

Mathematic

Upper Primary

Objectives

1. To develop logical thinking and reasoning among the students to attempt any problem.
2. To help the students develop the skill in four fundamental operations over number system.
3. To make the concept of 'Number System' clear.
4. To make the student understand mathematical abbreviations and symbols and be able to use them.
5. To enable the student to prepare him/her for the learning of mathematics in higher classes.
6. To prepare the students to apply the mathematical methods and procedures in other subjects of studies and to solve daily life problems.
7. To enable the students to adopt systematic and sincere approach towards life.
8. To inculcate capability of being confident and competent in solving difficult mathematical problems.
9. To enable the students to recognize and construct two and three dimensional geometrical figures.
10. To develop social values like discipline, tolerance, punctuality, regularity, honesty and neatness in practical life.
11. To enable the students to appreciate the contribution of mathematics in the progress of society.
12. To enable the students to appreciate the aesthetic sense in observing symmetry and similarity in the environment in which they live.

Mathematics

Class VI

Arithmetic

In class VI students will have knowledge of rational numbers, whole numbers, integers and their basic properties. They will be able to find out LCM, HCF of integers.

They will acquire the knowledge of test of divisibility by 2,3,4,5,6,8,9 & 11. Students will acquire knowledge of ratio and proportion, percentage, unitary method and speed, distance and time and can solve the problems of daily life related to these topics.

They will be able to appreciate the value of time and enjoy to find “a day” for a given date.

Algebra

The student will develop capacity to think abstractly and apply the algebraic expressions to solve the simple problems of addition and subtraction in different situations.

.Geometry

The student will be able to understand basic geometric concepts, figures, viz : Angles and Triangles with their properties and use them systematically to verify various result.

Menstruation

The students will be able to find out area and perimeter of basic geometrical figures i.e. rectangle, square and triangle by using formulae and use them in different situations.

Data Handling

The concept of data collection and organization of data is introduced to the students with the help of game and pictograph and will be able to answer the questions on data at a glance.

Mathematics

Class VII

Arithmetic

In class VII the students are introduced to the concept of Rational Numbers, fundamental operations and basic properties. The students can solve advance rational expression with the help of BOADMAS. They'll be able to apply direct and inverse variation method to solve problems of unitary method and to apply the concept of percentage in solving the problems of profit and loss and simple interest in practical life.

Algebra

The students will be able to multiply the algebraic expressions and will be able to use basic identities, $(a+b)$, $(a-b)$, $(a+b)(a-b)$ in factorization of simple algebraic expressions. They will be able to solve linear equations in one variable with rational coefficients.

Geometry

The students will be able to understand the concept of parallel lines, transversals, angles made by transversal with the parallel lines, intercept form, division of line, the concept of congruency through activity, properties of quadrilateral and circle through activities and apply these results in different situations.

Mensuration

Students are expected to find out area of paths around and inside the rectangular and square field surface area and volume of cube and cuboid.

Data Handling

The students would be able to construct Bar-graph of given data. They would be made to feel the concept of probability and have a notion of randomness through experiments (coin and dice etc).

Mathematics

Class VIII

Arithmetic

The students are expected to understand the concept of square, square root, cube & cube-root of positive rational numbers and use this concept to solve the problems. They will be able to understand the importance and concept of radicals radicands, laws of exponents and apply them in solving problems. They would acquire the capability to solve the problems on Profit & Loss, Discount and Compound interest with conversion period concept (half yearly, quarterly, monthly).

Algebra

The students will develop the ability to verify and apply the identities like $(x+a)(x+a)$, $(a+b)^3$, $(a-b)^3$. They would be able to divide the polynomial by monomials, binomials by factorization and division method and verify the result. It is expected that students would solve the advanced one-variable problem of daily life and can apply fundamental operation of mathematics to algebraic expression.

Geometry

The students will learn the different type of quadrilateral and their properties and can construct quadrilateral under given conditions. Simple theorems on circle related to arc, chord and cyclic quadrilateral are covered in this class.

Mensuration

The students will have the knowledge of the concept of π circumference and area of circle, right circular cylinder, right circular cone and sphere.

