Gymnázium, Šrobárova 1, 042 23 Košice, Slovakia

IB DP MATHEMATICS Applications and Interpretation

Mathematics entrance exam

- ✓ 60-minute test
- ✓ non-calculator
- ✓ required equipment: pen, pencil, ruler
- ✓ no multiple choice questions
- ✓ students are expected to show their full method, as marks will be awarded for relevant steps of the working out as well as answers
- ✓ students will demonstrate their mathematical skills and knowledge of mathematical terminology in English language
- ✓ in order to revise and prepare for the test, students can use some of the following resources:
    - videos on YouTube, Khan Academy
    - websites, e.g.:

website	**link**
Maths Genie	https://www.mathsgenie.co.uk/gcse.html
Mr Barton Maths	http://www.mrbartonmaths.com/index.html
IXL	IXL Math | Learn math online
Centre for Innovation in Mathematics Teaching	https://www.cimt.org.uk/projects/mepres/step-up/index.htm

Prior knowledge topics list

It is expected that students have secure mathematical knowledge before starting a DP Mathematics course.

The table below lists the topics students should be familiar with before embarking on the DP Mathematics course in accordance with the IB DP Mathematics AI guide (p. 24-25), pre-IB guidance and Slovak syllabus bearing in mind the demands of the IB DP Mathematics course. A selection of these topics will be included in the Mathematics entrance exam, with emphasis on numerical and algebraic skills, functions and geometry.

NUMBER	ALGEBRA and FUNCTIONS
✓ number sets ✓ number line, interval notation ✓ factors, highest common factor ✓ multiples, lowest common multiple ✓ prime numbers and composites ✓ sets, subsets, complement, union, intersection ✓ Venn diagrams ✓ rounding numbers ✓ scientific notation (standard form) ✓ exponent notation, index laws ✓ rational indices ✓ square roots and cube roots ✓ surds – simplifying, adding, subtracting, multiplying, dividing, rationalizing the denominator ✓ order of operations (BODMAS) ✓ operations with integers, decimals, fractions ✓ percentages ✓ ratio ✓ direct and inverse proportion ✓ absolute value ✓ familiarity with commonly accepted word currencies	✓ algebraic notation ✓ algebraic expressions – simplifying, collecting like terms, evaluating ✓ formulae – construction, substitution, rearranging ✓ expanding brackets ✓ binomial expansion ✓ factorisation ✓ algebraic fractions – evaluating, simplifying, adding, subtracting, multiplying, dividing ✓ solving equations – linear, rational, exponential ✓ solving quadratic equations by: - factorizing - completing the square - quadratic formula ✓ discriminant ✓ solving inequalities – linear, rational, quadratic ✓ simultaneous equations ✓ function notation, domain, range, graphs ✓ functions – linear, quadratic, exponential, trigonometric ✓ composite function ✓ inverse function
GEOMETRY and TRIGONOMETRY	**PROBABILITY and STATISTICS**
✓ Pythagoras ´ Theorem ✓ angles ✓ circles, circle theorems, cyclic quadrilaterals ✓ similarity ✓ congruent triangles ