number of dots, this can be used as a key in reading the numeral on the card. • Children can practice reading numerals by asking to read and checking by counting the dots on the reverse side of the card.

<p>  subtracts numbers using 1 to 9. For example, the child takes out 3 objects from a collection of 9 objects and counts the remaining to conclude $9-3=6$. </p> <p>  solves day-to-day problems related to addition and subtraction of numbers up to 9. </p> <ul style="list-style-type: none"> recognises numbers up to 20 and writes numerals <p>  Describes the physical features of various solids/shapes in her own language. For example, a ball rolls, a box slides, etc. </p>	<p>Paper cards with Numeral on one side and the same number of dots on the other.</p> <p>Domino cards</p> <p><i>Paper cards are divided into two parts which have less than nine dots on each part.</i></p>  <p>QR codes related to these chapters available on NROER</p>	<ul style="list-style-type: none"> Children can use their cards as prop while working on practicing writing of numerals. Practice writing of numerals 1 to 5 when the child is confident in recognition of the numerals. This can be done in many ways like by finger on sand or mud pit. Children may be given the number cut outs available in toy shops or can make their own by cardboard or thermocol sheet. <p>e-content</p> <ol style="list-style-type: none"> https://diksha.gov.in/play/collection/do_3129_69745092820992438?contentType=TextBook&contentId=do_312936473250848768165 https://diksha.gov.in/play/collection/do_3130_02615273250816145?contentType=TextBook&contentId=do_31276668517999411213642 <p>Week 6</p> <p>Theme</p> <p>Reading and writing of numerals 6, 7, 8, 9 and the concept of zero</p> <ul style="list-style-type: none"> Similar activities as done for numerals 1-5 in the previous week can be planned for numerals 6 to 9.
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		<ul style="list-style-type: none"> • To introduce “zero”, collect some objects, up to five in number, on your table. Ask children to tell how many they are. Then remove one, saying “one goes out” or something similar, and ask “how many left?” When the last object is removed some child in the class may say “zero”, most are likely to say “nothing”. You can introduce the idea of zero as a number here, which signifies absence of something in a collection. For example, saying “zero pen on the table” signifies absence of pens on the table. • Once the children get the idea of zero, you can introduce another card in their set with zero on one side and blank on the reverse. • Practice writing of the numeral zero with the child when he/she is confident in its recognition. • Ask children to identify the symbol for the number zero written around the child like wrappers, bills, calendar, charts, etc. <p>e-content</p> <p>https://diksha.gov.in/play/collection/do_313002615273250816145?contentType=Text-Book&contentId=do_31276668534544793613644</p> <p>Week 7</p> <p>Theme</p> <p>Developing number sense and addition</p> <ul style="list-style-type: none"> • Activities relating to comparison of numbers, what comes after, before, in between, matching may be done with children. • Use words like more than, less than or equal through the strategy of one to one correspondence in objects in two groups. • Provide a lot of exposure and experience of combining two collections and recounting the number of objects in the new collection. Children may be provided enough opportunities to handle a wide variety of concrete materials for combining two groups of objects. For example, collect some objects like leaves, pebbles seeds, etc. Keep them in two different groups and ask the child to tell how many objects are there in the two groups. • Take two cards having pictures of different numbers of objects (of the same kind). Ask the students to tell how many objects are there altogether. • Take a domino, say 4-3 domino. Ask a child to count the holes on its two parts and then tell the total number of holes in the domino. • There are many opportunities in everyone’s daily life to add numbers like we had four plates in one rack and three on the other. How many plates are there in all on both the racks.
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Week 8

Theme

Addition of numbers (continued)

- Addition Facts: With concrete objects to make, say 5, in as many ways as one can. Then ask children to make different numbers in many ways. Write a number on the notebook, say 7, and ask the child to give one answer for it. Then ask are there more numbers which when added gives 7, till all the answers are listed.
- Commutative Property of Addition: Help children to learn the commutative aspect of addition using concrete objects and then with the help of dominoes. Ask questions like - 4 pencils and 2 pencils are how many pencils altogether? 2 pencils and 4 pencils are how many pencils in all? Give many such examples, so that the child can appreciate the commutative property of addition. No need to introduce the term and ask abstract questions about commutativity, just an understanding that whether one takes 2 first and then adds 4 or the other way round, the answer will remain the same. This later helps the child in adding numbers in a more convenient way like while adding 2 and 17 the child need not count 17 ahead of 2 but can do it by count 2 ahead of 17.
- Zero in addition: Take a container and put some objects in it. Ask the children to count the objects. Now put three objects more and ask the children to say three more objects have been added. Ask them to count the objects now. Take another container and put, say five objects in it. Do not put any more objects. Ask children to say zero objects have been added. Ask them to count the objects in the container. Help children to realise that "five and zero make five only".
- At the end, the children must learn to add two numbers, without using concrete objects.
- Speak out slowly any two numbers, say 2 and 4. Ask a child what does 2 and 4 make. The child should say 6. If the answer is wrong, help her/him to get the right answer, using concrete objects and counting beyond one number. Continue this process with several pairs of numbers.
- Encourage the child to explore different strategies to add numbers up to 9 like counting on forward and using already known addition facts.

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Week 9

Theme: Subtraction

- Collect some objects like leaves, pebbles, seeds, etc. Ask the child how many are there. Take out some of the objects from the collection and tell the students how many you took away. Now ask them how many are left.
- Collect balls/pencils of 2 different colors. Ask the students—how many are there? How many are red? How many are not red?
- Take a domino card. Ask the students to count all the holes on the card. Hide one of the two parts. Ask the students how many holes are there in the hidden part. Repeat this with different domino cards.
- After the students have got sufficient experience in subtraction with concrete objects and pictures, ask them to subtract one number from the other.
- The next stage would be solving the abstract problems like $4 - 2 = ?$

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Week 10

Theme

Problem Solving using addition and subtraction

- Present problems orally to a child and ask her/him to answer. A few examples are given below as a sample. You may ask children to work out these problems mentally. Based on it, you need to create or develop many more problems.
- Examples of problems:
 1. Noori has 6 red pencils and 2 black pencils in her box. How many pencils are there in the box altogether?
 2. In a garden there are 4 mango trees and 3 orange trees. How many trees are there in the garden altogether?
- Develop a large number of simple word problems, based on taking away (or partitioning) and present them orally one by one to the children.
- Children may be encouraged to answer these problems, without using concrete materials. For the guidance purpose, some problems are given below:
 - Reena has 4 apples. She gives 2 to her friend Anju. How many apples are left with Reena?



		<p>☞ Three birds are sitting on a tree. 1 bird is away. How many birds are left on the tree?</p> <ul style="list-style-type: none"> Encourage children to construct their own word problems based on your examples and their surroundings and solve them verbally. <p>Week 11</p> <p>Theme Numbers from ten to twenty</p> <ul style="list-style-type: none"> use concrete play money for making amounts up to Rs 20 Through a variety of activities and practical experience and use of concrete objects teach children counting up to 20 Ask the child to collect 20 small sticks, which can be matchsticks or broomsticks, say about five centimeters in length. Ask the child to make one bundle of ten sticks by tying them together with a thread or by a rubber-band and keep the remaining ten sticks loose. Ask the children to keep their sticks in front of them and give you 14 sticks without opening the bundle. If the child is unable to do it you can show one bundle of ten and four loose sticks. Spend some time on it, asking the child to give at random 13, 16, 19, 10, 14, and so on. When the child becomes confident in handling numbers up to 19 in the form of bundles and sticks, draw, say, one bundle and seven sticks on the notebook and ask children to give as many sticks and name the number. Most of the children should be able to handle it in a day or so. After that encourage the child to write the number of bundles and sticks below TENS and ONES just like two digit numbers are written. <p>e-content</p> <p>https://diksha.gov.in/play/collection/do_3129697450928209921438?contentType=TextBook&-contentId=do_312936473371713536166</p> <p>Week 12</p> <p>Theme: Shapes</p> <ul style="list-style-type: none"> Ask the child to sort objects based on similarities and differences through their sense of touch and observations Help the child to verbalize the properties of shapes/criterion used by them in sorting/ classifying solids/ shapes. From the collection made for the previous activity, place the ball or a marble on an inclined surface and ask the students to observe how it moves down the surface.
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		<ul style="list-style-type: none"> • Ask the child to sort the objects on the basis of their movement on an inclined surface and ask them to name some more such objects which will roll or slide. • Blindfold the child and give her/him one of the objects. Ask to touch and feel it and then guess whether it will roll or slide. • Help the child to cut out different shapes like triangles, squares and circles to make a shape kit. Now ask them to use these shapes to make pictures/figures/designs/scenery. • Ask the students to sort the shape in their shape kit and match similar shapes <p>e-content</p> <p>https://diksha.gov.in/play/collection/do_3129697450928209921438?contentType=TextBook&contentId=do_312936473201401856164</p>
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Class II

Mathematics (Class II)

<i>Learning Outcomes</i>	<i>Resource</i>	<i>Week-wise Suggestive Activities (to be guided by Parents with the help of teachers)</i>
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<p>Child identifies basic 3D-shapes such as cuboid, cylinder, cone and sphere by their names</p>	<p>NCERT Textbook/State Developed Textbook of Mathematics for Class-II</p>	<p>WEEK -1</p> <p>Theme- What is Long, What is Short</p> <ul style="list-style-type: none"> • The student should be encouraged to use observations/ sense of touch to describe the shapes and their physical attributes. • A game of blind fold can be played with the student where they have to describe the object without looking at it. The purpose is to let the student observe different attributes of a solid shape and express them in their informal language. <p>WEEK -2</p> <p>Theme- What is Long, What is Short</p> <ul style="list-style-type: none"> • Showing the student a solid shape and asking which other solids around them looks like it. For example, ask the student to cite examples of shapes like a ball or a shoebox. Also ask him/her to justify why the two objects look alike? Which features are common in both? etc. • The student can be asked to observe and classify objects which roll, slide and both. <p>The student may be asked to play one interactive activity given at following link:</p> <p>https://diksha.gov.in/play/collection/do_312969822142676992155?contentType=TextBook&contentId=do_3129365801849077761150</p>
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reads and writes numerals for numbers up to 99

WEEK-3

Theme-Reading and writing numbers

- Give the student a lot of opportunities to experience numbers up to 99; like numbers on various wrappers of candies, daily utility material, milk pouches, cold drink bottles, in newspapers, on currency notes, on TV, etc. Engage the student in reading these numbers.
- Parents can prepare audio notes of counting and mathematical explanations for all children, particularly Children with Visual Impairment?? on their mobile or laptops or any other recording and play back device.
- Do an activity involving verbal description of the numbers with the student. For example, ninety-two is two more than ninety, ninety is made up of nine tens, ninety-nine can be made by a fifty, a forty and nine etc. Such verbal experiences will help the student in understanding a number and its numeral representation. This is the stage when the student has to develop number sense and start looking and analyzing a number in different forms.
- The number names in English give an understanding of the number like seventy-five is seen to be made up of seventy and five. In some Indian languages a little more help is required to the student, as बहत्तर में सत्तर और दो नह ीं ददखता.
- Engage the student in comparing numbers in terms less than or more than a given number. For example, the number of sheets in Mathematics textbooks is more than 50 or less than 50.

