

One day Rani went to a painter



After a while the painter showed her picture



The painter tried to cheat Rani

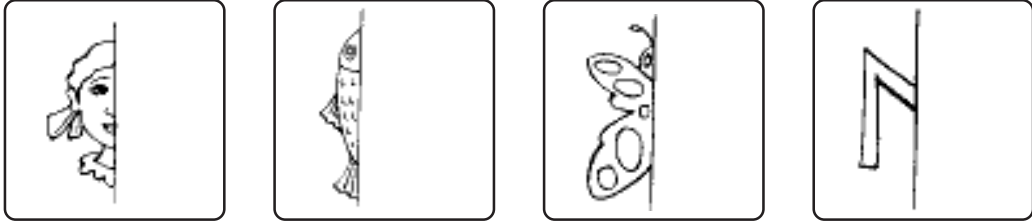


Rani out smarted the painter



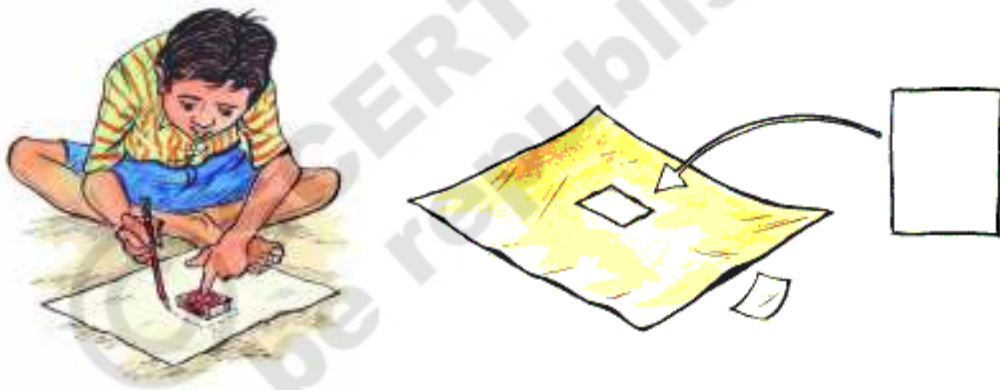
### Activity-1

Take a mirror, put it on the line. Observe the full picture.



### Activity-2

Take a match-box. Put it on a paper. Trace and cut it as shown in the picture.



Fold it such that one half covers the other half.

Did you and your classmates fold the paper in the same way? You will find that the paper can be folded in various ways.



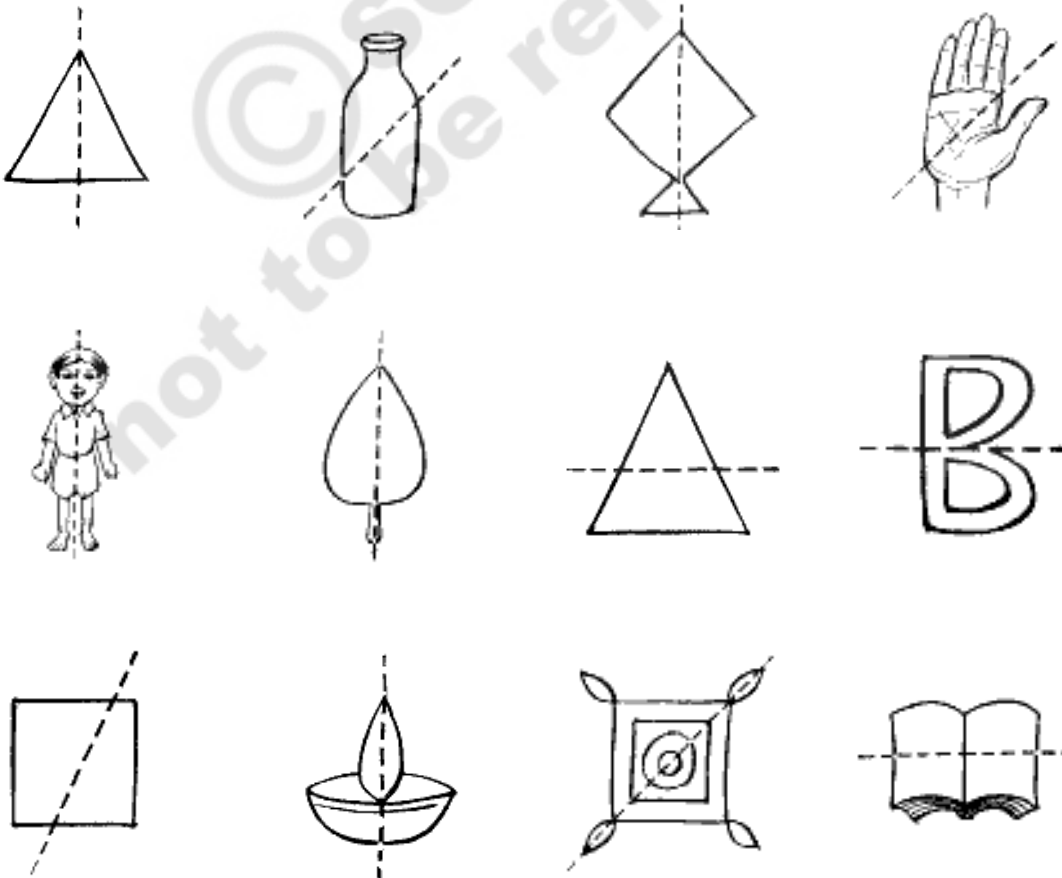
Put a mirror on the line in each picture. What do you see in the mirror?

