



MATHEMATICS

(Attached are typical problems from each topic that you should be able to count.)

1. Terminological Introduction

- Basic Numbers and their Sets
- Arithmetic Operations, Fractions, Operations with Fractions, Decimal Numbers and Percentages
- Exponents and Radicals, Practice with Expressions
- Sets, Numerical Sets and Intervals, Operations with Sets, Absolut Value, Divisibility, Venn diagram
- Basic Geometric Concepts, Triangles, Quadrilaterals, Perimeters and Areas of Plane Figures, Basic Solids and their Surfaces and Volumes

2. Algebra – Rational and Radical Expressions

- Polynomials
- Rational Expressions
- Exponents and Radicals

3. Equations and Inequalities

- Linear, Quadratic, Irrational, Systems
- Text Problems

4. Basic Concepts of Logic

- Statements, Operations with Statements
- Value of Statements

5. Cartesian Product, Binary relations, Mappings, Geometric Mapping (Identical and Similar)

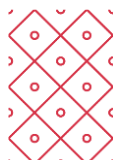
6. Real Functions: Basic Characteristics

- Function Linear, Quadratic, Rational, Polynomial
- Domain, Range, Graph, Inverse Functions

7. Exponential Functions, Equations, Inequalities

8. Logarithmic Functions

- Calculations with Logarithms
- Equations and Inequalities





9. Trigonometric Functions

- Expressions
- Equations and Inequalities
- Trigonometry (Law of Sines and of Cosines, Pythagorean Theorem, Euclid's Theorem)

10. Analytic Geometry: Points and Vectors

- Line (Equation, Relative Position, Deviation, Distance of a point from a line)
- Conic Sections (Equation of a Circle, an Ellipse, a Parabola and a Hyperbola, Relative Position of a Line and a Conic Section, Tangent Equation)

11. Complex Numbers

- Introduction, Algebraic and Trigonometric forms
- Operations with Complex Numbers
- Gaussian Plane, Moivre's Theorem
- Equations in the Set of Complex Numbers

12. Sequences

- Introduction and Characteristics
- Arithmetic and Geometric Sequences
- Limit of a Sequence
- Infinite Series, Text Problems

13. Combinatorics

- Fundamental Principles (Product and Sum)
- Factorials and Binomial Coefficients
- Variations, Permutations, Combinations
- The Binomial Theorem

