

Mathematics

Class (IX-X)

Objectives

1. Students of Secondary stage will be able to apply knowledge acquired at upper primary stage to learn real number system and other topics.
They will be able to distinguish between rational and irrational number.
They will appreciate the development of Real number System.
2. They will develop algebraic skills, through polynomials algebraic identities, factorization, solution of simultaneous Equations and Quadratic Equations.
3. They will have introduction of co-ordinate geometry, solution of pair of equations graphically and use of co-ordinate geometry in daily life problems.
4. They will be able to analyse the problem and solve it in correct manner.
5. They will be able to use various mathematical factors, Trigonometric Identities, Surface Areas and volumes of solids, Banking System in different situations.
6. They will be able to apply mathematical knowledge in various fields of higher learning viz; Technological, Agricultural, Statistical and Engineering.
7. They will acquire awareness about national unity, Integration and social coexistence.
8. They will be aware about protection of environment (Social, Physical, through mathematical thinking and attitude).

Class IX

Number System

In class IX students will have knowledge of Irrational Numbers and their representation on number line. They will become aware with different number

systems (Rational, irrational and their collection, Real Numbers). They will be introduced to absolute value of a real number. Through Decimal Expansion they will be able to distinguish rational and irrational number.

Algebra

They will learn polynomial in one variable and types of polynomials, zero of a polynomial and roots of an equation. They will have knowledge of algebraic Identities, remainder Theorem, factor Theorem and methods of factorization of polynomials. They will also learn H.C.F., L.C.M. through Factorization and their application in solving problems.

Co-ordinate Geometry and Linear Equations in two variables

Students will be made familiar with co-ordinate geometry and cartesian plane, co-ordinates of a point and graph of linear equation in two variables and solutions of a linear equation.

Geometry

Students will learn about Euclid's postulates and axioms, basic terms and definitions about lines, angles, parallel lines and Transversal and sum angle property of a triangle. They will have knowledge of criteria for congruence of triangles and inequalities in a triangle.

They will have knowledge of properties of quadrilaterals (Parallelogram, Square, Rectangle, Rhombus, Trapezium) and their properties. They will acquire knowledge about areas of parallelograms and triangles on the same base and between the same parallels.

They will learn about circle, chords, arcs and their basic properties.

Students will learn to find out area of a triangle through Hero's Formula and its application.

They will be able to find out surface area and volume of cube, cuboids, Right circular cone and sphere.

Statistics

Students will be able to understand the need of collection and representation of data and graphical representation of data (Bar graphs, Histograms, Frequency polygon and pie charts) They will learn about measure of central tendency (mean, median, mode) of ungrouped data.

Probability

The students have been introduced about empirical definition of probability through simple trials of tossing of coins, throwing of dice etc.

Class - X

Real Numbers

The students of X standard will learn Euclid's division algorithm, Fundamental Theorem of Arithmetic and conversion recurring decimal to a rational number. They will be able to prove irrationality of $\sqrt{2}$, $\sqrt{3}$ etc.

Algebra

The students will be made familiar with part of Linear Equations in two variables, their solutions through algebraic as well as graphical methods and their use in solving everyday life problems.

They will learn about quadratic equations, methods of their solutions, nature of roots, relation between roots and coefficient and formation of Quadratic Equation when roots are given. They will have knowledge of Division Algorithm of Polynomials and solve problems on H.C.F., L.C.M. through division method.

Arithmetic Progression

The students will acquire knowledge of A.P., its n^{th} term and sum of first n -terms.

Trigonometry

They will be told about measurement of an angle (sexagesimal, centesimal and circular systems). They will learn Trigonometric Ratios of an acute angle of a right angled triangle. They will acquire knowledge of T-Ratios of standard angles of 0° , 30° , 45° , 60° , and 90° . They will solve simple problems of height and distances having these angles as one of the acute angle. They will learn basic trigonometric identities and T-Ratios of complementary angles.

Co-ordinate Geometry

Graphical Solution of pair of linear equations in two variables, distance between two points, section formula and area of triangle.

Geometry

They will be familiar with properties of similar triangles, proof and application of Pythagoras Theorem and properties of tangents to a circle.

Mensuration

The students will be able to find out area of sector and segments of a circle. They will learn surface areas and volumes of combinations of two figures having cubes, cuboids, spheres, hemisphere, right circular cylinder/cone and frustum of a cone.

Statistics and Probability

They will learn about mean, median and mode of grouped data and cumulative frequency graph.

They will acquire efficiency to use classical definition of probability and simple problems on probability.

Banking

They will acquire introduction about Banking System and find out interest on saving bank account and fixed deposit account.

Evaluation Method

Following Techniques can be applied to evaluate the performance of students:-

1. Class Room Discussion

Discussion can be organized on basic concepts, definition and application of different topics. The participation of the individual student should be judged to evaluate the performance.

2. Oral Test

Oral question can be put to the students to evaluate their performance.

3. Home Assignment

The approach to various topics can be judged through home assignment.

4. Project work:

Students can be encouraged to undertake mathematical projects to judge their aptitude and innovation capacity.

5. Written Test

Periodic written test are most significant to evaluate performance of a student about the topic taught. Written test should be based on

- (i) Objective type questions (multiple choice)
- (ii) Short and long answer type questions.