Data Handling

At this stage the students will be able to read Bar-graph & construct Histogram and understand the concept of probability and will understand randomness with the help of experiment.

Expected outcome

(Class VI)

After the completion of upper primary stage (UPS) the students are expected to have complete knowledge of number system upto rational number and four fundamental operations in Arithmetic and Algebra. It is expected that the students of UPS will be able to solve the problems on topics like Ratio & Proportion, Unitary Method, Simple Interest, Compound Interest, Discount, Profit & Loss, “ speed, distance and time” and “Time & Work” of daily life. They will be able to differentiate the different dimensional geometrical figures upto 3-D (lines, Parallel lines, triangle, square, rectangle, parallelogram, rhombus, kite, quadrilateral, circle, cube, cuboids, sphere, cylinder and cone). The students of this stage will use their acquired knowledge to find out the area of simple 2-D figures and volume of simple & symmetrical 3-D figures.

Class VII

After passing Sixth class, students will have the knowledge of Natural numbers, whole numbers, integers and their properties like closure, commutative etc for addition and multiplication of integers. The students will have complete knowledge of HCF & LCM of numbers, ratio & proportion and percentage and can solve the problems on unitary method and ‘time, distance and speed.’ The students of class VI would find it interesting to know the day on which she/he was born.

The students are expected to have the knowledge of algebraic expressions and they can add and subtract them, solve the linear equations in one variables.

By the end of sixth class students will have the knowledge of basic geometrical concept of lines (angle and parallelism concurrence) they can construct the triangles and find the area of rectangle & square fields.

Students will have the knowledge of data (height & weight etc of their classmates) and can represent it with the help of pictograph.

After completion of Class VII they will have the knowledge of number system upto rational numbers and their properties and can simplify the advanced problems of rational expression, they can solve the problem of 'work and Time' and 'time and distance' problems of daily life and can find the interest earned in the bank and compare the prices of commodities in the market.

By the end of class VII the students can apply three basic operations of mathematics (excluding division) over polynomials/ algebraic expression, have the knowledge of standard identities, can factorize trinomials and can solve linear algebraic equations (one variable with rational coefficients).

The concept of parallelism is exhausted in this class. The students of this class are introduced with the congruency of triangles and concept of quadrilateral and their construction. By the end of class VII, the students will have the knowledge of rectangles and squares and can find area of rectangular path along the boundary and area of cross paths. They will be able to find the area & volume of simple 3-D symmetrical figures (cube & cuboids)

The concept of pictograph which he had studied in previous class has been extended to Bar-graph and concept of frequency is also introduced along with expected outcome of any activity of life.

Class – VIII

After passing the VIII class the students can find square, square root, cube and cube root of rational numbers (because $\sqrt{-a}$ is an imaginary) and can apply the laws of exponents to any arithmetic expression. By the end of class VIII the students can solve advanced problems of profit and loss, discount and of compound interest.

The students would be able to apply all the basic operation of mathematics to algebraic identities like $(a+b)^3 = a^3 + b^3 + 3ab(a+b)$ etc. They can solve algebraic linear expression of type $ax + b/cx+d = k$

Topic of quadrilaterals is exhausted completely in this class. In continuation with class VII, the concept of circle is also exhausted, the concept of and cyclic quadrilaterals is also discussed in the class.

After passing class VIII the students will have the knowledge of concept of π , area of circle, surface area of sphere, right circular cone and cylinder and volume of the sphere, Right circular cone, Right circular cylinder.

In continuation with concept of data handling of class VII of ungrouped data the students will be made aware of group data and their different graphical representation like Bar-graph, Pie-chart & Histogram. By the end of this class the students will have the knowledge of probability and notion of randomness.

Evaluation

To judge the performance of students in mathematics in upper primary classes following methods of evaluation will be adopted.

1. Oral Questioning: oral tests will be given related to basic concepts, formulae and identities and general understanding of the students.
2. Written Tests : written test will cover

Definitions	:	20%
Objective type	:	50%

Subjective type : 30%

3. Assignments: Regular home assignments will be given to evaluate innovative capacity of the students.
4. Group Discussion: Class room discussion in groups will be organized periodically and involvement of individual student will be monitored to assess their performance.