General Mathamatics

Introduction :

Mathamatics is the language of all sciences It is important to note that the subject itself has a separate identity in the life of human beings. The study of Mathematics has to be graded at different levels viz. primary, secondary and higher secondary. At the primary level the focus in on understanding the various concepts and fundamentals and on developing basic skills of calculation. At the secondary level the emphasis is on developing the capacity of the student to apply mathamatics in solving problems.

As curriculum renewal is a continuos proces, the curriculum of Mathamatics has also undergone several changes from time to time in accordance with the changing needs of the society. Inresponse to the demand of the society after diliberation of Government and Maharashtra State Board of Secondary and Higher Secondary Education, the Board has taken decision to implement Mathamatics at two levels from the year 2008 viz. Mathamatics (Algebra and Geometry) and General Mathamatics.

The Board has restruetried the syllabus of Mathamatics for std. IX and X on the directives of NCF 2005 and SCF 2010 with a new perspective. The syllabus has been designed to foser a sense of personal achievement and to encourage the continuing creative interact so as to overcome Mathophobia among students.

The logical proofs of the problems are avoided while restrucuring the syllabus of General Mathamatics. The topics selected are useful to develop knowledge, understanding skill and application which will enable the students to cope confidently with the developments in the modern world.

OBJECTIVES

- Consolidate the knowledge and skills acquired in Mathematics at primary stage.

- Acquire the knowledge and skills required for various competitive examinations.

- Acquire the skills required for various professions where minimum qualification is Standard X.

- Acquire the skills in Mathematics required for self employment.

- Expertise in basic Mathematical skills.

- Build the confidence and develop creative interest in Mathematics.

- Use the available modern technology to understand the concepts in Mathematics

- Understand and use the terms, symbols, principles in Mathematics.

- Apply mathematical knowledge to solve problem in real life situations.

- Develop the skill of drawing through geometric constructions.

- Think logically, analytically and use

different techniques for problem solving.

Std. IX
Part-I

Unit (I) - Arithmetic
1. Indices -
- Introduction
- Laws of indices
- Square and square root
- Cube and cube root

2. Ratio and Proportion -
- Introduction : Ratio
- Properties of ratios
- Theorems on equal ratios
- Proportion

Unit(II) - Commercial mathematics
3. Profit and Loss -
- Introduction to profit and loss.
- Percentage Profit
- Percentage Loss

4. Interest, Banking and Currency -
- Simple interest
- Compound interest
- Growth and decay
- Banking and Currency exchange

Unit (III) - Algebra
5. Algebraic expression
- Identities
- algebraic expression
- Operations on algebraic expressions
- Polynomials, Factors of quadratic polynomial

6. Linear equations in one variable
- Introduction
- Solutions of the equations
- Word Problems

Part-II

Unit (IV) - Geometry
1. Lines, Angles and Plane -
- Axioms
- Parallel lines, perpendicular lines, Coplanar lines, Transversal
- Properties of parallel lines
- Angle, Types of angles
- Pair of angles

2. Triangles -
- Types of triangles
- Medians, altitudes, angle bisectors, Perpendicular bisectors of sides of triangles
- Congurence of triangles
- Properties of triangles

3. Quadrilaterals
- Types of quadrilaterals
- Properties of particular quadrilateral

Unit (V) - Construction
4. Geometric Constructions
- Basic constructions
- Construction of triangle
- Construction of quadrilateral
- Constructions to the design related

Unit (VI) - Mensuration
5. Measurement and Area
- Measurement of the length, weight and capacity
- Perimeter and Areas
- Area of circle and circumference

Unit (VII)th - Statistics
6. Statistics
- Collection of data
- Types of data
- Classification of data
- Representation of data

- Measures of central Tendency for ungrouped data

Std. X
Part-I

Unit I - Arithmetic

1 Variation -
- Introduction
- Types of variation
- Time, work and speed

2 Sequences -
- Introduction
- Patterns of numbers
- Progressions
- Arithmetic Progressions

Unit II - Commercial Mathematics

3 Modern marketing techniques -
- Discount
- Rebate
- Commission
- Brokerage
- Instalments

4 Taxes and Investments -
- a. Introduction
- b. Sales tax
- c. VAT
- d. Income Tax
- e. Investments
- i. Bank investment
- ii. Post investment
- iii. Life insurance
- iv. Shares and Mutual funds

Unit III - Algebra

5 Linear equations in two variables
- Introduction
- Solution of equations in two variables
- Methods of solving linear equations in two variables

6 Quadratic equations -
- Introduction
- Solution of quadratic equations
- Methods of solving quadratic equations

Part-II
Unit IV - Geometry

1. Similarity
- Introduction
- Test of similarity
- Properties of similar triangles
- Basic proportionality theorem
- Similarity in right angled triangle. Pythagoras theorem statement
- Pythagorian Triplets
- Application of Pythagoras theorem
- Appolloneous theorem

2. Circle -
- Introduction
- Terms related to circle
- Properties of chords
- Properties of tangents
- Arc of circle

3. Trigonometry
- Basic concepts in Trigonometry
- Problems related to height and

distance

Unit V - Constructions

4. Geometric Constructions -

   - Construction of incircle of triangle
   - Construction of circumcircle of triangle
   - Tangents to the circle
   - Construction related to design

Unit VI- Mensuration

5. Surface area and volume -

- Parallelopiped
- Rectangular parallelopiped
- Cube
- Cylinder
- Cone
- Sphere and hemisphere

Unit - Statistics

6. Statistics

   - Representation of data
   - Histogram
   - Frequency polygon
   - Pie Diagram
   - Measures of central tendency for grouped data
   - Probability