BIFURCATION OF SYLLABUS (2023-24)
SUBJECT: - MATHEMATICS
CLASS: - VIII

TEXT BOOK – NCERT MATHEMATICS

TERM I	ASSESSMENT	MONTH	WORKING DAYS	CHAPTER	SUB TOPICS	LEARNING OBJECTIVES	ACTIVITY	SYLLABUS COVERAGE
APRIL TO SEPTEMBER	PT-1 **Max M:40** **(Weightage 5 m)**	**April**	**15**	1. **Rational numbers**	Introduction to Rational Numbers	➢ Define rational number, additive and multiplicative identity of rational numbers ➢ Apply the properties of natural numbers, whole numbers and integers with respect to all the arithmetic operations and extend them for rational numbers. ➢ Apply Distributive property of multiplication over addition for rational numbers and simplify a given expression.	Pick and locate rational numbers in the number line.	30% of Term-1.
					Representation of Rational Numbers on the Number Line	➢ Extend the concepts of number line and represent rational number on the number line.		
					Rational Numbers between Two Rational Numbers	➢ Calculate and find rational numbers between any two rational numbers and prove that there are infinite rational numbers between any two given rational numbers.		
				2. Linear equations in one variable	Meaning of Linear Equation in one variable and its solution	➢ Identify the variable(s) and the highest power of the variable in a given algebraic equation and distinguish whether it is a linear equation in one variable or not. ➢ Substitute the given values of variable and verify whether it is the solution of the equation or not.	To solve some linear equation in one variable using paper cut outs.	
					Solving Equations which have Linear Expressions on one Side and Numbers on the other Side	➢ Transpose terms to the other side and solve linear equations which have linear expression on one side and numbers on the other side.		

		June	**15**	**2. Linear equations in one variable (Cont.)**	Applications of Linear Equations with one variable	➢ Write simple contextual problems as linear equations in one variable and find its solution.		
					Solving Equations having the Variable on both Sides	➢ Transpose terms to the other side in order to solve linear equations in one variable which have variable on both sides.		
					Reducing Equations to Simpler Form	➢ Simplify the given linear equation in one variable and solve them.		
					Equations Reducible to the Linear Form	➢ Use cross multiplication and reduce certain equations into their linear form.		
		July	**23**	**3. Understanding quadrilaterals**	Classification of Polygons	➢ List the properties of a polygon in order to classify the given figures as a polygon and the properties of different types of polygons and classify them as regular or irregular, concave or convex.	To design a floor tile pattern using different types of quadrilaterals (ART)- TESSELLATION	
					Angle sum property of polygons	➢ Recall the angle sum property of triangle in order to extend it for quadrilaterals. ➢ Relate the angle sum property of triangle and quadrilateral in order to extend it for an n-sided polygon. ➢ Apply angle sum property of a quadrilateral in order to find the measure of the unknown angle in a given quadrilateral		
					Sum of the Measures of the Exterior Angles of a Polygon	➢ Apply exterior angle property of a polygon in order to find the measure of the unknown angle in a given figure		
					Kind of Quadrilaterals	➢ List the properties of quadrilaterals in order to classify them as trapezium, kite and parallelogram		
					Some special Parallelograms	➢ Discuss the properties of a parallelogram, rhombus, rectangle, square.		
				4. Practical geometry	Constructing a Quadrilateral	➢ Discuss and list the minimum number of elements required in order to construct a unique quadrilateral. ➢ List and execute steps of construction in order to construct a quadrilateral given information	Construction of Quadrilaterals Parallelogram, Rhombus,	