## Do This

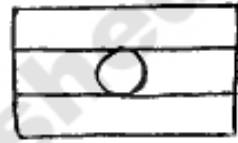
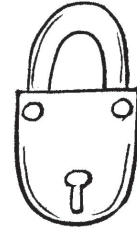
1. Take a match-box, chalk-box and a glass. Trace it in your notebook and cut the piece. Fold it to make it into exactly equal halves. Colour one half, put a mirror and observe the full coloured images.
2. Use a mirror to see the full picture. Then complete the picture and colour it.



3. Look at the pictures given below. Does the line divide it the pictures into two equal halves? Tick (✓) the correct ones.

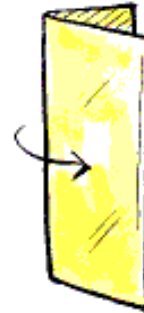


4. Look at the pictures given below. Can you divide them into two equal halves. Draw a line if they can be.



### Activity-3

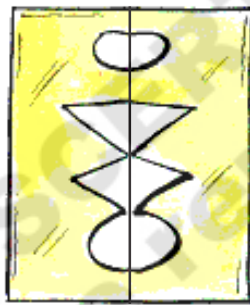
Take a sheet of paper. Fold it into half.



Cut it as you like, along the folded side.



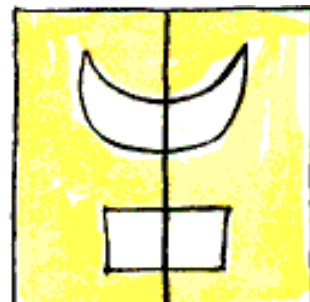
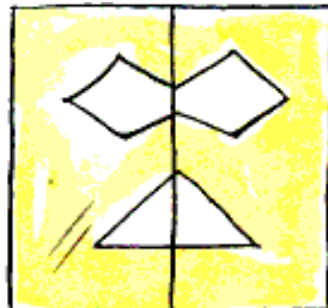
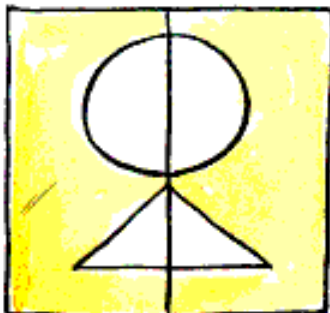
Unfold the paper.



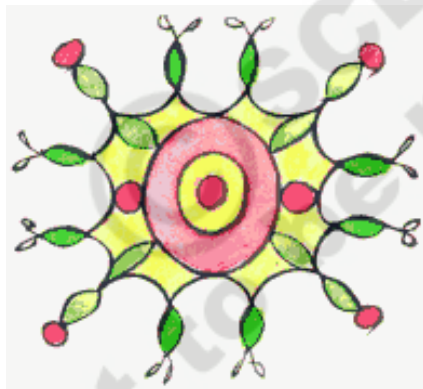
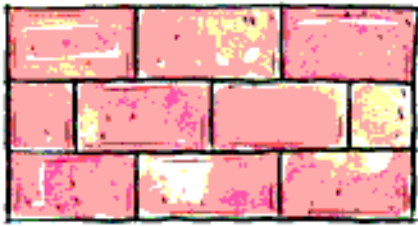
Do the two halves look similar?

### Try These

1. Try to make the following paper cuttings.



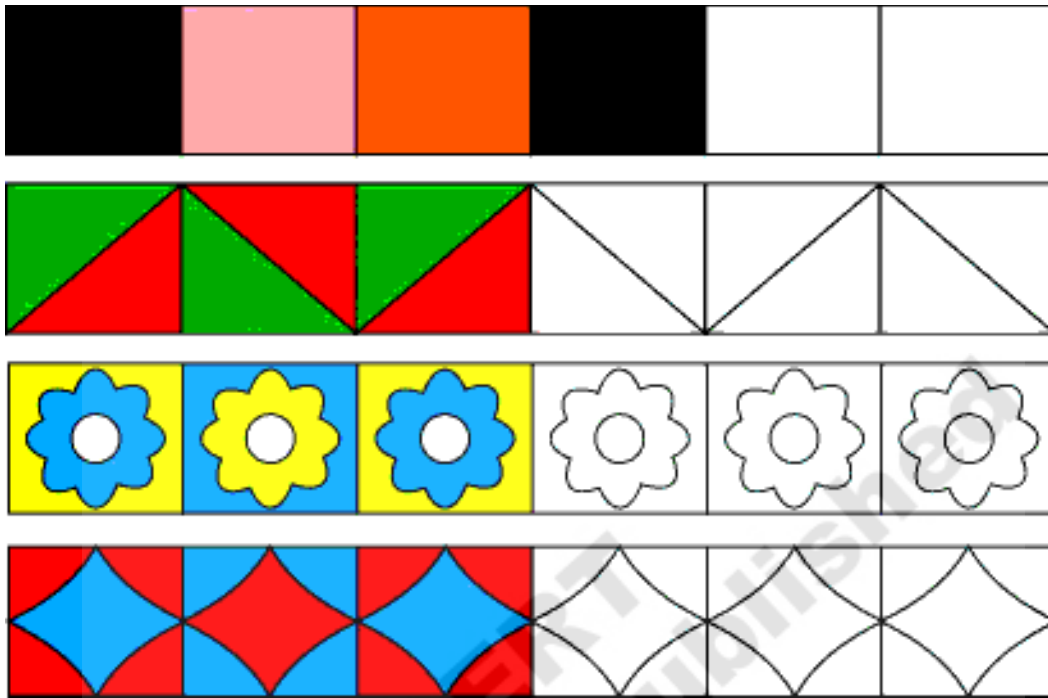
2. Look around you. Have you observed these patterns in your surroundings?



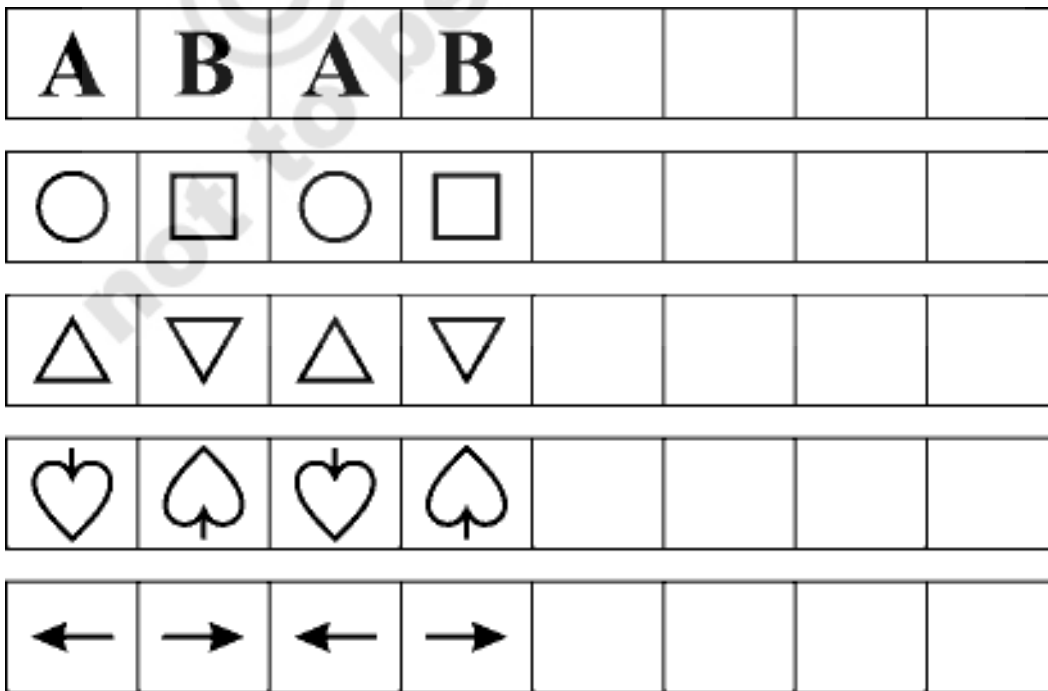
3. Draw any pattern which you have seen in your surroundings.

