BLOOM PUBLIC SCHOOL

C-8 Vasant Kunj, New Delhi

Syllabus for the Session 2025-26

Class: XI

Subject: Mathematics

SYLLABUS			
MONTH	**CHAPTER (NCERT Text book)**	**CONTENT (Topics)**	**Practical/Activities**
April	Ch 1: Sets	Sets and their representations, Empty set, Finite and Infinite sets, Equal sets, Subsets, Subsets of a set of real numbers especially intervals (with notations). Universal set. Venn diagrams. Union and Intersection of sets. Difference of sets. Complement of a set. Properties of Complement. Added content: Practical problems on Union and Intersection of two sets.	**Activity 1: (Activity File)** To find the number of subsets of a given set and verify that if a set has n number of elements, then the total number of subsets is 2^n . **Activity 2: (Activity File)** To verify that for two sets A and B, n (A×B) = pq and the total number of relations from A to B is 2^{pq}, where n(A) = p and n(B) = q. **Activity 3: (Activity File)** To represent set theoretic operations using Venn diagrams. **Activity 4: (Activity File)** To distinguish between a Relation and a Function.
	Ch 2: Relations and Functions	Ordered pairs. Cartesian product of sets. Number of elements in the Cartesian product of two finite sets. Cartesian product of the set of reals with itself (upto R x R x R).Definition of relation, pictorial diagrams, domain, co-domain and range of a relation. Function as a special type of relation. Pictorial representation of a function, domain, co-domain and range of a function. Real valued functions, domain and range of these functions, constant, identity, polynomial, rational, modulus, signum, exponential, logarithmic and greatest integer functions, with their graphs. Sum, difference, product and quotients of functions. Added content: Composition of Functions	
	Ch 3: Trigonometric Functions	Positive and negative angles. Measuring angles in radians and in degrees and conversion from one measure to another. Definition of trigonometric functions with the help of unit circle. Truth of the identity $\sin^2 x + \cos^2 x = 1$, for all x. Signs of trigonometric functions. Domain	

		and range of trigonometric functions and their graphs. $\tan(x \pm y) = \frac{\tan x \pm \tan y}{1 \mp \tan x \tan y}$, $\cot(x \pm y) = \frac{\cot x \cot y \mp 1}{\cot y \pm \cot x}$ $\sin\alpha \pm \sin\beta = 2\sin\frac{1}{2}(\alpha \pm \beta)\cos\frac{1}{2}(\alpha \mp \beta)$ $\cos\alpha + \cos\beta = 2\cos\frac{1}{2}(\alpha + \beta)\cos\frac{1}{2}(\alpha - \beta)$ $cos\alpha - cos\beta = -2sin\frac{1}{2}(\alpha + \beta)sin\frac{1}{2}(\alpha - \beta)$ Identities related to sin2*x*, cos2*x*, tan2 *x*, sin3*x*, cos3*x* and tan3*x*.	
May	Ch 3: Trigonometric Functions (cont.)	Domain and range of trigonometric functions and their graphs Added content: General solution of trigonometric equations of the type sin y = sin a , cos y = cos a and tan y = tan a	**Activity:** Building the Unit Circle.
	Ch- Principle of Mathematical Induction	Process of the proof by induction, motivating the application of the method by looking at natural numbers as the least inductive subset of real numbers. The principle of mathematical induction and simple applications.	
	Ch 4: Complex Numbers and Quadratic Equations	Need for complex numbers, especially $\sqrt{-1}$, to be motivated by inability to solve some of the quadratic equations. Algebraic properties of complex numbers. Argand plane. Added content: Polar representation of complex numbers. Statement of Fundamental Theorem of Algebra, solution of quadratic equations (with real coefficients) in the complex number system.	**Activity:** Plotting in the Complex Plane
July	Ch-5 Linear Inequalities	Linear inequalities. Algebraic solutions of linear inequalities in one variable and their representation on the number line. Added content: Graphical solution of linear inequalities in two variables. Graphical method of finding a solution of system of linear inequalities in two variables.	**Activity:** Real-Life Application of Linear Inequalities. **Activity 5: (Activity File)** To find the number of ways in which three cards can be selected from given five cards. flip classroom; students will prepare a PPT and explain the concept in the class.
	Ch 6: Permutations and Combinations	Fundamental principle of counting. Factorial n. (n!) Permutations and combinations, derivation of Formulae for ${}^{n}P_{r}$ and ${}^{n}C_{r}$ and their connections, simple applications.	