					Some Special Cases	➢ Identify the minimum number of elements required in order to construct special cases of quadrilaterals	Quadrilaterals	
		August	**24**	**5. Data handling**	Looking for Information	➢ Recall the different types of graphical representation (namely pictograph, bar graph and double bar graph) of data in order to represent the given data in the most suitable representation and interpret them	Make a survey in your locality to find the following: **1.** How many old age people are there. **2.** Number of children below 5 years. **3.** Number oF women and men. **4.** Number of CANDIDATES ELIGIBLE FOR VOTING Draw a **Bar Graph** for the above data. Reprsent these data in as a **Pie Chart** and **Histogram** for the marks obtained.	
					Organising raw data	➢ Use tally marks in order to organise the given raw data in a frequency distribution table		
					Grouping data	➢ Use tally marks in order to prepare a grouped frequency distribution table for large ungrouped data ➢ Construct histogram in order to represent the given grouped data and discuss the elements of the given histogram in order to interpret it		
					Circle graph or Pie Chart	➢ List and execute steps of construction in order to construct a circle graph and read a given circle graph in order to infer a variety of information from it		
					Chance and Probability	➢ List all the possible outcomes of an experiment in order to define the equally likely outcomes ➢ List all the possible outcomes of an event in order to calculate the probability of a given event		
				6. Squares and square roots	Properties of Square Numbers	➢ Define perfect squares in order to classify the given numbers as perfect squares or non-perfect squares ➢ Observe the number in order to find the unit place of its square, different number patterns in order to deduce square numbers ➢ Use the rule that there are exactly 2n non-perfect square numbers between the squares of the number n and (n+1) in order to find how many numbers, lie between the squares of the given two consecutive numbers	Calculating square of a given number using pattern and verifying it numerically.	
					Finding the Square of a Number	➢ Use the rule that a perfect square number (n^2) can be written as the sum of first n odd natural numbers in order to distinguish between square and non-square numbers ➢ Use Pythagoras theorem in order to find the Pythagorean triplet		

					Square Roots	➢ Apply inverse operations on a given perfect square in order to deduce square root of this number ➢ Use method of repeated subtraction, prime factorization method and long division method in order to find the square root of the given square number. ➢ Use prime factorization method and long division method in order to find the smallest number to be operated (all the four arithmetic operations) on given number to get a perfect square and then find the square root of the new number		
					Square Roots of Decimals	➢ Use long division method in order to find the square root of the given decimal number		
					Estimating Square Root	➢ Use estimation in order to approximate the value of the square root of the given number to the nearest whole		
				7. Cubes and Cube roots	Cubes	➢ Define perfect cube or cube number and classify the given numbers as cube numbers or non-cube numbers. ➢ Observe the properties of cube numbers. ➢ Use prime factorisation to determine whether the given number is a perfect cube or not and to find the smallest number to be operated (Multiplication or division) on a given number to get a perfect cube.	1. Number Wheel of cubes 2. Cube root clock	
					Cube Roots	➢ Use prime factorisation to find the cube root of a number. ➢ Use estimation and find the cube root of a given perfect cube.		
	PT-2 **Max M:80** **(Weightage 80 m)**	**September**	**22**	**8. Comparing quantities**	Recalling Ratios and Percentages	Convert ratios to percentage in order to solve the given questions	Prepare and analyse budget of a birthday party including the concepts of interest, discount, tax of different items and overall profit.	30+20=50% of Annual Syllabus
					Discount, Profit, Loss	➢ Apply the formula for discount and discount percentage in order to solve the given problem on discount ➢ Calculate the discount in given situations in order to comment whether the seller has made a profit/loss in the given transaction		
					Simple Interest and Compound Interest	➢ Define and compare simple interest and compound interest and calculate the simple interest and compound interest in order to find the total amount to be paid by the debtor		
					Rate Compounded Annually or Half Yearly	➢ Define the terms 'compounded annually', 'compounded half yearly' and 'compounded quarterly' and give examples in order to differentiate between the three		

TERM-2 OCT TO MARCH	**PT-3** **Max M:40** **(Weightage 5 m)**	**October**	**14**	**9. Algebraic expressions and identities**	Introduction	➢ Define algebraic expressions, like and unlike terms. Identify like and unlike terms in algebraic expressions and add or subtract the given algebraic expressions.	Generalisation of identities using colour papers	30% of Term-2
					Classification	➢ Classify algebraic expressions as monomial, binomial, trinomial and polynomial in general.		
					Multiplication	➢ Use rules of exponents and powers and multiply a monomial by monomial. ➢ Use distributive property of multiplication over addition and subtraction to obtain the product of a monomial and a binomial, a binomial and a binomial and in general a polynomial by a polynomial.		
					Standard Identities and its applications	➢ Use multiplication of binomials in order to explore and verify the standard identities for squares of binomials ➢ Use identities in order to simplify the given algebraic expressions ➢ Use identities in order to find the product of the given numbers		
		November	**22**	**10. Visualizing solid shapes**	Views of 3DShapes	➢ Compare 2D shapes and 3D shapes in order to classify a given shape into either ➢ Identify different shapes in nested objects in order to match the object with its shape ➢ Visualize 3D objects in order to draw them from different perspectives ➢ Discuss the given front, top and side view of an object in order to identify the object	1. Mapping the locality 2. Making prisms, pyramids and verify Euler's formula	
					Mapping Space Around Us	➢ Discuss the elements in a map in order to differentiate between a map and a picture ➢ Read and interpret simple map in order to answer questions based on them ➢ Choose appropriate scale and use symbols to denote landmarks in order to draw a simple map		
					Faces, Edges and Vertices	➢ Identify faces, edges and vertices in a given solid in order to classify it as a polyhedron or a non-polyhedron ➢ Count vertices, edges and faces in 3D figures with flat faces in order to verify Euler’s formula		