A large empty rectangular box for drawing a pattern.

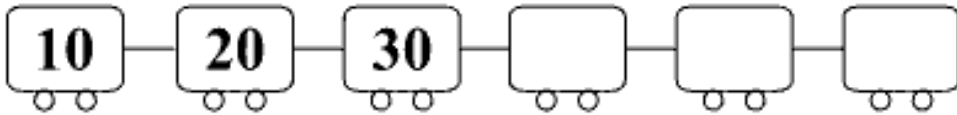
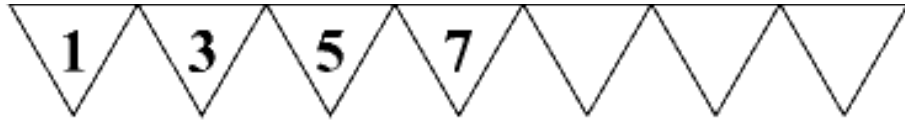
4. Look at the patterns given below and colour the next boxes.



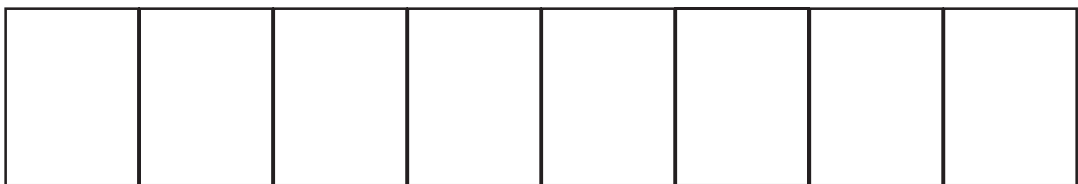
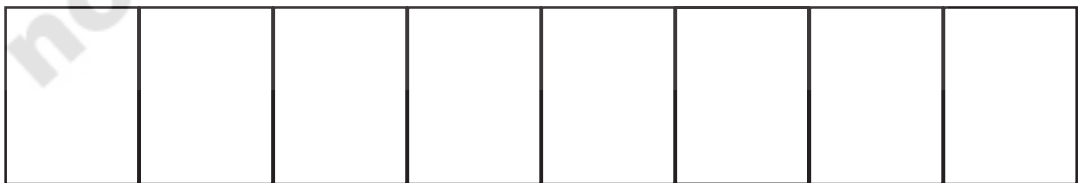
5. Look at the patterns given below and fill the next boxes.