WEEK-4

Theme-Writing of numerals

- Let the student identify the pattern in writing of two-digit numbers The practice of writing numbers in random order and also writing them in sequence should

		<p>also be done.</p> <ul style="list-style-type: none"> Note that such a practice should not be repeated. Use different strategies like making a number chart at home in different forms <p>1, 2, 3, 4, 5, 6, 7 8, 9, 10, 11, 12, 13, 14 15, 16, 17, 18, 19, 20, 21 and so on</p> <p>The student may be asked to play one interactive activity given at following link: https://diksha.gov.in/play/collection/do_312969822142676992155?contentType=TextBook&contentId=do_3129365801902735361183</p>
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<i>Learning outcomes</i>	<i>Resource(s)</i>	<i>Week-wise suggestive activities (to be guided by parents with the help of teachers)</i>
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<p>The learner</p> <p>works with two digit numbers reads and writes numerals for numbers up to 99 uses place value in writing and comparing two digit numbers. forms the greatest and smallest two digit numbers (with and without repetition of given digits) estimates and measures length/ distances and capacities of containers using uniform non-standard units like a rod/pencil, cup/ spoon/ bucket etc. compares objects as heavier/lighter than using simple balance. describes basic 3D and 2D shapes with their observable characteristics identifies basic 3D-shapes such as cuboids, cylinder, cone and sphere by their names</p>	<p>NCERT/ State developed textbook</p> <p>Chapter 3 How much can you carry?</p> <p>Chapter 4 Counting in tens</p> <p>Chapter 5 Patterns</p> <p>Chapter 6 Footprints</p> <p>Chapter 7 Jugs and Mugs</p> <p>QR codes content related to these chapters available on NROER</p>	<p>Week 5</p> <p>Theme: Number sense</p> <ul style="list-style-type: none"> Engage the children in counting with physical activities. For example, how many times can you hop on your right feet or on your left feet without falling. Show different objects to the child and ask him to estimate the number and then actually count them. For example, showing a packet of biscuits and asking what you think are the biscuits less than 20 or more than 20 and then counting them. Teachers/Parents can prepare worksheets of sequential joining of dots using the order of number. This will help the child to recall the number names in order and also give a sense of exploration in child. Engaging children in activities in reciting numbers till 99 with the family members like skipping one number and then saying the next number or counting with gaps of five, saying number names in reverse order, or asking what comes between 50 and 55, etc. Parents can create activities for the use of ordinal numbers in their family fun time. For example, making the child along with other family members stand in a line. Assign them positions as first, second, third, etc., with respect to some reference point. Give them interesting tasks to perform, such as ‘third person, tickle your partner’, ‘second person, hold your nose’, etc. <p>e-content</p> <p>https://diksha.gov.in/play/collection/do_312969822142676992155?contentType=TextBook&contentId=do_3129365801962455041193</p> <p>Week 6</p> <p>Theme</p> <p>How much can you carry?</p> <ul style="list-style-type: none"> The child can be engaged in story telling using the concept of heavy light objects. For example, creating a scene where different animals playing on see-saw and involving the child to replace animals with heavier animals in the story. Ask the child to list down things which they lift, things which their parents or younger sibling can lift, etc. Ask them to think why they cannot lift a bucket full of water but your mother can. Help child verbalise the concept of heavy and light
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- Make the child experience the weight of the objects for example, different fruits, utensils, books, etc., by holding them in their hands and also to compare the weight of different things, which one is heavier.
- Ask the child to find objects of nearly the same weight. Let them explore different objects by picking them up.

Week 7

Theme: Balancing objects

- With the help of parents, the child can be engaged in the construction of a simple balance using sticks, thread and 2 pans. A long ruler can also be used if the stick is not available.
- The child should be encouraged to observe how the pan with the heavier object goes down as compared to the pan with the lighter object. They should be encouraged to verbalise this experience of why the pan with orange goes down as compared to the ball.
- Let the child compare the weight of different things, fruits, utensils, toys and other objects by holding them in their hands and then putting them in the balance created by them.
- Help them to replace objects to balance both the pans. A child can use a combination of things to balance the pans. Let them estimate which things would balance each other.
- Talk about animals which are used for carrying things and how much they can carry.
- Worksheets can also be prepared on the similar lines like, tick the heavier object, colour the lighter object. But this should be given after a variety of experiences with concrete objects.

Week 8

Theme: Tracing Shapes

- Ask the child to collect a few things like leaves, pebbles, a stick, a bangle and trace them on their notebook.
- Take different utensils and trace them from different surfaces. Say, on tracing a bowl, how did you get two different traces of the same bowl?
- How did she keep the bowl to get two different traces from it? Look for other things which can give many different traces.
- On a newspaper trace the hands of different people in the family. Ask the child to guess which outline is of the child's hand, her mother's, her father's, etc.
- Help the child to collect some things, such as — a potato, a bottle cap, a matchbox cover, a sharpener, an eraser, a spoon, a bus ticket, a coin, a straw, etc., and make a trace of it. Ask the child to match similar traces by asking questions like 'Look at the shape of each trace you have made. See if it looks like any of the shapes given here'.



Week 9

Theme

2D Shapes- Circle, Triangle, Rectangle

- Help the child to prepare a table to draw or write the name of the thing below the shape.
- Help children look at the differences and similarities in the shapes which have come up after tracing. What is similar in the shapes —for instance, between a box and an eraser? These have been placed in the same column.
- Encourage children to name as many shapes as they can.
- We need to help the usage of words, such as, circle, square, rectangle, etc., so that these become a part of the child's vocabulary. This can be done by generalising the shapes obtained from different objects.
- Encourage the children to draw pictures/scenery using triangles, squares, circles and combinations of different shapes and also to colour a particular shape with a particular shade.
- Parents can also be asked to help to make paper jewelry by cutting out different shapes of different sizes.
- Activities of picture drawing can also be done with children giving instructions, like,
 - (a) draw glasses of shape 'Rectangle' on the first face.
 - (b) draw a moustache of shape 'Triangle' on the second face.
 - (c) draw a mouth of shape 'Circle' on the third face.

Week 10

Theme

Patterns

- Give opportunities to the child to observe different patterns and designs on the clothes/saris/curtains, etc., and other things in home like iron grills, tiles, window, door grills, etc.
- Help the child to find a unit of repeat in a design/pattern.
- Help the child to verbalise the experience of patterns that she has by asking questions like do you think that some design is being repeated in this design.
- Encourage the child to make different patterns/drawings by stamping using ladyfinger, potato, thread, or with other stamps.
- Children can make different kinds of patterns using leafs, flowers, spoons, matchsticks like putting one vertically and other horizontally, two upward, then two downward, etc.
- Children can also make patterns using different shapes, arrows, stickers and colors in their notebooks.



		<p>e-content https://diksha.gov.in/play/collection/do_312969822142676992155?contentType=TextBook&contentId=do_3129365801989898241209</p> <p>Week 11</p> <p>Theme Working with numbers (up to 99)</p> <ul style="list-style-type: none"> • Play 'Snake and ladder' with children and have an informal discussions about numbers and their relationships, such as, 'How many steps do you need to reach to the ladder?', 'On which number is the nearest/longest snake?', 'What number on the dice would land you up on the snake?', etc. • Ask the child to form the two digit numbers (with and without repetition of given digits) by using playing cards or by your own paper cards with numbers 0-9 written on it. This can also be converted into a game where the one who makes the largest/smallest number would win. Discuss with the child, which greatest and smallest can be formed with two same/different digits. • Ask the child to make simple number patterns using skip counting, counting in twos, fives, tens, etc., and help them to identify patterns and extend it. • Children can be asked to make a number grid from 1-100 and observe different patterns in the grid, like, above 7 is 17, then 27, 37, 47, so on. • The child can also be asked to make a number train/number strip and color different colors like all numbers with 5, 10, etc. <p>e-content https://diksha.gov.in/play/collection/do_312969822142676992155?contentType=TextBook&contentId=do_3129365801902735361183</p> <p>Week 12</p> <p>Theme: Jugs and Mugs</p> <ul style="list-style-type: none"> • While you engage the child in making lemonade or any other local drink ask him to count the number of drops in a lemon, half a lemon, and in the spoon. • Ask questions like if for one glass, one lemon is needed how many lemons are needed for six glasses. • Help the child to fill different bottles with the same cup or a glass to find which bottle holds the least water and which holds the most water. (Learning to make an estimate) • Ask the child to fill different vessels - Jug, Glass, mug, pot, bowl filled with the same cup and count the cups required to fill them and help prepare a table. Engage children in comparing of the capacity of different utensils in the house and find their relations
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		<ul style="list-style-type: none"> The story of 'Thirsty Crow' can be read to the child. The same can be done with the child by putting tamarind seed or stones in a half filled glass and observing if the water comes up. Ask the child to count how much water (in mugs or buckets) is used in their house for each of the activities like bathing, washing clothes, washing utensils, drinking, etc., and note the observations. <p>e-content</p> <p>https://diksha.gov.in/play/collection/do_312969822142676992155?contentType=TextBook&contentId=do_3129365802039705601210_6992155?contentType=TextBook&contentId=do_3129365802039705601210</p>
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Class III

Mathematics (Class-III)

<i>Learning Outcomes</i>	<i>Resource(s)</i>	<i>Week-wise Suggestive Activities (to be guided by Parents with the help of teachers)</i>
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<p>Student</p> <ul style="list-style-type: none"> Identifies and makes 2D-shapes by paper folding, paper cutting on the dot grid, using straight lines etc. describes 2D shapes by the number of sides, corners and diagonals. For example, the shape of the book cover has 4 sides, 4 corners and two diagonals 	<p>NCERT/ State developed Textbook</p>	<p>WEEK-1</p> <ul style="list-style-type: none"> Let the student explore shapes around them by tracing them such as various boxes, utensils, shapes of vegetables and fruits etc. from different sides. Let the student find similarities and differences in two shapes drawn/traced on a surface or paper. Engage the student in paper folding activities including origami to introduce new shapes that are formed on opening the folds. For instance, triangles and squares are formed when we open a paper boat. Let the student draw different shapes on a paper. For this, let them use round objects like a tumbler or katori to draw a circle, a box to draw four corner shapes by tracing. The shapes can then be coloured by the students. Use a dot grid sheet to draw different shapes and designs. You can find many Youtube videos showing such designs drawn on a dotted grid sheet. <p>WEEK-2</p> <ul style="list-style-type: none"> Engage the student in making <i>rangoli</i> using different shapes of varied sizes. Let the student relate the shapes drawn on a paper with the surface of a solid object. Let him/her find the surfaces that have the shape with four corners and four sides, or a shape like a round on
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		<p>the brim of a tumbler</p> <ul style="list-style-type: none"> Activities related to the association of a shape drawn on paper with the shape of a surface seen on a solid and vice-versa help the student in building better understanding of his/her surroundings. <p>Following link is for an interactive activity: https://diksha.gov.in/play/collectio_n/do_312960486912901120127?contentType=TextBook&contentId=do_3129506002195578881154</p>
<ul style="list-style-type: none"> Reads and writes numbers up to 999 using place value 		<p>WEEK-3</p> <ul style="list-style-type: none"> By this time children are comfortable in dealing with two-digit numbers. If your student still has problems with two-digit numbers, engage him/her in making out a sense of numbers by providing opportunities to count objects, sticks, straws, etc. by making groups. as explained above for class II. He/ She should be in a position to describe a number in different ways by splitting them into two, three or more parts. For example, 32 objects can be counted as six groups of five and two loose or four groups of eight or three groups of ten and two loose, Later he/ she may write the number in different ways like given below: $32 = 5+5+5+5+5+2$ $32 = 8+8+8+8$ $32 = 10+10+10+2$ $32 = 15+15+2$ $32 = 20+10+2 \dots\dots$ Once the student shows confidence in working with two-digit numbers, introduction of three-digit numbers will be much easier. Everything from reading, writing to applying number operations is in a pattern which a student may have identified while working with two-digit numbers. For example, in two-digit numbers reading after nineteen is twenty, twenty-one, twenty-two and so on to

