

3.MATHEMATICS

The Syllabus in the subject of Mathematics has undergone changes from time to time in accordance with growth of the subject and emerging needs of the society. The present revised syllabus has been designed in accordance with National Curriculum Framework 2005 and as per guidelines given in Focus Group on Teaching of Mathematics which is to meet the emerging needs of all categories of students for motivating the teacher to relate the topics from real life problems and other subject areas, greater emphasis has been laid on applications of various concepts.

The curriculum at Secondary stage primarily aims at enhancing the capacity of students to employ Mathematics in solving day-to-day life problems and studying the subject as a separate discipline. It is expected that students should acquire the ability to solve problems using algebraic methods and apply the knowledge of simple trigonometry to solve problems of heights and distances. Carrying out experiments with numbers and forms of geometry, framing hypothesis and verifying these with further observations form inherent part of Mathematics learning at this stage. The proposed curriculum includes the study of Arithmetical concepts, number system, algebra, geometry, trigonometry, mensurations, statistics, graphs and coordinate geometry etc.

The teaching of Mathematics should be imparted through activities which may involve the use of concrete materials, models, patterns, charts, pictures posters games, puzzles and experiments.

OBJECTIVES

The board's objectives of teaching of Mathematics at secondary stage are to help the learners to :

1. Consolidate the Mathematical Knowledge and Skills acquired at the upper primary stage.
2. Acquire knowledge and understanding, particularly by way of motivation and visualization, of basic concepts, terms, principles and symbols and underlying processes and skills.
3. Develop mastery of basic algebraic skills;
4. Develop drawing skills;
5. Feel the flow of reasons while proving a result or solving a problem.
6. Apply the Knowledge and skills acquired to solve problems and wherever possible, by more than one method
7. To develop positive ability to think analyze and articulate logically.
8. To develop awareness of the need for national integration, protection of the environment, observance of small family norms. Removal of social barriers, elimination of gender biases.
9. To develop necessary skills to work with modern technological devices fields for its beautiful structures and patterns etc.
10. To develop interest in Mathematics as a problem-solving tool in various fields for its beautiful structures and patterns, etc.
11. To develop reverence and respect towards great Mathematicians for their contributions to the field of Mathematics.
12. To develop interest in the subject by participating in related competitions
13. To acquaint students with different aspects of mathematics used in daily life.
14. To develop an interest in students to study mathematics as discipline

Courses of Study

1. Real Numbers
2. Polynomials
3. Pair of Linear Equations in Two Variables
4. Quadratic Equations
5. Arithmetic Progressions
6. Triangles
7. Coordinate Geometry
8. Introduction to Trigonometry
9. Some Applications of Trigonometry
10. Circles
11. Areas Related to Circles
12. Surface Areas and Volumes
13. Statistics
14. Probability

Detailed Syllabus

1. Real Numbers

- 1.1 Introduction
- 1.2 The Fundamental Theorem of Arithmetic
- 1.3 Revisiting Irrational Numbers
- 1.4 Summary

2. Polynomials

- 2.1 Introduction
- 2.2 Geometrical Meaning of the Zeroes of a Polynomial
- 2.3 Relationship between Zeroes and Coefficients of a Polynomial
- 2.4 Summary

3. Pair of Linear Equations in Two Variables

- 3.1 Introduction
- 3.2 Graphical Method of Solution of a Pair of Linear Equations
- 3.3 Algebraic Methods of Solving a Pair of Linear Equations
 - 3.3.1 Substitution Method
 - 3.3.2 Elimination Method
- 3.4 Summary

4. Quadratic Equations

- 4.1 Introduction
- 4.2 Quadratic Equations
- 4.3 Solution of a Quadratic Equation by Factorisation
- 4.4 Nature of Roots
- 4.5 Summary

5. Arithmetic Progressions

- 5.1 Introduction
- 5.2 Arithmetic Progressions
- 5.3 nth Term of an AP
- 5.4 Sum of First n Terms of an AP
- 5.5 Summary

6. Triangles

- 6.1 Introduction
- 6.2 Similar Figures
- 6.3 Similarity of Triangles
- 6.4 Criteria for Similarity of Triangles
- 6.5 Summary

7. Coordinate Geometry

- 7.1 Introduction
- 7.2 Distance Formula
- 7.3 Section Formula
- 7.4 Summary

8. Introduction to Trigonometry

- 8.1 Introduction
- 8.2 Trigonometric Ratios
- 8.3 Trigonometric Ratios of Some Specific Angles
- 8.4 Trigonometric Identities
- 8.5 Summary

9. Some Applications of Trigonometry

- 9.1 Heights and Distances
- 9.2 Summary

10. Circles

- 10.1 Introduction
- 10.2 Tangent to a Circle
- 10.3 Number of Tangents from a Point on a Circle
- 10.4 Summary

11. Areas Related to Circles

- 11.1 Areas of Sector and Segment of a Circle
- 11.2 Summary

12. Surface Areas and Volumes

- 12.1 Introduction
- 12.2 Surface Area of a Combination of Solids
- 12.3 Volume of a Combination of Solids
- 12.4 Summary

13. Statistics

- 13.1 Introduction
- 13.2 Mean of Grouped Data
- 13.3 Mode of Grouped Data
- 13.4 Median of Grouped Data
- 13.5 Summary

14. Probability

- 14.1 Probability — A Theoretical Approach
- 14.2 Summary

Prescribed Book:-

Ganit : **HP Board of School Education**

Mathematics : **HP Board of School Education**