



MATURITNÍ TÉMATA

Školní rok:	2024/2025		
Ředitel školy:	PhDr. Karel Goš		
Předmětová komise:	Matematika a deskriptivní geometrie		
Předseda předmětové komise:	Mgr. Martin Minařík		
Předmět:	Matematika/Mathematics		
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Schváleno předmětovou komisí dne:	27. 8. 2024	Podpis:	
Schváleno ředitelem školy dne:	13. 9. 2024	Podpis a razítko:	
Počet výtisků:	8	Výtisk č.:	

1. Sets and Logic.

- Definition of a set and operations with sets including Cartesian product
- Statement and the basic operations with statements
- Tautologies
- Proofs in Mathematics

2. Linear Functions, Solving Linear Equations and Inequalities, Simultaneous Equations and Inequalities.

- Definition of a linear function, basic properties and their significance
- Different methods of solving linear equations and inequalities including absolute value

3. Quadratic Functions, Equations and Inequalities.

- Definition of a quadratic function, basic properties and their significance
- Different methods of solving quadratic equations including absolute value

4. Congruent and Similar Mappings.

- Isometric mappings, their definitions, properties, and classification
- Definition of a similar mapping and its basic properties
- Homothety – definition, basic properties
- Constructive tasks

5. Solving Right-angled Triangle.

- Definition and basic properties of a right-angled triangle
- Fundamental statements concerning a right-angled triangle
- Metric properties of a right-angled triangle

6. Solving Scalene Triangles.

- Definition and basic properties of scalene triangles
- Fundamental statements concerning the scalene triangle and its metric properties

7. Functions and Their Basic Properties.

- Cartesian product, binary relations and functions
- Definition of a function and its basic properties
- Classification of functions

8. Trigonometric Functions and Equations.

- Definition and basic properties of trigonometric functions
- Basic formulas concerning trigonometric functions
- Solving trigonometric equations

9. Exponential Functions, Equations and Inequalities.

- Definition, graph, and basic properties of exponential functions
- Basic methods of solving exponential equations and inequalities

10. Logarithmic Equations and Inequalities.

- Definition, graph and basic properties of logarithmic functions
- Basic methods of solving logarithmic equations and inequalities

11. Geometry in Space.

- Parallel projection
- Configuration of lines and planes in space
- Section of solids
- Angles between lines and planes in space
- Distances in space

12. Volumes and Surface Areas of Solids.

- Basic solids
- Surface area and volume of a solid

13. Complex Numbers.

- The set of complex numbers and its geometrical model
- Basic forms of complex numbers
- Moivre's theorem and binomial equations

14. Vectors.

- Characteristics of vectors, basic operations
- Scalar and vector products and their applications
- Mixed product and its application

15. Vector Geometry in the Plane - Lines.

- Equations of lines in a plane
- Configurations of lines in a plane
- Metric properties of lines.

16. Vector Geometry in Space.

- Equations of lines and planes in space
- Configurations of lines and planes in space
- Metric properties of lines and planes

17. Vector Geometry in the Plane - Conics.

- Definitions and equations of conics
- Configurations of lines and conics in a plane
- Tangents to conics

18. Combinatorics and Probability.

- Permutations with and without repetition
- Combinations
- Probability, conditional probability, binomial probability

19. Binomial Theorem.

- Definition of factorial, binomial coefficients and their properties
- Binomial theorem and its proof

20. Arithmetic Progression.

- Definition of sequence and its basic properties
- Arithmetic progression, its basic properties and applications

21. Geometric Progression.

- Definition of sequence and its basic properties
- Geometric progression, its basic properties and applications

22. Infinite Geometric Series.

- Series and their basic properties
- Convergent infinite geometric series

23. Limit and Derivative of Function.

- Definition of the first derivative, its geometrical and physical significance
- Rules for differentiation
- Differentiation of implicit functions

24. Curve Sketching.

- The role of derivatives in curve sketching

25. Indefinite Integral.

- Antiderivative of function
- Rules for integration
- Integration by parts and by substitution

26. Definite Integral.

- Definition of a definite integral, evaluation of definite integrals
- Geometrical applications of definite integral