		<p>thirty, thirty-one, thirty-two and so on.</p> <ul style="list-style-type: none"> • A similar numeration of three-digit numbers based on pattern. • Along with reading of three-digit numbers let the student start analyzing the number in two or more parts like one hundred can be seen as 50 and 50, 20 and 80, one more than 99, 6 more than 94, etc. <p>WEEK-4</p> <p>Writing of three-digit numbers</p> <p>Let the student identify the pattern in writing of two-digit numbers and continue the same for three-digit numbers. The practice of writing numbers in random order along with in sequence is to be done. Note that such a practice should not be repeated. To avoid this use different strategies such as making a number chart at home in different forms.</p>
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<i>Learning outcomes</i>	<i>Resource(s)</i>	<i>Week-wise suggestive activities (to be guided by parents with the help of teachers)</i>
<p>The learner</p> <p>works with three digit numbers</p> <ul style="list-style-type: none"> • reads and writes numbers up to 999 using place value – compares numbers up to 999 for their value based on their place value • solves simple daily life problems using addition and subtraction of three digit numbers with and without regrouping, sums not exceeding 999 • analyses and applies an appropriate number operation in the situation/ context 	<p>NCERT/ State developed textbook</p> <p>Chapter 2 Fun with numbers</p> <p>Chapter 3 Give and Take</p> <p>Chapter 4 Long and Short</p> <p>Chapter 5 Shapes and design</p> <p>QR codes content related to these</p>	<p>Week 5</p> <p>Theme: Playing with numbers</p> <ul style="list-style-type: none"> • Making association with large numbers in familiar contexts like a century in the cricket match. Parents could add other examples from their children's lives to think about 3-digit numbers. Like how many runs would add up to triple century, half century, etc. • Ask children to count in 10s, 20s, 50s, etc. For example, to count two hundred thirty four objects the child should be able to say there are 23 groups ten and 4 loose or 11 groups of 20 and 14 loose or four groups of 50, three groups of 10 and 4 loose. • Engage the child in writing the expanded form of number using grouping like $234 = 200 + 30 + 4$ $234 = 100 + 100 + 10 + 10 + 10 + 4$ $234 = 100 + 50 + 50 + 10 + 20 + 4$ etc. • Let the child experience and appreciate that a number can be expressed in many ways as we do for transacting money. Give him/her enough opportunities to handle play money notes. • Ask the child to construct a 10X10 grid on a paper and write numbers 1 to 100 or 101 to 200, etc. Then ask to observe the patterns of numbers on the grid,

- estimates and measures length and distance using standard units like centimetres or metres and identifies relationships\

**chapters
available on
NROER**

For example, on skipping four numbers and shading the fifth a pattern will emerge. On skipping three, a diagonal pattern will emerge. Ask the child to observe all such fascinating and interesting patterns. Some of these are given in the textbooks and more are available online.

- These may also include number patterns like jump 2 steps forwards starting from 104 ten times, or 10

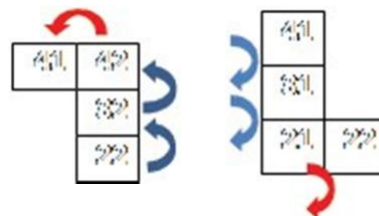
<ul style="list-style-type: none"> • acquires understanding about 2D shapes- • identifies and makes 2D-shapes by paper folding , paper cutting on the dot grid, using straight lines etc. • describes 2D shapes by the number of sides, corners and diagonals. For 		<p>steps backwards from 220, 12 times, etc</p> <ul style="list-style-type: none"> • Number games like I am exactly between 77 and 97, I am half century and one century etc. <p>e-content</p> <p>https://diksha.gov.in/play/collection/do_312960486912901120127?contentType=TextBook&contentId=do_3129506000113172481151</p>
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example, the shape of the book cover has 4 sides, 4 corners and two diagonals

Week 6

Theme: Addition

- Engage the child in doing addition using 10×10 number grid for example adding 22 to 19 means moving two rows above and then two steps forward
- Finding out strategies like 'How to go from 22 to 41?'



- Shift to other strategies of adding two numbers. For example, add 23 and 31

Method-1

$$23 + 31 = 20 + 3 + 30 + 1$$

Now, add 20 & 30 together and 3 & 1 together.

$$\text{You will get: } 23 + 31 = 50 + 4 = 54$$

Method-2

$$23 + 31 = 23 + 30 + 1 = 54$$

- The child should be first able to do it with the help of paper pencil and gradually shifts to mental calculation. And then shifts to the standard algorithm of counting using carry or regrouping.
- Children can make token cards of 1s, 10s and 100s to assist in adding in initial problems and then shift to adding mentally.



- Children should also be encouraged to estimate the sum of two 3-digit numbers before adding. For example, $379 + 287$ will be more than 650.
- Encourage to make number facts using given numbers like arrange 50, 70 and 20 to make addition and subtraction facts.

Week 7

Theme: Solving problems using addition

- Provide them some simple daily life situations involving addition and subtraction. Let them analyse the situation and identify the appropriate number operations.



		<ul style="list-style-type: none"> • Help them to find the answer to the situation problem. • Problem sums in the context of puzzles, riddles, card games, word problems, etc., are interesting for all children. They find relevance in using mathematics in daily life also. • Provide them opportunities to incorporate vocabulary like 'less than', 'more than', 'added to', 'sum of', 'take away,' etc., in their language by asking puzzles like— 9 taken from 34 is?; the sum of 45 and 34 is?; etc. • Ask the child to find some situation themselves in real life based on addition or subtraction and let them explain how they can solve it. <p>e-content https://diksha.gov.in/play/collection/do_312960486912901120127?contentType=TextBook&contentId=do_3129506000949903361207</p> <p>Week 8</p> <p>Theme: Non-standard units of measurement (Length)</p> <ul style="list-style-type: none"> • Children should be encouraged to look around and see how lengths of different things are measured in different ways using local or non-standard units. For example, rope, garlands or cloth may be sold by the cubit, handspan, fingers, etc. • They also need to do activities of measuring lengths (and distances) with their own body parts. For example, while playing cricket they decide the distance between the wickets by their strides. • Ask students to measure the length of certain things around them like notebook, pencil, tabletop, keyboard etc. using any non-standard units of their choice like hand span, any paperclip, rope etc. Let them write their measurement properly on a sheet of paper. • Ask the child to count the number of footspans from her room to the kitchen, or how many times a cup can be placed on the table from one end to the other. <p>Week 9</p> <p>Theme: Measuring length using standard units- cm and metre</p> <ul style="list-style-type: none"> • Many children have an idea of a meter, kilometer from their daily experiences. They may also have seen a ruler in their pencil/geometry box. Engage them, use the ruler to measure things and help them to read it properly. • Ask them to measure the things which are round for example, head, rim of a glass, etc. Let them construct their own ruler which can bend. • Use the internet to show them some other instruments and discuss them. For example, the instruments, such as, measuring tape used by a cloth seller to measure a cloth or carpenter measuring a piece of wood?
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<ul style="list-style-type: none"> fills a given region leaving no gaps using a tile of a given shape extends patterns in simple shapes and numbers adds and subtracts small amounts of money with or without regrouping 		<ul style="list-style-type: none"> It is more important for children to be able to get an estimate of a metre as related to known things, such as, their own heights, rather than do tedious exercises of converting metres to centimetres, or vice-versa without any relevance in their lives. Engage the child in making ten 10cm strips and pasting them to make a metre strip and then use it to measure clothes, bed sheets, room's length, etc. This measuring tape will also help the child in exploring that 100 cm make 1 meter. Discuss about 'metre' and 'centimetre' with respect to measurement of few objects and try to establish a relationship between them. Let children measure small lengths and keep records like measuring and recording the growth of a plant. <p>Week 10</p> <p>Theme: Estimation of lengths and distances in standards units</p> <ul style="list-style-type: none"> Provide the child a few things those are generally measurable in centimeters. Ask them to estimate their length and write. Now, provide them a ruler and let them find the actual length of the things. Ask them to observe the differences in estimation and actual length. This will help in making better estimation of length in daily life situations. Repeat this activity by using some non-standard units of their choice. Provide them any object and ask them to suggest the appropriate unit of measuring its length, width, height, thickness, etc. Example: What is the most appropriate unit for measuring length of an 'eraser'? (cm or m), width of finger nail, distance from Delhi to Agra, length of sari, distances on Google maps, depth of the well, waist of an elephant, etc. <p>Measurement of height of family members by pasting a measuring strip on the wall.</p> <p>e-content https://diksha.gov.in/play/collection/do_312960486912901120127?contentType=TextBook&contentId=do_3129506001608130561153 </p> <p>Week 11</p> <p>Theme: Shapes</p> <ul style="list-style-type: none"> At this level, students are familiar with basic 2-D shapes. But to make sure quick recapitulation must be done by making them draw using basic shapes or coloring them - for example, making a Joker using shapes like triangle for cap, round for face, rectangles for legs and arms and an oval or rectangle for waist.
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- Engage the child in making a paper clapper or a boat by paper folding. Now ask to open and count the shapes, biggest shape cut out from irregular shapes, etc.
- Provide them certain simple objects and ask them to observe and point out their sides, corners, etc.
- Provide the child few objects with straight edges (e.g., book, ruler, geometry box, sheet of paper, etc.) and few with curved edges (e.g., coin, bottle cap, plate, etc.). Let them observe the differences. Discuss with them what they have observed and introduce the topic of 'edge'.
- The terms like curved and straight edges can now be introduced.
- Engage the child in folding a sheet of paper to make shapes having only 3, or 5 or 6 edges, etc.
- Make the tangrams shapes on a cardboard and cut out the shapes. Now ask the child to make different their shapes like, boat, a swan, a fish, etc., using all figures, using only triangles, two triangle or combination

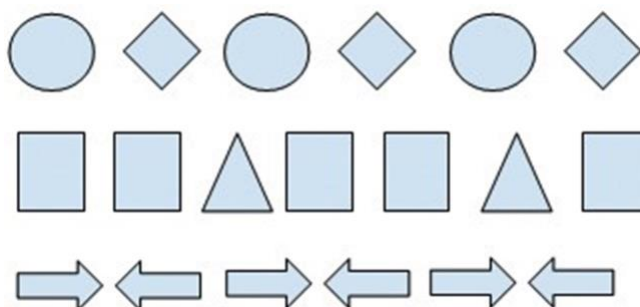
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Week 12

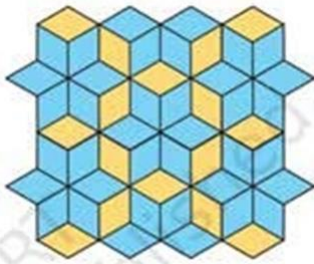
Theme: Pattern and Tiling

- Students are familiar with various shape patterns at this level. Ask them to observe their surroundings and identify some patterns. Give them some incomplete patterns and ask them to complete it.
- Let the child explore different patterns made up of shapes as shown below;



- Let them observe and ask the following questions for each of the pattern:
- Which shape will come next and why?
- Which shape will come at 10th place?
- Which group of shapes is repeating?
- Now let the child explore floor tiles and ask which shapes are used to cover the floor completely? Can a circular tile fill up the floor? etc.