6. Complete the patterns.



7. Make your own pattern.





## INSTRUCTIONS TO TEACHERS

### *(General and Pedagogic Instructions)*

- ☞ This text book is prepared as per the syllabus and academic standards conceived by Mathematics position paper of Andhra Pradesh State Curriculum Framework - 2011 (APSCF-2011). and instructions of Right to Education Act - 2009 (RTE - 2009).
- ☞ This text book is formed by chapters with cocepts like Numbers, four operations on numbers (Addition, Subtraction, Multiplication and Division), Geometrical concepts, Measurements, Datahandling etc.
- ☞ Situations, examples, games, activities etc in daily life are taken into consideration in the formation of these 12 chapters.
- ☞ We should strive to achieve “Academic Standards”, by making every child to participate in the activities in the textbook by understanding the concepts.
- ☞ This textbook is prepared to achieve skills like conceptual understanding, problem solving, reasoning proof, correcting errors, forming new problems, solving problems in different ways and the concepts are reinforced by the respective concepts in the previous class.
- ☞ The pictures, examples and daily life situations are given in the textbook to understand clearly the concepts to solve problems systematically and to think logically to give reasons.
- ☞ The pictures in exercises are given in the textbooks sothat the child can understand them easily by observing them and respond to the questions.
- ☞ Exercises of “Try these” or “Try this” are given to know how far the child has understood concepts, problem solving and how he is responding. Similarly “Do this” exercises are given extensively after completion of two or three concepts in a chapter.
- ☞ The exercises given in this text book enable the students not only to understand the conscepts but also practice them with ease. As such, the children should be made to solve them in the text book only to the maximum extent. Whenever, they are not possible children should be made to work in the note book.
- ☞ The Teacher should prepare his own problems related to the concept besides solving the problems in the textbook. More over the teacher should encourage the student to prepare problems on his own.
- ☞ The teacher should collect TLM related to the concepts and activities given in the textbook and make the students to use them and participate in every activity effectively.
- ☞ The teacher should read and understand the concepts and problems those are given in the textbook thoroughly in the begining. Try to solve all the problems which are given in the textbook.

- ☞ At the end of this textbook, Syllabus and Academic standards of 3rd class mathematics are given. The teacher should read and understand them and should strive to achieve them through effective teaching learning processes.
- ☞ The teacher should keep in mind that whenever the academic standards prescribed for each chapter are achieved by children, then only he/she has to feel that the syllabus is completed. Mere completion of the syllabus will not serve any purpose.
- ☞ Instructions are given for each chapter separately, besides the above general instructions. Read them thoroughly and understand logical sequence of the chapters to convey better subject to the student.

## 1. SHAPES AND SPATIAL UNDERSTANDING

- ♣ Introducing different perspectives of objects from different sides.
- ♣ Identifying the pictures of objects in different perspectives and drawing them.
- ♣ Drawing different shapes by tracing the objects which are used in daily life.
- ♣ Identifying shapes in a net of a cuboid by opening objects like match box, book etc in cuboid shapes.
- ♣ Forming different shapes like square, rectangle, triangle by playing with match sticks. Identifying shapes in Rangoli.
- ♣ Tiling with squares, rectangle and triangle. forming different types of tiling. Tiling with circles which forms with gaps.
- ♣ Making paper boats, rockets, etc. by folding of papers. In this chapter, students understand the shapes of square, rectangle, triangle and circle by different activities in daily life used objects. They identify these shapes by enjoying while playing.

## 2. NUMBERS

- ♣ Reading and writing the 3-digit numbers by counting objects in Hundreds, Tens and Ones.
- ♣ Understanding the sequence of numbers upto 999.
- ♣ Estimating the objects in groups upto 50.
- ♣ Identifying the digits in a given number and explaining it in terms of value of digits.
- ♣ Identifying the before number and the after number of a given number and the middle number between two given numbers upto 999.
- ♣ Understanding expanded form of a number and short form of an expanded form of numbers upto 999.
- ♣ Comparing the numbers upto 999. Writing ascending and descending orders of given numbers. using  $<$ ,  $>$  and  $=$  symbols to compare numbers.
- ♣ Rounding the given number in 10's and 100's.
- ♣ Writing 2-digit or 3digit numbers by given digits and compare them without repetition of digits.

## 3. ADDITION

- ♣ Understanding the concept of addition by 'joining' and by 'combining' activities.
- ♣ Able to solve addition problems by 'joining' and by 'combining' objects.

- ♣ Adding the numbers horizontally and vertically with carry forward and without carry forward with result not more than 999.
- ♣ Giving reasoning proofs to the answers in addition and explaining it.
- ♣ Estimating the sum of two numbers.
- ♣ Identifying errors and correcting mistakes in addition problems
- ♣ Applying the concept of addition in situations arising in daily life situations
- ♣ Solving the problems with addition in different ways.
- ♣ Solving the problems by reading stories and pictures on his own

#### 4. **SUBTRACTION**

- ♣ Understanding the concept of subtraction by activities of “eliminating”, by “remaining” and by “summation”.
- ♣ Solving the problems by understanding the concept by “separating objects from given total and remaining objects”, by “Decreasing from given total” and by “Comparing two quantities and difference of them”.
- ♣ Solving the subtraction problems arising in above three solutions by horizontal and vertical methods with borrowing and without borrowing.
- ♣ Giving reasoning proof to the answers in subtraction problems
- ♣ Estimating “difference” in between two given numbers.
- ♣ Identifying errors and correcting mistakes in subtraction problems.
- ♣ Applying the concepts in “subtraction” in daily life situations
- ♣ Solving the subtraction problems in stories and pictures by reading them on his own.

