Subject ……Mathematics…….(2023-24…)… Class ……..IX……..

MONTH & CHAPTER	CONTENT	ACTIVITIES/ Co-curricular Activities
(APRIL) Ch. 1. NUMBER SYSTEM	1. Review of representation of natural numbers, integers, and rational numbers on the number line. Rational numbers as recurring/ terminating decimals. Operations on real numbers. 2. Examples of non-recurring/non-terminating decimals. Existence of non-rational numbers (irrational numbers) such as $\sqrt{2}$, $\sqrt{3}$ and their representation on the number line. Explaining that every real number is represented by a unique point on the number line and conversely, viz. every point on the number line represents a unique real number. 3. Definition of nth root of a real number. 4. Rationalization (with precise meaning) of real numbers of type $\frac{1}{a+b\sqrt{x}}$ and $\frac{1}{\sqrt{a}+\sqrt{b}}$ (and their combinations) where x and y are natural number and a and b are integers. 5. Recall of laws of exponents with integral powers. Rational exponents with positive real bases (to be done by particular cases, allowing learner to arrive at the general laws.)	Square root spiral. ,
Ch. 2. POLYNOMIALS	Definition of a polynomial in one variable, with examples and counter examples. Coefficients of a polynomial, terms of a polynomial and zero polynomial. Degree of a polynomial. Constant, linear, quadratic and cubic polynomials. Monomials, binomials, trinomials. Factors and multiples. Zeros of a polynomial. Motivate and State the Remainder Theorem with examples. Statement and proof of the Factor Theorem. Factorization of $ax^2 + bx + c$, $a \neq 0$ where a, b and c are real numbers, and of cubic polynomials using the Factor Theorem. Recall of algebraic expressions and identities. $(x + y + z)^2 = x^2 + y^2 + z + 2xy + 2yz + 2xz$. $(x \pm y)^3 = x^3 \pm y^3 \pm 3xy(x \pm y)$ $X^3 \pm y^3 = (x \pm y)(x^2 \pm xy + y^2)$ $X^3 + y^3 + z^3 - 3xyz = (x + y + z)(x^2 + y^2 + z^2 - xy - yz - xz)$	Proof of identities

(MAY)	Verification of identities and their use in factorization of polynomials	
Ch. 3. COORDINATE GEOMETRY	The Cartesian plane, coordinates of a point, names and terms associated with the coordinate plane, notations.	Cartesian plane
Ch. 4. LINEAR EQUATIONS IN TWO VARIABLES	Recall of linear equations in one variable. Introduction to the equation in two variables. Focus on linear equations of the type ax + by + c=0.Explain that a linear equation in two variables has infinitely many solutions and justify their being written as ordered pairs of real numbers, plotting them and showing that they lie on a line.	Graph of linear equation.
Ch. 5. INTRODUCTION TO EULID'S GEOMETRY	History - Geometry in India and Euclid's geometry. Euclid's method of formalizing observed phenomenon into rigorous Mathematics with definitions, common/obvious notions, axioms/postulates and theorems. The five postulates of Euclid. Showing the relationship between axiom and theorem, for example: (Axiom) 1. Given two distinct points, there exists one and only one line through them. (Theorem) 2. (Prove) Two distinct lines cannot have more than one point in common	
(JULY) Ch. 6. LINES AND ANGLES	1. (Motivate) If a ray stands on a line, then the sum of the two adjacent angles so formed is 180^0 and the converse. 2. (Prove) If two lines intersect, vertically opposite angles are equal. 3. (Motivate) Lines which are parallel to a	Theorem : If two lines intersect then vertically opposite angles are equal

	given line are parallel. .	
Ch. 7. TRIANGLES	1. (Motivate) Two triangles are congruent if any two sides and the included angle of one triangle is equal to any two sides and the included angle of the other triangle (SAS Congruence). 2. (Prove) Two triangles are congruent if any two angles and the included side of one triangle is equal to any two angles and the included side of the other triangle (ASA Congruence). 3. (Motivate) Two triangles are congruent if the three sides of one triangle are equal to three sides of the other triangle (SSS Congruence). 4. (Motivate) Two right triangles are congruent if the hypotenuse and a side of one triangle are equal (respectively) to the hypotenuse and a side of the other triangle. (RHS Congruence) 5. (Prove) The angles opposite to equal sides of a triangle are equal. 6. (Motivate) The sides opposite to equal angles of a triangle are equal.	1. Charts of congruence conditions of the triangles
(AUGUST)		
Ch.8.QUADRILATERALS	1. (Prove) The diagonal divides a parallelogram into two congruent triangles. 2. (Motivate) In a parallelogram opposite sides are equal, and conversely. 3. (Motivate) In a parallelogram opposite angles are equal, and conversely. 4. (Motivate) A quadrilateral is a parallelogram if a pair of its opposite sides is parallel and equal. 5. (Motivate) In a parallelogram, the diagonals bisect each other and conversely. 6. (Motivate) In a triangle, the line segment joining the mid points of any two sides is parallel to the third side and in half of it and (motivate) its converse.	1.The sum of angles of a quadrilateral is 360°.(by cut and paste method) 2.The sum of either pair of the opposite angles of a cyclic quadrilateral is 180°.(by cut and paste method) -
Ch. 10. CIRCLES	1.(Prove) Equal chords of a circle subtend equal angles at the center and (motivate) its converse.	The angle subtended by an arc at the centre is double the angle

	.(Motivate) The perpendicular from the center of a circle to a chord bisects the chord and conversely, the line drawn through the center of a circle to bisect a chord is perpendicular to the chord. 3. (Motivate) Equal chords of a circle (or of congruent circles) are equidistant from the center (or their respective centers) and conversely. 4.(Prove) The angle subtended by an arc at the center is double the angle subtended by it at any point on the remaining part of the circle. 5.(Motivate) Angles in the same segment of a circle are equal. 6.(Motivate) If a line segment joining two points subtends equal angle at two other points lying on the same side of the line containing the segment, the four points lie on a circle. 7.(Motivate) The sum of either of the pair of the opposite angles of a cyclic quadrilateral is 180° and its converse.	subtended by it at any point on the remaining part of the circle. (by cut and paste method)
(SEPTEMBER)	Revision and half yearly exams	
(OCTOBER)		
Ch. 12. HERON'S FORMULA	Area of a triangle using Heron's formula (without proof).	
13. SURFACE AREA AND VOLUME	Surface areas and volumes of cubes, cuboids, spheres (including hemispheres) and right circular cylinders/cones.	Models of cubes, cuboids, cylinders, Cones .
(NOVEMBER) 14. STATISTICS	Bar graphs, histograms (with varying base lengths), and frequency polygons.	Draw the Histogram and frequency polygon given data.

(DECEMBER) **(JANUARY)** **(FEBRUARY- MARCH)**	Revision and First Pre board exams Revision and Second Pre-board exams Revision and Annual Exams	Quiz

Syllabus for Unit Test – I : Ch 1,2,3,4.

Syllabus for Half Yearly Exams : 1,2,3,4,5,6,7,8

Syllabus for pre-boards and annual exams : Full syllabus.