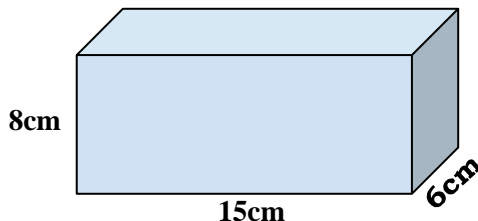
		<ul style="list-style-type: none"> Engage the child in finding the shapes that fit in the tile without any gaps, what combination of shapes can be used for tiling? etc. and also tiling pattern using different shapes—  <ul style="list-style-type: none"> Now, use internet and show some tile patterns like footpath, floor of a room, some historical monuments, etc. and discuss with them on certain points like: How many types of tiles are being used in the pattern? Name the shape of the tile(s) used in the pattern? Is there any gap between the tiles? (Note: You can ask many more questions as per the pattern) Provide students a sheet of paper and any shape(s). Ask them to create a tiling pattern of their choice. Ask them to make a tiling pattern using circles only. Focus on the gaps left in between. Discuss with them how edge of the shape affects the pattern <p>e-content https://diksha.gov.in/play/collection/do_312960486912901120127?contentType=TextBook&contentId=do_3129506004619837441156</p>
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Class- IV

Mathematics (Class-IV)

<i>Learning Outcomes</i>	<i>Resource(s)</i>	<i>Week-wise Suggestive Activities (to be guided by Parents with the help of teachers)</i>

<p>Child-</p> <ul style="list-style-type: none"> • acquires understanding about shapes around her/him. • identifies shapes that can be used for tiling • makes cube/ cuboids using the given nets • shows through paper folding/ paper cutting, ink blots, etc. the concept of symmetry by reflection • draws top view, front view and side view of simple objects 	<p>NCERT/State developed Textbook</p> <p>Building with Bricks</p> <p>These theme aims at developing an understanding on various themes which include patterns made up of different shapes, properties of cuboids, volume of cuboid, and idea of large numbers integrated with daily life usage.</p>	<p>WEEK-1</p> <ol style="list-style-type: none"> 1. Provide opportunities to the student to explore her/his surroundings to see patterns in tiles on walls, floors etc. This will help student in making an understanding of how different shapes, specially the cuboidal bricks, are arranged to form various patterns etc. <p>WEEK-2</p> <ol style="list-style-type: none"> 1. Make a net of cuboid by taking a cardboard sheet. To make a cuboid of length 15cm, breadth 8cm, and height 6cm: <p>Step1: Draw a rectangle of length 46cm and breadth 14 cm, and divide it into smaller rectangles as shown in Fig.1.</p> <div style="text-align: center; margin: 20px 0;"> <p>46 cm</p> <p>20 cm</p> <p>15cm 8cm 15cm 8cm</p> </div> <p>Step 2: Cut out the two yellow boxes of dimensions 8cm X 8cm to obtain the final structure as depicted in Fig. 2</p>
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		<p>Cut the border and fold to join the end by a tape or gum. You get the shape of a cuboid.</p>  <p>8cm 15cm 6cm</p> <p>Make many such cuboids. Now conduct activities with these as given in the text books.</p> <p>WEEK-3</p> <ol style="list-style-type: none"> 1. Later the student may be asked to arrange the bricks so that they get designs of <i>Jaali</i> and the floor. 2. Engage children in finding the volume of a cuboid by multiplying its sides. <p>e-content https://diksha.gov.in/play/collection/do_312937229886611456142?contentType=TextBook&contentId=do_3129365167850291201160 </p>
<ul style="list-style-type: none"> estimates the length of an object/ distance between two locations, weight of various objects, volume of liquid, etc., and verifies them by actual measurement 	<p>Chapter 2: Long and Short</p>	<p>WEEK-4</p> <ol style="list-style-type: none"> 1. Measurement of length and distances is a skill which is essential for all problem solving in life. 2. Engage the student in estimating lengths and compare them. There are many situations in a student's experiences to do so. For example comparing the heights of different family members, friends and various objects like window, doors. etc. Can an almirah be taken inside a room through a door? Let the student make an estimate and then measure to compare. 3. Let the student use the known units like meter and centimeter to measure lengths and compare them. 4. Engage the student in measuring a distance in meters and then in centimetres. Later let them compare and find how many centimetres make a

		<p>meter. Some children may have the idea that there are 100 centimeters in a meter.</p> <p>5. Applications of decimal number operations are also seen prominently while dealing with measurement of length and distances. Like addition and subtraction of lengths and distances. For example a cloth piece of length 4m 75cm is there out of which 2m15cm is used to make a shirt, what is the length of the cloth piece left?</p> <p>6. Finding total length of a cycling track or a jogging track of rectangular shape, etc.</p>
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<i>Learning outcomes</i>	<i>Resource(s)</i>	<i>Week-wise suggestive activities (to be guided by parents with the help of teachers)</i>
<p>The learner</p> <ul style="list-style-type: none"> solves problem involving daily life situations related to length, distance, weight, volume and time involving four basic arithmetic operations converts metre into centimetres and vice-versa applies operations of numbers in daily life multiplies 2 and 3 digit numbers 	<p>NCERT Textbook Math Magic IV</p> <p>Chapter 2 Long and Short</p> <p>Chapter 3 A trip to Bhopal</p> <p>Chapter 4 Tick-Tick-Tick</p> <p>Chapter 5 The way the world looks</p> <p>Chapter 11</p>	<p>Week 5</p> <p>Theme Measurement of length and distance (Standard Units)</p> <p>Activity: Make your own scale: Ask the child to make a scale on the wall and then measure the heights of the family members and to note down the heights in their notebooks. They may also be asked to calculate the difference between your height and your mother's height, and other family members.</p> <ul style="list-style-type: none"> Ask them to find things that are of one centimetre length in their toys or in their

<ul style="list-style-type: none"> divides a number by another number using different methods like pictorially (by drawing dots), equal grouping or repeated subtraction and by using inter-relationship between division and multiplication creates and solves simple real life situations/ problems including money, length, mass and capacity by using the four operations 	<p>Tables and Shares</p> <p>https://diksha.gov.in/play/collection/do_312937229886611456142?contentType=TextBook&contentId=do_3129365168602644481129</p> <p>QR codes content related to these chapters available on NROER</p>	<p>room. Let them first estimate and then actually measure and finally arrange them from shortest to longest</p> <ul style="list-style-type: none"> Children can also make a one meter-long measuring tape to measure circular things, encourage the child to measure as many things at home which are within their reach. Ask children to observe that while writing the distances generally a dot is placed between metre and centimetre measure. For example, 2m35cm is generally written as 2.35 m. Note that now only meters are written along the number. Children can use the internet to find the world records for the longest jump or the highest jump and try to estimate how long/high it would be by drawing on the floor. Children can also be asked to make the longest jump possible and measure it in metre and centimetre compared with their siblings' jump or the world record holder. The children may be given the idea that 1000 metres are equal to one kilometer by taking them for a walk in the park. Once the children have some idea with kilometers, they may be asked to estimate how many kilometers is their home from school, market or a friend's home.
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		<ul style="list-style-type: none"> The child may also be engaged to solve problems, like, “If there are 2 objects of length 120 cm and 1 metre 30 centimetre, then the length of which object is more and by how much?” , “Sunita bought 9.75 metre of cloth. She used 2.30 metre from it. How much cloth is left?” <p>e-content</p> <ul style="list-style-type: none"> https://diksha.gov.in/play/collection/do_312937229886611456142?contentType=TextBook&contentId=do_3129365168409067521124 https://diksha.gov.in/play/collection/do_313002932773634048188?contentType=TextBook&contentId=do_31277094556440985611727 <p>Week 6</p> <p>Theme Problem solving in daily life</p> <ul style="list-style-type: none"> Provide opportunities to the child to explore where math and mathematical calculations are used in her/his everyday life. For example, if 200 gm of flour is used in making one cupcake, how much flour is used for making 12 such cupcakes, using repeated addition. Activity: Making bill The parent may ask the child to make an inventory of the groceries bought at home. Ask the child to note down the prices of the items and the number of items purchased. Then the parent may ask the child to calculate the total of the bill. In this activity the child will use multiplication to calculate the price of one item multiple times and then add the prices to obtain the total price. Let the child calculate using any method they want. Ask them how are they adding the numbers of the list, How are they calculating for 12 packets when cost of one is known etc. Provide the child with situational problems which can be solved by applying the basic number operation- addition and subtraction. The child must understand in which situation/problem which operation could be used. Also, help the child to find out different ways of solving a particular problem. Encourage the child to create contextual questions based on mathematical statements, e.g., the statement $25 - 10 = 15$ may trigger different questions from different children. A child may create: “I had 25 apples, ten were eaten. How many apples are still left?”
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Week 7**Theme**

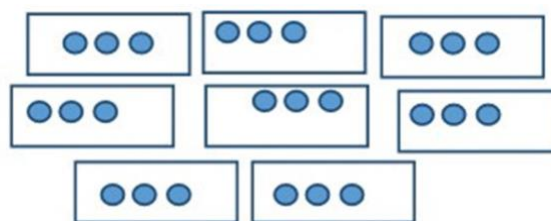
Multiplication and construction of multiplication Tables

- Encourage the child to explore and write multiplication facts through various ways like skip counting, extending patterns, etc., that they have learnt in earlier classes. For example, for developing a multiplication table of 3, children could use either skip counting or repetitive addition. Provide the child with a number of real life examples which implies multiplication.
- Encourage the child to do multiplication in different ways. For example, to expand the two digit number and multiply, 23 multiplied by 6 could be solved as follows:
 $23 \times 6 = (20 + 3) \times 6 = 20 \times 6 + 3 \times 6$
 $120 + 18 = 138$
- Further the parent may discuss and evolve standard algorithms for multiplication.
- Give more practice to children to multiply two digit numbers.


Week 8**Theme**

Division

- Encourage the child to observe that division is dividing a collection into equal groups. For example, $24 \div 3$ means to find how many groups of 3 can be there in 24 or how many 3's make 24? This could be done by giving the child 24 beads or coins and asking them to divide the beads into groups of 3 and then asking them to observe how many groups of 3 are there.