#### 5. **USING ADDITION AND SUBTRACTION**

- ♣ Understanding the relation between processes of addition and subtraction.
- ♣ Verifying the subtraction problems with addition.
- ♣ Solving the addition and subtraction problems by reading the information given in the tables.
- ♣ Identifying the patterns of numbers with addition and subtraction completing the patterns and forming new patterns.
- ♣ Forming new problems with the concepts of addition and subtraction.
- ♣ Solving addition and subtraction problems in stories and pictures by reading them on his own.

#### 6. **MULTIPLICATION**

- ♣ Identifying similar groups with same number of objects.
- ♣ Forming the groups with same number of objects.
- ♣ Adding the number of objects in groups with same number of objects.
- ♣ Introducing multiplication by above three concepts.

- ♣ Understanding multiplication in situations 1) grouping increasing at the rate of 2) Array of objects in rows and columns.
- ♣ Communicating the above three concepts of multiplication in mathematical language.
- ♣ Writing tables from 2 to 10 by repeated addition.
- ♣ Identifying errors in solutions of multiplication problems and correcting the mistakes.
- ♣ Giving reasoning proof to the answers of problems of multiplication.
- ♣ Understanding the multiplication properties of '0' and '1'.
- ♣ Multiplying 2-digit number by single digit number and verifying the answer.
- ♣ Solving the problems arising concept of multiplication in daily life situations.

## 7. ***DIVISION***

- ♣ Understanding the concept of division in situations "Dividing into groups with same number of objects" and "sharing equally".
- ♣ Understanding the terms involved in "Division" ("Divisor", "Dividend", "Quotient" and "Remainder").
- ♣ Expressing situations of division in mathematical language.
- ♣ Identify errors in the process of division and correcting the mistakes in it.
- ♣ Giving reasoning proof for the answers in division problems.
- ♣ Solving the division problems by division algorithm.
- ♣ Understanding the relation between multiplication and division.
- ♣ Solving the division problems which occur in daily life situations.

## 8. ***MEASUREMENT***

- ♣ Measuring the objects by non-standard units and estimating measurements.
- ♣ Appreciating the need for standard units.
- ♣ Knowing that the scale is used to measure the length in centimeters.
- ♣ Measuring the lengths of objects and comparing them.
- ♣ Understanding the concept of "Capacity" of containers and identifying the vessels which hold more liquid.
- ♣ Measuring capacity of a container by another container and expressing capacity of a container in terms of capacity of another container.
- ♣ Solving problems related to capacity of containers in non-standard units.
- ♣ Appreciating need for standard unit of capacity and Understanding concept of "Litre".
- ♣ Understanding conservation of capacity and appreciating the property.
- ♣ Measuring the weights of objects in terms of "kg".
- ♣ Comparing the objects according to their weights.
- ♣ Estimating the weight of an object in terms of "kg".
- ♣ Solving problems related to weight in terms of "kg".

## 9. TIME

- ♣ Identifying chronological order of a daily life activities in a day.
- ♣ Comparing the events with time intervals.
- ♣ Reading clock and expressing time in “Hours”.
- ♣ Solving the problems related to time in “Hours”.
- ♣ Solving the problems, when any two of “Starting time”, “Duration” and “Ending time” are given, then finding the third one.
- ♣ Identifying the chronological order of days in a week.
- ♣ Identifying the names of months in a year and understanding chronological order of them.
- ♣ Reading the calendar. Identifying months and dates with days.
- ♣ Comparing months with their number of days in them.
- ♣ Identifying the magical relations in numbers of a month in a calendar.