				11. Mensuration	Area of plane figures	➢ Calculate area and perimeter of circle, square, rectangle, triangle, trapezium, polygon in order to calculate area and perimeter of adjoint shapes	Making net solids and deriving the surface area of those solids	
					Surface Area of Cube, Cuboid and Cylinder	➢ Calculate the surface area of a cube, cuboid and cylinder to determine the cost of painting/covering their surface		
					Volume of Cube, Cuboid and Cylinder	➢ Calculate the volume of a given cuboid, cylinder in order to determine the time taken to fill it with a liquid at a given rate		
		December	**17**	**12. Exponents and Powers**	Powers with Negative Exponents	➢ Simplify powers with negative exponents in order to calculate the multiplicative inverse of a number	1)Exponents Maze 2)To find the value of a^n(where a and n are natural numbers) using paper folding	
					Laws of Exponents	➢ Give examples in order to show that is valid for all integer exponents. ➢ Apply the first law of exponents ( ) and principles of negative exponents in order to derive the rest of the laws of exponents ➢ Apply laws of exponents in order to simplify a given expression		
					Express Small Numbers in Standard Form	➢ Express very large and very small numbers in the standard form in order to compare and estimate quantities		
				13. Direct and Inverse Proportions	Direct proportion and Inverse proportion	➢ Examine situations in order to decide whether two quantities are proportional to each other or not ➢ Complete a given table showing two proportional quantities in order to answer questions based on them ➢ Convert the given statement on relationship (directly or inversely proportional) between two quantities into a table in order to identify the missing quantity and solve for its value	Write daily life examples for the following 1. Direct Proportion 2.Inverse Proportion	
				14. Factorisation	Factors of algebraic expressions	➢ Express each term as a product of irreducible factors in order to find the common factors of the given terms	Factorisation using paper cutting and pasting.	
					Method of common factors	➢ Use the method of common factors in order to factorize the given algebraic expression		
					Factorisation by regrouping terms	➢ Regroup the terms in order to factorize the given algebraic expressions		

					Factorisation using identities	➢ Apply the standard algebraic identities in order to factorize the given algebraic expressions		
					Division of Algebraic Expressions	➢ Use the common factor method in order to divide a monomial by a monomial, polynomial by a monomial and polynomial by a polynomial		
					Find the Error	➢ Check the given mathematical statements in order to find and give reasons for the possible errors in them		
		January	**22**	**15. Introduction to graphs**	A line graph	➢ Draw a line graph in order to represent the given data that changes continuously over periods of time ➢ Interpret the given line graph in order to answer the given questions	By plotting the points given. To identify the face formed by joining the points in order.	
					Linear graph and Location of a point/coordinates	➢ Plot a point on the graph in order to describe its coordinates ➢ Plot the given points on the graph in order to verify if they lie on the same line or not		
					Some applications	➢ Construct the line graph in order to discuss the relationship between independent and dependent variable in a given mathematical situation		
				16. Playing with numbers	Games with Numbers Tests of Divisibility	➢ Use the concepts of place value and express the given numbers in their generalised form. ➢ Use addition and multiplication and find the values of the letters in the given puzzles. ➢ Apply the divisibility rules of 2, 3, 5, 9, 10 and find the missing digits of a numbers.	Puzzles	
11		**February**	**22**	**Revision**				
12	**ANNUAL EXAMINATION** **Max M:80** **(Weightage 80 m)**	**March**	**23**	**Annual Exam and Results**				30% of Term-1 + Entire syllabus of Term-2