		<ul style="list-style-type: none"> Let the students explore the concept of division. Give them opportunities to use their knowledge of division in situations like dividing chapatis equally among the family members, etc. Provide the child with a bunch of word problems that involves division, like, "How will you equally divide 50 sweets among 5 members of the family?" In life situations division also occurs with a different context i.e. $24 \div 3$ means to find how many items in a group will be there if 24 objects are divided equally in 3 groups? Ask the child to frame such problems and solve them. For example 12 bananas are to be given equally to three monkeys, how many will each monkey get? Once the child is familiar with this type of problem, increase the complexity of the problem like- "Can you equally divide 49 sweets among 5 members of the family? Will any family member be left with only 4 sweets? What if there are 51 sweets, how will you divide then?" Encourage the child to think of some situations of her/his own and make statement problems. <p>Week 9</p> <p>Theme Division (continued) and its relationship with multiplication.</p> <ul style="list-style-type: none"> Division by subtraction is another way of performing division. Help the child to get familiar with both the division methods i.e. division by subtraction and division using groups. Encourage the child to perform division by repeated subtraction. For example, to divide 24 by 3, provide the child with 24 beads or any other similar objects and then ask them to first form a group of 3 and move it away i.e. <p> $24 - 3 = 21$ $24 - 3 - 3 = 18$ $24 - 3 - 3 - 3 = 15$ $24 - 3 - 3 - 3 - 3 = 12$ $24 - 3 - 3 - 3 - 3 - 3 = 9$ $24 - 3 - 3 - 3 - 3 - 3 - 3 = 6$ $24 - 3 - 3 - 3 - 3 - 3 - 3 - 3 = 3$ $24 - 3 - 3 - 3 - 3 - 3 - 3 - 3 - 3 = 0$ </p> <ul style="list-style-type: none"> Now ask the child to identify how many groups of 3 did they subtract?
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		<ul style="list-style-type: none">• This is equal to $24 \div 3$ which is 8.• Once the child is familiar with the concept, the parent may ask to find similarities between the two ways of division.• Provide the child with word problems involving division, like, "If there are 84 people invited to a party and on each table 12 people can sit, then how many tables are required for the party?" Children can take the help of visual representations initially.• If instead of 84, 89 people come to the party, then how many people will not get a table to sit? What if instead of 12, only 6 people can sit on one table, then how many tables will be required for 84 people?", etc• Encouraging children to observe the relationship between multiplication and division, For instance, consider 8 beads, <div></div> <table><tr><th>Multiplication</th><th>Division</th></tr><tr><td>2 groups of 4 equals 8</td><td>8 divided by 2 equals 4</td></tr><tr><td>4 groups of 2 equals 8</td><td>8 divided by 4 equals 2</td></tr></table> <p>Ask the child to develop division facts for each of the given multiplication facts. One is done for you:</p> <div><div>$9 \times 8 = 72$</div><div>$72 \div 8 = 9$</div><div>$72 \div 9 = 8$</div></div> <div>$10 \times 7 = 70$</div> <div>$12 \times 8 = 96$</div> <p>Let children do a lot of such practice.</p> <p>Week 10</p> <p>Theme</p> <p>Reading Time and Calculating Time Interval</p> <ul style="list-style-type: none">• A discussion could be carried out about a clock with the child. This will help the child to get accustomed to various features and vocabulary of a clock and find answers to the questions like: What do the numbers 1 to 12 show? What do the hands on the clock show? How much an hour hand moves in an hour, quarter day, half day and full day?, etc.	Multiplication	Division	2 groups of 4 equals 8	8 divided by 2 equals 4	4 groups of 2 equals 8	8 divided by 4 equals 2
Multiplication	Division							
2 groups of 4 equals 8	8 divided by 2 equals 4							
4 groups of 2 equals 8	8 divided by 4 equals 2							
<ul style="list-style-type: none">• telltime from the clock in hours and minutes and expresses the time in a.m. and p.m.• calculates time intervals/ duration of familiar daily life events by using forward or backward counting/ addition and subtraction								

<ul style="list-style-type: none"> draws top view, front view and side view of simple objects 		<ul style="list-style-type: none"> The parent may discuss the hour hand and minute hand with the child. The parent may ask the child to show a particular time on the clock by moving the hour and minute hand of the clock. Provide enough practice to read time on a clock and then encourage them to write. Ask the child to note the time of sunrise and sunset from the newspaper. Familiarise the child with 24-hour clock and why is it widely used. For calculating the time interval the parent may discuss the child's favorite activity like- for how many minutes do you watch cartoons? At what time did the cartoon start? At what time the cartoon ends? What is the time duration that you watch cartoons? Encourage the child to talk about how she calculates the time lapsed in an event. Talk about different strategies: Is it by counting forward or using subtraction/ addition? Activity: The child will enjoy doing activities to see all the things they can do in one minute. So the parent may give them challenges which they have to complete in any particular time. Observing activities at home will give her/him a sense of time. For example for how much time one can hold breath? For how much time one can keep standing on one leg?, etc. <p>e-content</p> <p>https://diksha.gov.in/play/collection/do_313002932773634048188?contentType=TextBook&contentId=do_31277094573316505611939</p> <p>https://diksha.gov.in/play/collection/do_313002932773634048188?contentType=TextBook&contentId=do_31287142598506086411549</p> <p>https://diksha.gov.in/play/collection/do_312937229886611456142?contentType=TextBook&contentId=do_3129365168982671361161</p> <p>Week 11</p> <p>Theme</p> <p>Reading calendar</p> <ul style="list-style-type: none"> Ask the child to observe and study the calendar note the days in a month, number of weeks in a month/in a year, leap year, etc.
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- Let children explore the pattern in the number of days in each month and how days are associated with dates in a month, etc.
- Carry out a discussion with the child involving reading a calendar. Ask her/him questions like- What month is going on? When is your birthday? After how many days or months will your birthday arrive? Engage children in calculation in months, weeks and days.
- Carry out discussion with them about at what interval new electricity or water bills are generated.
- Ask children to observe the date of manufacturing and best before time and calculate the expiry date or the shelf life of different things.
- Help the child to calculate the number of holidays they have in a whole year including all vacations.

Week 12

Theme: Different Views of an object

- The parent may ask the child to look at various objects from different viewpoints and ask them to make a drawing of the view. For example, a glass may look differently from the front, side and top.
- The parent may ask questions like, 'But how would our house look from the top?' Or 'how it would look like from below?' Encourage the child to use his visualisation to think about different views of different objects which he cannot view practically.
- The parent may carry out discussion on how things look differently in shape and size when you see it from different views and distances.
- The parent may further talk about how things look different from different angles and encourage them to draw the shapes. This will help the child to improve her/his spatial understanding and visualisation skills.
- Help the child to construct maps from his house to his school or his friends' house.
- Let them observe the differences between pictures of an object and a map. Like a picture may look different from different views but a map looks the same.
- Young children tend to think of directions like left, right front etc. in absolute terms. It is important for the development of spatial

		<p>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.</p> <ul style="list-style-type: none"> • Discuss about the google maps with children considering the top view of a locality and try to locate the roads and intersections. <p>e-content</p> <p>https://diksha.gov.in/play/collection/do_312937229886611456142?contentType=TextBook&contentId=do_3129365169400954881130</p> <p>https://diksha.gov.in/play/collection/do_313002932773634048188?contentType=TextBook&contentId=do_31277094607831859211728</p>
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Class-V

Mathematics (Class-V)

<i>Learning Outcomes</i>	<i>Resource</i>	<i>Week-wise Suggestive Activities (to be guided by Parents with the help of teachers) (to be guided by Parents)</i>
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<p>Child -</p> <ul style="list-style-type: none"> reads and writes numbers bigger than 1000 being used in her/his surroundings 	<p>NCERT book/State Textbook</p>	<p>WEEK-1</p> <p><i>Reading of large numbers:</i></p> <p>Get the context of large numbers from newspapers and ask the student to read the numbers</p> <p>Some new terminology like Lakh, Crore, Arab, etc or Thousands, Million, Trillion, etc. may come to the student's knowledge while reading these numbers. Discuss with them the interrelationship in both the Indian and International system of numeration.</p> <p>For example, the total number of corona infected persons in each country and the total number in the world.</p> <p>Money allocated to various activities in the national budget for 2020-21</p> <p>Textbooks may also have such numbers</p> <p><i>Writing of large numbers</i></p> <p>Let the student write large numbers in both Indian and International system. The two activities may be of writing numbers in words and then numeral for the same and vice-versa first reading a numeral and writing in words.</p> <p>WEEK-2</p> <p>Expanding numbers in different ways.</p> <p>Engage the student in describing large numbers in terms of number of thousands, lakhs, etc.</p> <p>For example like 12 lakh as</p> $10,00,000 + 2,00,000$ $12,00,000 = 5,00,000 + 5,00,000 + 2,00,000$ <p>Engaging the student in finding the number of 2000/500 rupee notes to make a certain amount</p>
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<ul style="list-style-type: none"> performs four basic arithmetic operations on numbers beyond 1000 by an understanding of place value of numbers divides a given number by another number using standard algorithms 		<p>WEEK-3</p> <p>The student can be engaged in addition and subtraction of numbers from daily life context. For example, a person donated ₹1,26,000 and another person from the same family donated ₹4,25,000, what is the total amount they both donated?</p> <p>Similarly, if a person wants to buy a car that costs ₹25,03,756, and he/she has only ₹18,00,000 the rest he/she has to get loan from a bank. What is the amount he/she will have to have as a loan?</p> <p>Reading and comparing different rate charts and bills for a purchase is a good opportunity to apply and learn operations on numbers.</p> <p>Contexts related to division of large numbers are often available in every student's life. Avail those contexts, and ask the student to develop their own strategies to solve such problems. For example, to divide 9450 by 25, divide 9000 by 25, 400 by 25, and finally 50 by 25 and gets the answer by adding all these quotients.</p>
<ul style="list-style-type: none"> estimates sum, difference, product and quotient of numbers and verifies the same using different strategies like using standard algorithms or breaking a number and then using operation. 	Chapter: The Fish tail	<p>WEEK-4</p> <p>For any problem solving involving operations numbers estimation and verification by actual operation is very important. For example, in a stadium there are 25340 seats and the average price of each seat is ₹ 1480, what is the total amount collected, if all seats have been sold? In such a case a better estimate can be made by multiplying 25000 by 1500 i.e. ₹3,75,00,000 app.</p> <p>e-content_ https://diksha.gov.in/play/collection/do_312981338824802304120?contentType=TextBook&contentId=do_312936528888012800192</p>

<i>Learning outcomes</i>	<i>Resource(s)</i>	<i>Week-wise suggestive activities (to be guided by parents with the help of teachers)</i>
<i>The learner</i> <ul style="list-style-type: none"> explores idea of angles and shapes 	NCERT/State Textbook for Class V	<p>Week 5</p> <p>Theme: Shapes and angles</p>

☞ classifies angles into right angle, acute angle, obtuse angle and represents the same by drawing and tracing

☞ identifies 2D shapes from the immediate environment that have rotation and reflection symmetry like alphabet and shapes










Material Required

- Match sticks/ Toothpicks
- Rubber tubes to join the ends of the match sticks.

Chapter 2 Shapes and angles

- Ask the child to observe a shape and tell if the given shape is closed or open. Random shapes can be drawn on paper or paper cut-outs of various shapes can also be used.
- Any shape can be shown to the child and ask how many sides the shape have. Simple shapes can be drawn on paper or paper cut-outs can be used.
- Ask the child to draw a shape of a particular number of sides. For example, a child can be asked to draw a shape with four sides. In this case, a child can draw a square or rectangle, etc.

Activity 1: Ask the child to take three or more sticks and join them end to end by rubber tubes. These shapes (and other shapes) can be used for the above purpose

<ul style="list-style-type: none"> acquires understanding about fractions – finds the number corresponding to part of a collection – identifies and forms equivalent fractions of a given fraction <p> expresses a given fraction $\frac{1}{2}$, $\frac{1}{4}$, $\frac{1}{5}$ in decimal notation and vice-versa. For example, in using units of length and money</p> <p> half of Rs. 10 is Rs. 5 – converts fractions into decimals and vice versa</p>	<p>Chapter 3 How many squares?</p> <p>Chapter 4 Parts and wholes</p> <p>Chapter 5 Does it look the same?</p> <p>Chapter 7 Can you see the pattern?</p> <p>QR codes content related to these chapters available on NROER</p>	<div style="text-align: center;">     </div> <p>Conduct the following discussion related to the above shapes.</p> <p> Which of the shapes are closed?</p> <p> Which are open?</p> <p> How many sides does each shape have?</p> <p>Activity 2: A random shape can be drawn on a paper or paper cut-outs can be used. Ask the child to mark all the angles he/she can identify in the shape. Let children explore angles made by doors while opening /closing, hand of clock, different body positions while exercising/Yoga etc.</p> <p>Activity 3: Give the child some matchsticks. Ask the child to make a particular shape using a particular number of matchsticks. For example, ask the child to make 8 triangles using 6 matchsticks only. OR Ask the child to make 5 squares with 12 matchsticks, etc.</p> <p>e-content</p> <p>https://diksha.gov.in/play/collection/do_312981338824802304120?contentType=TextBook&contentId=do_3129768014220574721693</p>
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- identifies the pattern in triangular number and square number

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Week 6

Theme: Measurement of angles

Activity 1: Make different shapes using match sticks/toothpicks and rubber tubes. Now ask the child to observe the angles made by two adjoining sticks. How many angles are there in a triangular shape? How many angles will be there in a closed shape made up of six sticks? Make an estimate and then verify by actually forming the shape.