## 10. DAY TO DAY MATHEMATICS

- ♣ Identifying the situations in daily life in which mathematical operations are needed.
- ♣ Applying the concepts in four fundamental operations in the situations arise in daily life.
- ♣ Relating the concept of money with other concepts of length, weight, capacity and solving problems.
- ♣ Solving problems related to money and preparing rate charts.

## 11. DATA HANDLING

- ♣ Collecting data from various resources in daily life.
- ♣ Arranging the collected data in a particular order.
- ♣ Analyse the arranged data and come to a conclusion.
- ♣ Makes grouped data by using tally marks and classify it.
- ♣ Representing the data by pictogram.

## 12. PATTERNS

- ♣ Identifies the similar objects and patterns in them in daily life.
- ♣ Sorting the objects which are symmetrical and non-symmetrical.
- ♣ Identifying the axis of symmetry to divide them into two halves. Drawing axis of symmetry.
- ♣ Making, symmetrical shapes by folding papers and by cutting papers.
- ♣ Identifying patterns in lines and geometrical shapes. Understanding and completing the pattern.
- ♣ Understanding the patterns with numbers and letters. Completing the pattern.

# SYLLABUS

## 1. SHAPES AND SPATIAL UNDERSTANDING

- Draws intuitively the plane, elevation and side view, top view, front view of simple (knowing) objects.
- Study of the net of a cuboid and its shape.
- Creates shapes using other shapes.
- Creates shapes through paper folding, paper cutting and understood intuitively.
- Identifies 2-D shapes (square, rectangle, triangle, circle).
- Makes shapes using straight lines and curves.
- Tiles, a given region using a tile of a given shape.
- Distinguishes between shapes that tile and that do not tile.
- Traces circle, rectangle, square using with different objects.

## 2. NUMBERS

- Reads and writes 3-digit numbers.
- Understands place value in 3-digit numbers.
- Expands a number using place values.
- Counts in different ways (starting from any number).
- Compares numbers.
- Forms greatest and smallest numbers using given digits.

## 3 to 5. ADDITION, SUBTRACTION & USING ADDITION AND SUBTRACTION

- Adds and subtracts numbers by writing them vertically in the following two cases: without regrouping, with regrouping.
- Uses the place value in standard algorithm of addition and subtraction.
- Horizontal Addition and subtraction.
- Solves addition and subtraction problems in different situations presented through pictures and stories.
- Frame problems for addition and subtraction facts.

- Estimates the sum and difference of two given numbers.
- Adds and subtracts single digit numbers and two digit numbers mentally.
- Doubles two digit numbers mentally (result not exceeding two digits).

## 6. MULTIPLICATION

- Explains the meaning of multiplication (as repeated addition).
- Identifies and uses the sign of multiplication.
- Constructs the multiplication tables of 2, 3, 4, 5 and 10.
- Uses multiplication facts in situations.
- Construct tables for 6, 7, 8, 9.
- Multiplies two digit numbers by single digit number using standard algorithm and Lattice multiplication algorithm.

## 7. DIVISION

- Explains the meaning of division from context of equal grouping and sharing.
- Relates division with multiplication.
- Completes division facts (Double digit by single digit) : by repeated subtraction, by grouping, by using multiplication tables.

## 8. MEASUREMENT (Length, Weight, Capacity)

### Length

- Appreciates the need for a standard unit.
- Measures length using appropriate standard units of length by choosing centimeters.
- Estimates the length of given object in standard units and verifies by measuring.
- Uses a scale.

### Weight

- Weighs objects using 1kg.
- Appreciates the conservation of weight.

## Capacity

- Measures and compares the capacity of different containers in terms of a litre.
- Appreciates the conservation of capacity.

## 9. TIME

- Reads a calendar to find a particular day and date.
- Reads the time correct to the hour.
- Sequences the events chronologically.

## 10. DAY TO DAY MATHS

### (Money, length, weight, capacity and time)

- Adds and subtracts amounts using column addition, and subtraction with and without regrouping.
- Makes rate charts (upto ₹ 999) bills.
- Solving problems involving money, length, weight, time and capacity.

## 11. DATA HANDLING

- Records data using tally marks.
- Collects the data and represents in terms of pictograph choosing appropriate scale and unit for display through pictographs.
- Draw conclusions from the data by discussing with the teacher.