August	Ch 7: Binomial Theorem	Historical perspective, statement and proof of the binomial theorem for positive integral indices. Pascal's triangle, simple applications. Added content: General and middle term in binomial expansion.	**Activity 6: (Activity File)** To construct a Pascal's Triangle and to write binomial expansion for a given positive integral exponent.
	Ch 8: Sequence and Series	Sequence and Series. Arithmetic Mean (A.M.) Geometric Progression (G.P.), general term of a G.P., sum of n terms of a G.P., infinite G.P. and its sum, geometric mean (G.M.), relation between A.M. and G.M. Added content: Formulae for the following special sums $\sum_{k=1}^{n} k, \sum_{k=1}^{n} k^2, \sum_{k=1}^{n} k^3$	**Activity 7: (Activity File)** To demonstrate that the Arithmetic mean of two different positive numbers is always greater than the Geometric mean.
September	Ch:11 Introduction to Three dimensional Geometry	Coordinate axes and coordinate planes in three dimensions. Coordinates of a point. Distance between two points. Added content: Section formula.	**Activity 9: (Activity File)** To explain the concept of octants by three mutually perpendicular planes in space..
October	Ch 9: Straight Lines	Brief recall of two dimensional geometry from earlier classes. Slope of a line and angle between two lines. Various forms of equations of a line: parallel to axis, point -slope form, slope-intercept form, two-point form, intercept form, Distance of a point from a line. Added content: Normal form. General equation of a line.	**Activity:** Use software like Desmos or GeoGebra to graph various equations of the line..
	Ch 10: Conic Sections	Sections of a cone: circles, ellipse, parabola, hyperbola, a point, a straight line and a pair of intersecting lines as a degenerated case of a conic section. Standard equations and simple properties of parabola, ellipse and hyperbola. Standard equation of a circle.	**Activity 9: (Activity File)** To construct different types of conic sections.
November	Ch 10: Conic Sections(cont.)	Standard equations and simple properties of parabola, ellipse and hyperbola. Standard equation of a circle.	

	Ch-12: Limits and Derivatives	Derivative introduced as rate of change both as that of distance function and geometrically. Intuitive idea of limit. Limits of polynomials and rational functions trigonometric, exponential and logarithmic functions. Definition of derivative relate it to scope of tangent of the curve, derivative of sum, difference, product and quotient of functions. Derivatives of polynomial and trigonometric functions.	**Activity** : Application of Derivatives in Real-Life Problems
December	Ch-12: Limits and Derivatives (cont.)	Definition of derivative relate it to scope of tangent of the curve, derivative of sum, difference, product and quotient of functions. Derivatives of polynomial and trigonometric functions. Added content: Derivatives of composite functions (Chain rule).	
	Ch 13: Statistics	Measures of Dispersion: Range, Mean deviation, variance and standard deviation of ungrouped/grouped data.	
January	Ch 13: Statistics (cont.)	Measures of Dispersion: Range, Mean deviation, variance and standard deviation of ungrouped/grouped data.	**Activity** : Collecting Data for a Frequency Distribution
	Ch 14: Probability	Events; occurrence of events, ‘not’, ‘and’ and ‘or’ events, exhaustive events, mutually exclusive events, Axiomatic (set theoretic) probability, connections with other theories of earlier classes. Probability of an event, probability of ‘not’, ‘and’ and ‘or’ events. Added content: Random experiments; outcomes, sample space (set representation	**Activity 10: (Activity File)** To write the sample space, when a coin is tossed once, two times, three times, four times.
February	Revision	Remedial classes	
March	Annual Exams		

ASSESSMENT SYLLABUS

PERIODIC ASSESSMENT -1	Ch 1: Sets Ch 2: Relations and Functions Ch 3: Trigonometric Functions Ch : Principle of Mathematical Induction
PERIODIC ASSESSMENT -2	Chapter 9: Straight Lines Chapter 10: Conic Sections
MID TERM EXAM	Ch 1: Sets Ch 2: Relations and Functions Ch 3: Trigonometric Functions

	Ch 4: Complex Numbers and Quadratic Equations Ch 5: Linear Inequalities Ch 6: Permutations and Combinations Ch 7: Binomial Theorem Ch 11: Introduction to Three-Dimensional Geometry
FINAL EXAMINATION	Ch 1: Sets Ch 2: Relations and Functions Ch 3: Trigonometric Functions Ch 4: Complex Numbers and Quadratic Equations Ch 5: Linear Inequalities Ch 6: Permutations and Combinations Ch 7: Binomial Theorem Ch 8: Sequences and Series Ch 9: Straight Lines Ch 10: Conic Sections Ch 11: Introduction to Three-dimensional Geometry Ch 12: Limits and Derivatives Ch 13: Statistics Chapter 14: Probability