- Ask the child to observe the angles made by opening/closing of doors, angles made by the wall with the ceiling, etc.
- Show the child an angle and ask him/her to first tell if the angle is acute, obtuse, or right angle.

Activity 2: Making an Angle Tester. Cut two strips from a cardboard sheet. Fix them with a drawing pin such that both the strips can move around easily. Use this tester to check the measure of the angle.



- Engage the child to guess the measure of the angle.
- Further ask the child to use a protractor to verify if his guess of the angle was correct.
- Ask the child to make a right angle, acute angle, obtuse angle, etc., with his hands and even in the yoga postures.
- Further ask the child to make a square, circle, rectangle, etc., with his/her finger and to justify the shape made by him/her.

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Week 7

Theme: Perimeter

- Make a dot grid on a paper. Ask the child to make as many rectangles as he/she can using the dots of the grid.
- Further, ask the child to shade the largest rectangle that he made in the grid. Ask the child to tell why a particular rectangle is largest. (Note: A square is also a rectangle)
- Now ask the child to shade the rectangle that has the largest boundary.
- Ask the child to measure the boundary using a thread or by counting the sides of the squares at the boundary.

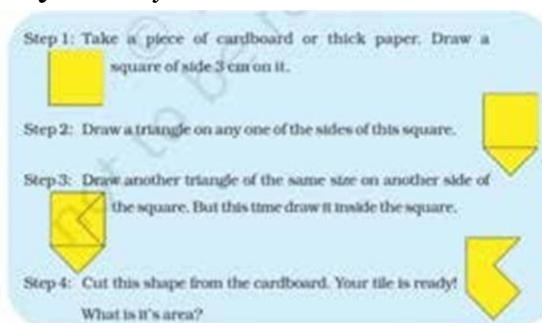
		<ul style="list-style-type: none"> • Let the child now understand that the measure of the boundary of a closed shape is called its perimeter. • The child can also be asked to find the perimeter of any object using a thread. For example, ask the child to find the perimeter of the cover page of his notebook, etc. • Engage the child in finding the perimeter of bed, room and other objects in his/her vicinity. These objects may also include the objects whose boundary cannot be measured by a straight edge/ruler. • Ask the child to arrange 7 squares in different ways. Then ask the child which combination would give minimum perimeter and which combination would give maximum perimeter. <p>Week 8</p> <p>Theme: Area</p> <p>Activity 1: Make a dot grid. Ask the child to make as many rectangles as he/she can using the dots of the grid. (Note: A square is also a rectangle)</p> <ul style="list-style-type: none"> • Now, ask the child to shade the biggest rectangle that he made in the grid. Now ask the child to count the number of squares that are enclosed in the biggest rectangle. From here the concept of area can be introduced to the child as the measure of the region bounded by a closed shape on a surface. <p>Activity 2: Take a graph paper and trace different objects/ handspan of different family members, etc., on the graph paper and ask the child to estimate the area of the given shape using the grid by counting the squares.</p> <p>Activity 3: Make a square grid on a sheet of paper. Ask the child to make as many shapes as he can make by shading say, exactly 7 squares. Then ask them to find the perimeter of each shape. Help them observe that the area remains the same but the perimeter may vary. Find which of the shapes drawn with the same area has the largest perimeter.</p> <ul style="list-style-type: none"> • Estimate and then calculate the area of different currency notes using a graph paper or a 1x1 square grid. <p>https://diksha.gov.in/play/collection/do_312981338824802304120?contentType=Text-Book&contentId=do_312936528936443904189</p> <p>https://diksha.gov.in/play/collection/do_312981338824802304120?contentType=Text-Book&contentId=do_3129365291898388481129</p>
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Week 9

Theme: Patterns and tiling

- The child already has an idea about patterns of shapes seen on floors, walls, pavements, pedestrian paths etc.
- They have also studied in earlier classes about the shapes or combinations of shapes that can be used as tiles to fill a given region completely without overlapping and leaving gaps. Encourage children to make tiling patterns firstly with regular shapes then with a combination of regular shapes and ultimately with irregular shapes.

Activity: Make your own tile.



- Children can make patterns using motifs/objects/designs/alphabets by rotating them at different angles like half turn, one-fourth turn, full turn, etc., clockwise or anticlockwise.
- The children can be given patterns and asked to verbalise rules behind the pattern and extend them. Many such examples are given in the text books.
- Rules can be given to the child for the construction of patterns and asked to extend it on the basis of the rule.
- Patterns can also be used for introduction of degree of rotational symmetry. For example, given a shape you have to turn it to 45 degrees (half of a quarter turn) each time until you get the same shape again.
- Also give examples of patterns which are breaking a rule and ask them to identify it. For example, in the pattern 4, 9, 16, 25, 50, 64 find the number that is wrongly written.
- The purpose of playing with patterns should be the skill of generalisation. The child should be able to predict what will come at say 50th position or 115th position, etc.

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Week 10

Theme: Fractions

- Engage the child to draw flags of different countries. Ask her/him to observe and estimate the fraction of area covered by a particular color in the flag. Ask her/him to notice in how many parts the flag is divided? Are the parts equally divided? How many parts are there in that flag, what part of the whole is represented by each part. Ask the child to write it in the form of fractions.
- Activity: Making Magic Top: Take a cardboard piece. Draw a circle of radius 3 cm and cut it out. Divide the circle into 8 equal parts. Now each part is $\frac{1}{8}$ th of the circle. Colour $\frac{2}{8}$ th red, $\frac{1}{8}$ th orange, $\frac{1}{8}$ th yellow, etc., as shown. Push a matchstick through the centre of the circle and spin it like a top.



- Divide different shapes into equal parts in many different ways. Name each part. For example, if the shape is divided into six equal parts then each part will be called one-sixth of the whole shape. On shading four parts out of six the shaded region will be called four-sixths of the whole shape.
- The child can make different pattern drawings like given a 4x4 grid you have to color $\frac{2}{8}$ th white, $\frac{1}{8}$ th black, $\frac{1}{8}$ th red.
- Usage of fractions as an operator on numbers in different contexts- $\frac{1}{8}$ th of a group of 16 people, cut $\frac{1}{2}$ of a meter, color $\frac{1}{3}$ rd of the hats red, half a kg of tomatoes and calculating the number.

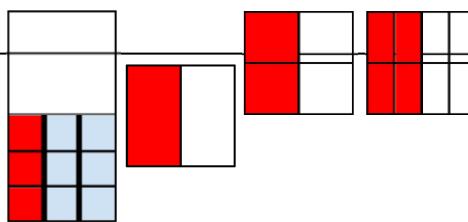
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Week 11

Theme: Equivalent fractions

Activity: Making Equivalent fraction chart

- Take four origami sheets (make sure they are of the same size).
- Fold the paper in two equal parts and make a crease on the first sheet.



3. Ask the child to shade $\frac{1}{2}$ part of this sheet.
4. Make creases on the second sheet such that it is divided into 4 equal parts. Ask the child to shade $\frac{2}{4}$ part of this sheet.
5. Make creases on the third sheet such that it is divided into 8 equal parts. Ask the child to shade $\frac{4}{8}$ part of this sheet.
6. Make creases on the fourth sheet such that it is divided into 9 equal parts. Ask the child to shade $\frac{3}{9}$ part of this sheet.
7. Now keep all the four sheets with each other and ask the child if the shaded portion in each is the same but named differently. The fraction that shows the same part of a whole are called equivalent fractions. From here it should be explained that the first three sheets look the same because they are equivalent fractions and the fourth sheet looks different because it represents a different fraction (i.e., $\frac{3}{9} = \frac{1}{3}$ which is not equivalent to $\frac{1}{2} = \frac{2}{4} = \frac{4}{8}$).

👁 Similarly, the relationships can be constructed with equivalent fractions by folding a chapati. For example, divide the chapati into two equal parts ($\frac{1}{2}$ each). Take one part and further divide it into two equal parts (we will get $\frac{1}{4}$ th). Now ask the child to observe how many $\frac{1}{4}$ ths make half a chapati so two $\frac{1}{4}$ ths make half a chapati, so $\frac{1}{2} = \frac{2}{4}$ and so on.

- After the understanding about equivalent fractions children should be motivated to construct a rule to get equivalent fractions.

Week 12

Theme: Rotational Symmetry

Activity: Origami

- Make different shapes using origami paper. A windmill, a dog, cat, boat or any shape can be made. You can surf the internet to see how it can be made. Make two copies of the shape for comparison.
- Now keep one copy of the shape on the left and the other on the right.
- Keep the left shape stationary and rotate only the right shape.

		<ul style="list-style-type: none"> • Rotate the right shape at different angles - 90 degree, 120 degree, 180 degree. • On rotating the right shape at every angle, ask the child if the left and the right shapes still look the same. • The same activity can be repeated with the cut-outs of different numbers and alphabets also. • Check the blades of a ceiling fan. They look the same on rotating three times about its center. There are many such shapes who look the same more than once while rotating about their centers in a complete round. Such shapes are said to have rotational symmetry. • The number of times an object looks the same while rotated in a round is called order of rotational symmetry. For example the order of rotational symmetry of a ceiling fan is three. • The child can be asked to check the rotational symmetry of different alphabet, shapes of triangles, squares, rectangles, circle etc. Find the order of rotational symmetry of different objects in your house like a plate, table top, book cover etc. <p>https://diksha.gov.in/play/collection/do_312981338824802304120?contentType=TextBook&contentId=do_31298027738623180811</p>
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Mathematics (Class VI)

Learning Outcomes	Source/Resources	Week-wise Suggestive Activities (to be guided by Parents with the help of teachers)
The learner <ul style="list-style-type: none"> □ solves problems involving large numbers by applying appropriate operations (addition, subtraction, multiplication and division) □ recognises and appreciates (through patterns) the broad classification of numbers 	NCERT/State <i>Mathematics</i> Textbook for Class VI Themes-KNOWING OUR NUMBERS Theme: WHOLE NUMBERS Theme: PLAYING WITH NUMBERS E-resources- 1) Knowing our numbers https://nroer.gov.in/55ab34ff81fccb4f1d806025/file/5b48692316b51c01ed5615a9 https://nroer.gov.in/55ab34ff81fccb4f1d806025/file/5b48692316b51c01ed5615a9	WEEK 1 <ul style="list-style-type: none"> □ Discussion may be initiated about numbers which students have already studied in Primary classes. The learners may be sent some questions about numbers and may be asked to respond online. For example, what happens to the number 4537 if the digits 3 and 4 are interchanged? Will it increase or decrease? By how much? Why? □ Learners may be encouraged to quote daily life examples in support of their answers. □ Projects may be assigned to learners in which they would be required to measure /weigh objects in their house like measure edge of a table, edge of a window etc. Find ways to weigh a pile of books/newspapers, etc. and compare the measures, and send their observations to the teacher and to each other. WEEK 2

