BIHAR MATHEMATICAL SOCIETY

The Syllabus has been designed in accordance with National curriculum framework CBSE, ICSE, State Board and competitive Examinations. The objectives of teaching mathematics at senior school stage intend to help the students to acquire knowledge and critical understanding.

<p style="text-align:center; color:red">Talent Search Test in Mathematical Sciences (TSTMS Junior)</p>

<p style="text-align:center">Syllabus (Class VI-XII)</p>

Class-VI

Number system, Factors and Multiples, Test of divisibility of numbers, HCF and LCM, Decimals and Fractions, Unitary Method, Elementary Properties of Factorial. Mensuration, Parameter and Area of simple curve. Algebraic equations and Expressions, Ratio and Proportion, Percentage and their applications, Symmetry, Making symmetry figures, Reflection and Symmetry. Geometry, Understanding Elementary Shapes of 2 and 3 dimensions, Line segment, Parallel lines, Polygons, The Triangles and its properties, Quadrilaterals, Circle. Data Handling.

Class-VII

Elementary properties of real numbers, LCM and HCF, Divisibility rules, Fractions and Decimals, Exponents and Powers, Digit at Unit and tens place in the power of positive integers, Identities, Comparing Quantities, Percentage, Profit and Loss, Simple interest.

Algebraic Equations and Expressions, Law of indices, Exponential Equation. Visualising of Solid Shapes, Lines and Angles, The Triangle and its Properties, Symmetry, Congruence of Triangles, Quadrilaterals, Polygons, Circles. Perimeter and Area of Triangle, Rectangle, Parallelogram, Trapezium, Rhombus, Square, Cube and Cuboid.

Data Handling, Arithmetic Mean, Median and Mode. Simple Trigonometrical identities and their properties. Basic concept of Probability.

Class-VIII

Properties of real numbers, LCM and HCF of polynomials, Squares and Square Roots, Cubes and Cube Roots, Exponents and Powers, Comparing Quantities.

Percentage, Simple and Compound Interest, Discount and Partnership, Time and Distance, Work and Time. Algebraic Expressions and Identities, Linear equations and inequations. Plane, Lines, Angles, Triangles, Congruence, Quadrilaterals, Circles Constructions, Mensuration, Visualising Solid Shapes, Circle, Cone, Sphere, Cube and Cuboids Direct and Inverse Proportions, Factorisation, Introduction to Graphs. Data Handling, Mean, Median, Mode and their Simple Properties. Basic concept of Probability. Elementary properties of Sets, Union, Intersection, Venn Diagrams, ordered pairs.

Class-IX

Number Systems, Prime and Composite numbers, Surds and rationalisation of surds, Congruence, Fermat and Wilson theorem, Pythagorean triads, Polynomials, Algebraic expression and identities, Linear Equations in Two Variables, Graph of linear equations Coordinate Geometry, Coordinate of a point, Distance formula, Section formula, Area of Triangle and Quadrilateral.

Introduction to Euclid's Geometry, Lines and Angles, Triangles, Congruent triangle, Condition of similar triangles, Quadrilaterals, Constructions.

Properties of Polygons, Mensuration, Areas of Parallelograms and Triangles, Heron's Formula, Area of Cyclic quadrilateral, Surface Areas and Volumes of cube, cuboid, cylinder, cone, sphere and Circle. Introduction of Statistics, Graphical representation of statistical data, Mean, Median of ungrouped data.

Trigonometrical identities and their Properties, Logarithm.

Definition of probability, Terms of probability.

Class-X

Real and Complex Numbers, Polynomials, Pair of Linear Equations in Two Variables, Quadratic Equations and Expressions, Arithmetic Progressions. Concepts of Coordinate Geometry, Straight Lines, Pair of Straight Lines.

Trigonometrical Ratio, compound angles, Multiple angles and Submultiple angles, Conditional Identities, Height and distance.

Geometry of triangle, Circles, Constructions, Mensuration, Areas related to Circles, Surface Areas and Volumes of Cylinder, Cone and Sphere.

Introduction of Statistics, Basic concepts of Mean, Median, Mode, Histograms and Ogive. Probability of Random experiments, Sample space, Events, simple problem of single events.

Class-XI

Sets and their properties, Subsets, Power Set, Union, Intersection, Complements of a set, Relations and functions. Principle of Mathematical Induction, Complex Numbers, Quadratic Equations and Expressions, Partial Fraction, Binomial Theorem, Multinomial theorem, Linear Inequations, Sequences and Series (A.P, G.P and H.P), Combinatorics-Simple Permutations and Combinations, Pigeon Hole Principle (PHP).Trigonometry, Domain and range of trigonometrical functions, Graphs, Conditional Identities, Trigonometrical Equations, General solutions of trigonometrical equations, Properties Triangles, Logarithms.

Coordinate Geometry of Straight Lines, Conic Sections of Circle, Parabola, Ellipse and Hyperbola. Statistics (Measure of dispersion), Mean Deviation, Variance and Standard Deviation. Functions, Limits, Continuity of a Function, Differentiation including Chain Rules, Application of Derivatives, Probability, Addition theorem, Multiplication theorem, Conditional probability.

Introduction to 3-D Geometry of Distance Formulae, Section Formulae, Direction Cosines and Ratios, Plane. Indefinite Integration, Transformation rule of integration.

Class-XII

Number Theory, congruence modulo m, Relations and Functions, Equivalence Relations, Binary Operation, Inverse Trigonometric Functions.

Matrices and Determinants, Inequalities.

Continuity and Differentiability, Application of Derivatives, Tangent and Normal, Mean value theorem, Maxima and minima Integrals, Definite integrals. properties of definite integrals, Application of Integrals (area bounded by curve) Differential Equations of first degree and first order, order and degree, formation of differential equations, application of differential equations.

Vector Algebra, Scalar and Vector products of two and three vectors.

Three-dimensional geometry of plane and straight lines, shortest distance between two lines.

Probability of Different type Events, Mutually Exclusive and Independent Events, Addition and Multiplication theorem, Conditional Probability, Bayes' Theorem, Random variable, Expectations, Probability Distribution and Binomial Distribution.

Formation of Linear Programming Problem and their Solution by Graphical Method.