



Requirements for the eighth graders to Pre IB at WMHS

EXAMINATION REQUIREMENTS MATHEMATICS

The purpose of the entrance exam is to check to what extent the candidate has mastered the primary school material

requirements:

<https://bip.cke.gov.pl/attachments/download/8042>, annex
2023/2024: <https://bip.cke.gov.pl/attachments/download/9520>,

as well as additional information about the candidates' mathematical and logical skills. The exam will include:

- knowledge and understanding: basic number skills, selecting and applying effectively mathematics to solve problems, checking results;
- investigating patterns, seeing connections and dependencies: applying reasoning, content analysis, giving arguments, noticing analogies, formulating applications, generalizing;
- communicating: using appropriate mathematical language to describe reasoning and obtained results, interpreting and creating mathematical data, representing data graphically, using different forms of representation when communicating mathematical ideas,

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reasoning and findings;

- applying mathematics in real-life context: selecting the best model to describe and solve the given problem, draw valid conclusions, reflect upon their results.

Detailed requirements:

1) Operations with arithmetic expressions:

- order of operations,
- GCD, LCM, division with remainder,
- changing decimals into fractions and the other way round, also in the case of periodic decimal fractions,
- comparing fractions and/or decimals,
- working with percentages,
- powers and roots, laws of operations on powers and roots,
- ratios, rates, scale,
- rounding numbers (significant figures concept), approximation and estimation,
- conversion of units: time, speed, distance, length, mass,
- units of areas and volumes.

2) Algebraic expressions:

- writing relationships in the form of algebraic expressions,
- calculating value of the given expression for the given variables,
- simplifying algebraic expressions, multiplying algebraic sums and adding like monomials,
- perfect squares formulas: square of a sum, square of a difference, difference of squares,

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- simple proofs.

3) Equations with one unknown:

- solving linear equations using the method of equivalent equations,
- solving equations that can be reduced to linear form,
- solving tasks with content, including percentage calculations,
- transforming simple geometrical or physical formulas and finding a formula for a given quantity,
- simple proportionality.

4) Plane geometry:

- point, segment, straight line, ray,
- the concepts of perpendicularity and parallelism,
- acute, obtuse, right angles,
- vertex, adjacent, alternating and corresponding angles,
- sum of interior angles in a triangle or polygon,
- congruent triangles SSS, SAS, ASA,
- relationships between sides and angles in isosceles and equilateral triangles,
- right triangle and Pythagorean theorem, triangles 45, 45, 90 and 30, 60, 90,
- simple geometric proofs,
- regular polygons, especially regular hexagon,
- the concept of diagonal,
- formulas for the perimeters and areas of flat figures: square, rectangle, rhombus, parallelogram, trapezoid,
- circle, circumference of a circle and area of a circle,

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the number π ,

- axisymmetric and centrally symmetric figures.

5) Number line and coordinate system on the plane:

- marking numbers and intervals on the number line,
- reading the coordinates of points in a rectangular coordinate system,
- marking points with given coordinates,
- finding the midpoint of a segment with given ends,
- calculating the length of a segment.

6) 3D geometry:

- cube, cuboid: volume, surface area, diagonals,
- prisms and pyramids: volumes and surface areas in tasks of low difficulty,
- prisms and pyramids in a realistic context, e.g. packing books or frames in a box.

7) Statistics and probability:

- interpretation and creation of tables, bar and pie charts, charts in the coordinate system,
- calculating the probability of events in simple experiments (e.g. throwing one or two dice, drawing cards from a deck, or drawing balls from an urn).

ENGLISH

Required skill level: B2.

Format: Written exam + oral exam

The written exam lasts up to 90 minutes and consists of three parts:

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1. Reading comprehension
2. Grammar and vocabulary
3. Writing: e-mail, opinion essay or for-and-against essay (200-250 words)

Grammar and vocabulary covered:

1. Present, past and future tenses
2. Articles and quantifiers
3. Conditionals
4. Comparatives and superlatives
5. Modal verbs
6. The passive
7. Gerunds and infinitives
8. Direct and indirect questions; question tags
9. Reported speech
10. Relative clauses
11. Unreal past
12. People and society
13. Food and drink
14. Health and fitness
15. Travel and transport
16. Hobbies, sports and games
17. Science and technology
18. The media
19. The law and crime
20. Education and learning
21. Weather and the environment
22. Money and shopping
23. Fashion and design

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24. Entertainment

25. Work and business

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