<p>numbers as even, odd, prime, co-prime</p>	<p>https://nroer.gov.in/5ab34ff81fccb4f1d806025/file/5b486a5316b51c01ee9b1005</p> <p>https://nroer.gov.in/5ab34ff81fccb4f1d806025/file/5b486b0d16b51c01ec8b1833</p> <p>https://nroer.gov.in/5ab34ff81fccb4f1d806025/file/5b486bdb16b51c01ec8b1836</p> <p>https://nroer.gov.in/5ab34ff81fccb4f1d806025/file/5b486cb816b51c01ed5615af</p> <p>https://nroer.gov.in/5ab34ff81fccb4f1d8060</p>	<p>own problems besides solving problems from the exercises.</p> <p>□ Learners may be given questions in which they would be drawn towards observing things around them. For example, give five situations around you where the number of things would be in more than 4 digit numbers. (one of them could be the number of learners in a school)</p> <p>□ Learners may be asked to perform activities from <i>Laboratory Manual for Elementary Stage</i> (Class VI- Activity 1-6) available on NCERT website. The activities can be done using paper and learners may send their observations to the teachers online. Results may be shared with all.</p> <p>□ For innovative problems <i>Exemplar Problem Book</i> for Class VI may be referred to, which is available on NCERT website.</p>
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	<p>25/file/5b4704f116b51c01f24a38ae</p> <p>https://nroer.gov.in/5ab34ff81fccb4f1d806025/file/5b47038916b51c01f4bd714b</p> <p>https://nroer.gov.in/5ab34ff81fccb4f1d806025/file/5b47006416b51c01f38e85fb</p> <p>Whole numbers https://nroer.gov.in/5ab34ff81fccb4f1d806025/file/5834db4616b51c7b700a7626 (video in Hindi)</p> <p>Playing with numbers https://nroer.gov.in/5ab34ff81fccb4f1d806025/file/5b484e6016b51c01f8f25d18</p> <p>https://nroer.gov.in/5ab34ff81fccb4f1d806025/file/5b484f4f16b51c01f8f25d1a</p> <p>https://nroer.gov.in/5ab34ff81fccb4f1d806025/file/5b47224716b51c01f24a546f</p> <p>https://nroer.gov.in/5ab34ff81fccb4f1d806025/file/583503f116b51c7b700a77b2 (video in Hindi)</p> <p>Books published by The Association of Mathematics Teachers of India (AMTI)</p> <p>Email- support@amtionline.com</p>	<p>WEEK 3</p> <ul style="list-style-type: none"> <input type="checkbox"/> The next chapter of 'Whole Numbers' may now be discussed on the same lines. <input type="checkbox"/> Children may be given questions where they would be required to think and discuss things like: <i>Is it true that Whole numbers are not closed under subtraction. Why or Why not? Subtraction is not commutative for Whole numbers. Justify giving examples.</i> <input type="checkbox"/> E-resources on NROER may be used to get a better understanding of the concepts. <input type="checkbox"/> Teachers may also use NISHTHA module for a better understanding of the transactional strategies. <p>WEEK 4</p> <ul style="list-style-type: none"> <input type="checkbox"/> The activities of Week 3 may be continued. <input type="checkbox"/> After observing the comments sent by students, the teacher may assess them and give appropriate feedback. <input type="checkbox"/> Some open ended questions that may be thought of are: <ul style="list-style-type: none"> <input type="checkbox"/> <i>For which of the operations the Whole numbers are closed</i> <input type="checkbox"/> <i>/commutative/associative/ distribute?</i> <input type="checkbox"/> <i>If the perimeter of a rectangle is 24 units, what can be the possible lengths and breadths?</i> <input type="checkbox"/> <i>Fill in the blanks $\underline{\hspace{1cm}} - \underline{\hspace{1cm}} = 7$.</i> <input type="checkbox"/> <i>Give some one digit numbers like 1,2,3,4 (Different groups of numbers may be given to different groups). Ask them to form two 2-digit numbers from these (without repeating the digits) such that the sum of these two numbers formed is largest/smallest. Ask the learners to compare the different sums obtained and decide which sum is largest/smallest. Under what condition of placement of digits, it was possible?</i> <input type="checkbox"/> <i>Learners may be asked to form magic squares of different magic sums. (Information about magic squares is available in the books of The Association of Mathematics Teachers of India.)</i>
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Mathematics (Class VII)

Learning Outcomes	Sources/Resources	Week-wise Suggestive Activities (to be guided by Parents with the help of teachers)
<p>The learner multiplies /divides two integers. interprets the division and multiplication of fractions uses algorithms to multiply and divide fractions /decimals.</p>	<p>NCERT /State <i>Mathematics</i> textbook for Class VII</p> <p>Chapter 1: INTEGERS</p> <p>Chapter 2: FRACTIONS AND DECIMALS</p> <p>E-resources: Integers https://nroer.gov.in/55ab34ff81fccb4f1d806025/file/5b583b8a16b51c01cccebeb0</p> <p>https://nroer.gov.in/55ab34ff81fccb4f1d806025/file/5d42d0d116b51c0171d33ad5</p> <p>https://nroer.gov.in/55ab34ff81fccb4f1d806025/file/5d42cea016b51c0171d33ab0</p> <p>https://nroer.gov.in/55ab34ff81fccb4f1d806025/file/5b583c6616b51c01cdf01fd</p> <p>https://nroer.gov.in/55ab34ff81fccb4f1d806025/file/58dd3a87472d4a03227bf998</p> <p>Fractions and decimals https://nroer.gov.in/55ab34ff81fccb4f1d806025/file/5850f8494</p>	<p>WEEK 1</p> <ul style="list-style-type: none"> □ The first chapter is about Integers in which multiplication and division of integers is dealt. □ Discussion may be initiated about integers which students have already studied in Class VI. The learners may be sent some questions about integers and may be asked to respond online. □ Different ways of introducing multiplication of integers may be discussed (On the number line, through patterns, etc.) Students may be encouraged to form examples and look for patterns. Teachers and other learners may give their comments. This may continue in Week 2 as well. <p>WEEK 2</p> <ul style="list-style-type: none"> □ Learners may be introduced to properties of multiplication of integers. They may observe the patterns and send their observations to the teacher. Generalisation of the property may then be discussed. □ Exercises from the textbook of <i>Mathematics</i> for Class VII and <i>Exemplar Problem Book</i> for Class VII may be attempted. Learners should send their solutions to the teacher and teacher and other learners may discuss about them. □ Teacher may select appropriate activities from <i>Laboratory Manual for Elementary Stage</i> (Activities 29, 38) in mathematics and ask the learners to perform them and send their observations. Conclusions about the concept can then be drawn after discussion. □ Concept of division of integers can then be discussed on similar lines.

	<p>72d4a9b25a086cc (video in Hindi)</p> <p>https://nroer.gov.in/55ab34ff81fccb4f1d806025/file/5850f8b7472d4a9b25a0875c (video in Hindi)</p> <p>https://nroer.gov.in/55ab34ff81fccb4f1d806025/file/57d9044f16b51c0312a1ef63 (Video in Hindi)</p>	<p>WEEK 3</p> <ul style="list-style-type: none"> □ On similar lines as done in earlier weeks concept of multiplication of fractions can be taken up. <ul style="list-style-type: none"> □ E resources can be used for better visualisation and understanding of concepts. □ While getting comments from learners, teachers may assess understanding of learners about the concepts and plan for an appropriate feedback. <ul style="list-style-type: none"> □ In all the activities learners may be encouraged to draw their inferences and try to justify them through examples. <p>WEEK 4</p> <ul style="list-style-type: none"> □ Concept of division of fractions can then be discussed using activities in the textbook and laboratory manual in mathematics at Elementary stage □ The activities and their online sharing can continue in Week 4. □ Laboratory Manual for Elementary stage (Activities 35,36,37,39,40) □ Learners may be involved in a game which goes as follows: <ul style="list-style-type: none"> ➤ <i>Think of a number</i> ➤ <i>Add 7 to it</i> ➤ <i>Multiply the result obtained by 2</i> ➤ <i>Subtract 4</i> ➤ <i>Find half of the result obtained</i> ➤ <i>Subtract original number.</i> ➤ <i>Learners may tell the number obtained</i> ➤ <i>Discuss the game by changing its rules and try to find how all of them get the same answer under given conditions.</i> □ More such games can be played, but at the end of the game an attempt should be made to discuss about the relation between the conditions of the game and the result obtained. It may lead to understanding of some relation between numbers. The games can be modified for integers/fractions.
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Mathematics (Class- VIII)

Learning Outcomes	Sources	Week-wise Suggestive Activities (to be guided by Parents with the help of teachers)
The learner <ul style="list-style-type: none"> □ generalises properties of addition, subtraction, multiplication and division of rational numbers through patterns □ finds out as many rational numbers as possible between two rational numbers 	<p>NCERT Textbook of <i>Mathematics</i></p> <p>Chapter 1: RATIONAL NUMBERS</p> <p>Chapter 2: LINEAR EQUATIONS IN ONE VARIABLE</p> <p>E-resources: Rational Numbers https://nroer.gov.in/55ab34ff81fccb4f1d806025/file/5b48442816b51c01f8f25cde https://nroer.gov.in/55ab34ff81fccb4f1d806025/file/5b48455716b51c01f6790635 https://nroer.gov.in/55ab34ff81fccb4f1d806025/file/5b48461216b51c01f6790637 https://nroer.gov.in/55ab34ff81fccb4f1d806025/file/5b4846fe16b51c01f6790645 Linear Equations in one variable https://nroer.gov.in/55ab34ff81fccb4f1d806025/file/57c6f4fb16b51c1d3087a63a </p>	<p>WEEK 1</p> <ul style="list-style-type: none"> □ Teacher may initiate discussion about Rational numbers introduced in Class VII by sending some questions to learners. Based on the responses feedback can be given. □ Discussion about the properties of rational numbers can begin by motivating the learners to create and observe the examples. Generalisations can then be discussed. □ Learners may be asked to compile statements related to properties exhibited by numbers under different operations like addition, subtraction, multiplication and division. They may be encouraged to observe how these properties change as the number system extends. Discussion can be held to evolve a general form of such properties. <p>WEEK 2</p> <ul style="list-style-type: none"> □ Use of Exemplar problem book can be done which is available on NCERT website. □ Since learners have learnt decimals in earlier classes, open ended questions of the following form may be discussed. <i>Write those decimal numbers which when rounded off to say second decimal place can give, say, 25.32.</i> Change numbers for different groups and discuss. □ The work of Week 1 may be carried further and textbook of Class VIII may be used which is available on NCERT website. □ Teacher may also look for e resources on NROER and ask the learners to refer to them and send their observations. The observations of all learners may be compiled and discussion about a general form can be initiated. <p>WEEK 3</p> <ul style="list-style-type: none"> □ The other properties of rational numbers may now be discussed □ The work of properties of rational numbers initiated in Week 2 may be carried further in this week and the next week.