## 12. PATTERNS

- Identify simple symmetrical shapes and patterns.
- Make patterns and designs from straight lines and other geometrical shapes.
- Partitions a number in different ways (only 2 partitions).
- Identify patterns in his surroundings.
- Identify patterns in multiplication tables of 2, 5, and 10.



## ACADEMIC STANDARDS

Content	Problem Solving	Reasoning Proof	Communication	Connections	Representation
<b>Numbers operations (addition, subtraction, multiplication and division)</b>	<ul style="list-style-type: none"> <li>Counts from any number by using groups as 100s, 10s, ones.</li> <li>Can complete given sequence of numbers up to 999.</li> <li>Able to find the sum of two numbers by joining, combining by grouping, regrouping up to 999.</li> <li>Demonstrates the understanding of the addition, subtraction of the numbers horizontally, vertically up to 3 digit numbers.</li> <li>Can multiply two digit numbers with one digit number.</li> <li>Solves the problems on division (divisor is single digit, without remainder).</li> </ul>	<ul style="list-style-type: none"> <li>Estimates the number of objects in a group upto 50.</li> <li>Compares the numbers upto 999 based on place value.</li> <li>Can write the given numbers in ascending, descending orders.</li> <li>Can form the greatest and smallest two digit and three digit numbers with, and without; repetition of given digits.</li> <li>Determines the reasonableness of calculated answers in addition, subtraction.</li> <li>Creates patterns using numbers involving addition and subtraction upto 50.</li> <li>Identifies errors in solving addition, subtraction and multiplication.</li> </ul>	<ul style="list-style-type: none"> <li>Able to read and write 3 digit numbers.</li> <li>Comparing any 3 digit numbers using symbols <math>&lt;</math>, <math>&gt;</math>, <math>=</math>.</li> <li>Round the numbers upto the nearest 10s and 100s.</li> </ul>	<ul style="list-style-type: none"> <li>Applies addition, subtraction, simple multiplication in dialy life situation.</li> <li>Uses three digit numbers (school strength, purchasing articles, pay of workers, etc)</li> </ul>	<ul style="list-style-type: none"> <li>Represents the numbers up to 999 as numbers using cubical blocks</li> </ul>

Content	Problem Solving	Reasoning Proof	Communication	Connections	Representation
<b>Shapes and Spatial understanding</b>	<ul style="list-style-type: none"> <li>• Sorts objects using characteristics of shapes.</li> <li>• Identify the object by observing different view.</li> <li>• Identify basic 2-D shapes like square, rectangle, triangle and circle.</li> <li>• Distinguishes between the shapes that tile and do not tile.</li> <li>• Identifies objects for tracing circles, rectangle, squares.</li> </ul>	<ul style="list-style-type: none"> <li>• Can read simple diagrams and maps.</li> <li>• Describes relationship between shapes of cuboids and the net of cuboids.</li> <li>• Able to read halves in a whole.</li> <li>• Gives reasons for tiles of a given region using a given tile shape.</li> </ul>			<ul style="list-style-type: none"> <li>• Can draw 2-D shapes on grid paper.</li> <li>• Can divide in to two halves and represents halves in a whole.</li> <li>• Identify different shapes using different colours in to different shapes.</li> </ul>
<b>Day to day maths (Money, length, weight, capacity, time)</b>	<ul style="list-style-type: none"> <li>• Adds and subtracts amounts without regrouping in written and also mentally.</li> <li>• Prepares rate charts and bills.</li> </ul>			<ul style="list-style-type: none"> <li>• able to do simple problems connecting money with length, weight and daily life situations.</li> </ul>	
<b>Measurement (length, weight capacity)</b>	<ul style="list-style-type: none"> <li>• Measures the lengths using suitable apparatus</li> </ul>	<ul style="list-style-type: none"> <li>• Estimates the length of given objects like table, blackboard etc. in standard units(cm)</li> <li>• Estimates weight, and capacity in standard units</li> </ul>	<ul style="list-style-type: none"> <li>• Identifies need for a standard unit for measuring lengths, capacity, weight</li> </ul>		
<b>Data handling</b>	<ul style="list-style-type: none"> <li>• Collects the suitable data for the tabulating</li> </ul>		<ul style="list-style-type: none"> <li>• Comments on the data</li> </ul>		<ul style="list-style-type: none"> <li>• Represent the data in tabular form</li> </ul>