		<p>WEEK 4</p> <ul style="list-style-type: none"> <input type="checkbox"/> Learners may be given different linear equations to solve. They may be asked , which of these have solutions that are natural numbers/integers/rational numbers which are not integers. <input type="checkbox"/> they may be asked to form equations which have solutions which are whole numbers/integers/rational numbers which are not integers. <input type="checkbox"/> Games of the following type can be played: <ul style="list-style-type: none"> <input type="checkbox"/> Write a number <input type="checkbox"/> Add 2 to it <input type="checkbox"/> Multiply the resulting number by 3 <input type="checkbox"/> Subtract 3 <input type="checkbox"/> Multiply by 2 <input type="checkbox"/> Find $\frac{1}{6}$ of the resulting number <input type="checkbox"/> Subtract the original number <input type="checkbox"/> Discuss about the answer obtained. Discussion can be made and inference may be sought about the relation between the conditions of the game and the final result. Discuss whether using the variables for the given conditions can make things more clear and if so, how can the conditions be changed to evolve a new set of conditions and a new result. This will help learners to draw a relation between numbers and also how algebra can simplify things. <input type="checkbox"/> Assessment of learners can be done by observing their responses. Appropriate feedback can then be given.
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Mathematics (Class-IX)

Learning Outcomes	Sources/ Resources	Week-wise Suggestive Activities (to be guided by teachers/parents)
<p>The learner</p> <ul style="list-style-type: none"> applies logical reasoning in classifying real numbers, proving their different properties and using them in different situations. 	<p>NCERT/State Mathematics</p> <p>Textbook</p> <p>Chapter 1: NUMBER SYSTEMS</p>	<p>WEEK 1</p> <ul style="list-style-type: none"> Discussion through emails/Whatsapp can be held about rational numbers which may include encouraging students to send contexts in which they have used rational numbers. The students can frame questions, such as, how many rational numbers are there between say, 2 and 3, etc., and can send it to each other. They can refer the exemplar problem book in mathematics for Class VIII, which is available on the NCERT website. The teachers can also encourage students to pose problems from these online books and also the e resources for Class VIII available on NROER. <p>WEEK 2</p> <ul style="list-style-type: none"> The teachers can give some rational numbers to be converted to decimal forms. <p>The difference between the forms of different rational decimal</p>

		<p>numbers should be asked to students.</p> <ul style="list-style-type: none"> • The students may also be encouraged to make different decimal expansions for themselves. The different decimal numbers can then be discussed to evolve the concept of irrational numbers. The textbook for Class IX is also available on the NCERT website and can be used during online discussions. <p>WEEK 3</p> <ul style="list-style-type: none"> • One suggested activity: Teachers may send one context to the students where irrational numbers are used. Students may be encouraged to provide more such contexts. • A discussion about the properties of rational and irrational numbers may be held. • Exercises from the textbook and Exemplar problem book of Class IX (available on the NCERT website) can be done. Teachers can ask students to do activities on the concepts discussed using the Laboratory manual (available on the NCERT website) (Activities 1, 2) for secondary stage. These need to be sent online and their logic explained. • Assessment of students can be done by observing their responses. Appropriate feedback can then be given. <p>WEEK 4</p> <p>The work of Week 3 may be carried further in this week.</p>
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Mathematics (Class-X)

Learning Outcome	Sources/ Resources	Week wise activities (to be guided by parents)
<p>The learner</p> <p>generalises properties of numbers and relations among them studied earlier to evolve results, such as, Euclid's division algorithm, Fundamental Theorem of Arithmetic and applies them to solve problems related to real life contexts.</p>	<p>NCERT/State Textbook Mathematics Chapter 1: Rational Numbers</p>	<p>WEEK 1</p> <ul style="list-style-type: none"> The teacher may engage students by sending them different decimal numbers and asking them to distinguish between rational and irrational numbers. Students have to justify their answer. Whatsapp groups or emails can be used for this interaction. The teacher may send contexts in which HCF and LCM are used. She may ask students to send some more such contexts. <p>WEEK 2</p> <ul style="list-style-type: none"> The statements of the definitions and theorems in the chapter need to be discussed. The proofs of the theorems should be discussed. Students should try to send their views and analyses. <p>WEEK 3</p> <ul style="list-style-type: none"> Using the already learnt methods of representing real numbers on the number line students may be encouraged to locate numbers like \sqrt{x}, where x is a decimal number, on the number line and justify the method mathematically. Students may be sent different groups of numbers such as 2, $2\frac{1}{2}$, $2\frac{3}{2}$, $2\frac{5}{2}$, etc., and asked to arrange them in ascending or descending order. They should be encouraged to justify it. <p>WEEK 4</p> <ul style="list-style-type: none"> Exercises from Chapter 1 of the textbook, problems from exemplar problem book for Class X and activities from Laboratory manual (Activity 1) for secondary stage may be discussed. All this material is available on the NCERT website. E-resources related to this topic can be seen on NROER. Assessment of students can be done by observing their responses. Appropriate feedback can then be given.

MATHEMATICS (CLASSES XI-XII)

Mathematics (Class XI)

Learning Outcomes	Sources/ Resources	Suggested Activities (to be guided by teachers)
<p>The learner</p> <ul style="list-style-type: none"> develops the idea of Set from the earlier learnt concepts in Number System, geometry, etc. identifies relations between different sets. 	<p>NCERT Textbook (NCERT Textbook for Class XI)</p> <p>Theme 1-Sets Theme-2 Relations and Functions</p> <p>E-resources- Link for textbook/ Laboratory Manual/Exemplar problem book— ncert.nic.in – publications--- PDF (I to XII); ncert.nic.in – publications--- Exemplar problems; ncert.nic.in – publications--- science laboratory manuals</p> <p>(Other mentioned at the bottom)</p>	<p>WEEK 1</p> <ul style="list-style-type: none"> The discussion about sets can begin by asking learners to send lists of collections of objects around them, for example, on a table, in a room, etc. The meaning of well-defined collections can then be discussed. Collections that do not form sets may also be discussed, such as, collection of best mathematicians in the world. The discussion may now shift to collections of mathematical objects like collection of Natural numbers, collection of shapes with three/four sides, solutions of equations, collection of big numbers etc. Learners should be motivated to generate many such collections. The concept of Set can then evolve after getting online responses from Learners. Formal symbolism related to sets can then be discussed. For e.g. set of Natural numbers is denoted by N, etc. <p>WEEK 2</p> <ul style="list-style-type: none"> Different Sets may be formed, and Learners may be encouraged to observe the relationships between these sets. They may search and send those sets whose elements are also present in another set. For example, all elements of N (natural numbers) are present in W (whole numbers), etc. The concept of subsets and related notions can then be discussed. Use of Venn diagrams for visual representations of sets can be explored and discussed. Learners may be encouraged to refer to the e-resources available on NROER related to sets. The learners may be motivated to extend the analogy of operating upon numbers by way of different operations to that of operating on sets by way of their union, intersections, etc. Teachers may encourage Learners to attempt exercises and circulate among other Learners. The group members may discuss the questions through emails/mobiles and get their queries resolved.

		<ul style="list-style-type: none"> Activities (Activity 1 to 4) relevant to Sets from the Laboratory Manual of Class XI, available online may be done by the learners and shared with the other learners. After every activity they should write what they learnt from that activity. Exemplar Problem Book which is available on the NCERT website can be used to solve and discuss more problems for getting a better idea of the concept of Sets and their applications. Assessment of Learners can be done by observing their responses. Appropriate feedback can then be given. <p>WEEK 3</p> <ul style="list-style-type: none"> Learners may be asked to send a list of relations that they observe in their day-to-day life. For e.g. Relation between mother and children, relation between teacher and Learners etc. This list can be compiled and sent to all the Learners online for their comments. This list can now be extended to mathematical objects for which Learners need to apply their previously learnt knowledge of numbers, geometrical objects, etc. The idea of ordered pairs can then evolve initially from daily life examples and then from mathematical objects. The relevance of sets can then be discussed and concept of relations can then evolve after understanding the importance of relation between objects. Teachers may encourage Learners to attempt exercises and circulate among other Learners. The group members may discuss the questions through emails/mobiles and get their queries resolved. Particular cases for relations can be seen and conditions can be discussed leading to the concept of Functions. <p>WEEK 4</p> <ul style="list-style-type: none"> Different notions like Domain, Range, co-domain of functions may then be discussed. Learners may be motivated to form a function and show these mathematical objects. After learners send their examples of functions teacher may change their domain or co-domain and ask whether it still remains a function or not. For example, $f: R_+ \rightarrow R$ such that, $f(x) = \sqrt{x}$ is function, but will it remain a function if co-domain R is replaced by N? Many such examples may be sent by the teacher. Also, learners
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		<p>may be encouraged to form such examples and send to other learners. In this way a live interaction can take place.</p> <ul style="list-style-type: none">• Learners may be encouraged to sketch graphs of functions. After constructing the graph of a function, they may be encouraged to comment on its nature. Activities (Activity 5 to 6) relevant to Relations and Functions from the Laboratory Manual of Class XI, available online may be done by the learners and shared with the other learners.• Exemplar Problem Book which is available on the NCERT website can be used to solve and discuss more problems for getting a better idea of the concept of Sets.• Assessment of learners can be done by observing their responses. Appropriate feedback can then be given.• Learners may be encouraged to use e-resources related to relations and functions available on the NROER website.
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Mathematics (Class XII)

Learning Outcomes	Sources/ Resources	Suggested Activities (to be guided by teachers)
The learner <ul style="list-style-type: none"> identifies different types of relations and functions. explores the values of different inverse trigonometric functions. 	NCERT Textbook (for Class XII) Theme 1 Relations and Functions Theme-2 Inverse Trigonometric Functions E-resources Link for textbook/Laboratory Manual/Exemplar problem book— ncert.nic.in – publications---PDF (I to XII); ncert.nic.in – publications---Exemplar problems; ncert.nic.in – publications---science laboratory manuals (Other mentioned at the bottom)	WEEK 1 <ul style="list-style-type: none"> Learners may be given different examples of relations including reflexive, symmetric and transitive and may be asked to differentiate between them. Note that at this juncture the types of different relations should be evolved by the students and not to be told by teachers on the group. Learners after observing the relations should send their comments to the teacher. The discussion on these comments should lead to different types of relations. The concept of equivalence relations can then be discussed. Learners should create examples of such relations and crosscheck their correctness. Exercises in the textbook and exemplar problem book for Class XII may be discussed. This will help in deepening the understanding of concepts. WEEK 2 <ul style="list-style-type: none"> Similar activities as done in Week 1 for relations may be done for the concept of function. WEEK 3 <ul style="list-style-type: none"> Trigonometric functions on different domains <small>May 20, 2017</small> may comment on which domain the trigonometric function is one-one and onto, one-one or simply onto. The exchange of ideas can lead to the concept of inverse trigonometric functions. Learners may be motivated to make decisions and give reasons for that. This will ensure their involvement in the process of learning. Learners may trace curves for the inverse trigonometric functions in the e resources available on NROER and comment on their nature. Questions may be put to them like what graph can be seen if the domain of $\cos^{-1} x$ is restricted to $(-1, 1)$? Students may download the open source software, GeoGebra and try exploring the graphs of different functions including trigonometric functions.

		<p>WEEK 4</p> <ul style="list-style-type: none"> • Problems from textbook for Class XII and Exemplar Problem Book may then be discussed. The generation and sharing of ideas will clarify the concepts and Learners will become confident in posing and solving problems. • E-resources will help in visualising the concepts better.
<p><i>E-resources that include Geogebra</i></p> <p>Class XI</p> <p>https://nroer.gov.in/CIET%2C%20NCERT/video/details/55ddc14781fccb28d8d932a8?nav_li=55b1f72181fccb7926fe5451,55b1f73981fccb7926fe5523,55b1f73981fccb7926fe5526</p> <p>Class XII</p> <p>https://nroer.gov.in/CIET%2C%20NCERT/topic_details/55b1f73a81fccb7926fe552b?nav_li=55b1f72181fccb7926fe5451,55b1f73981fccb7926fe5523,55b1f73a81fccb7926fe552b</p>		

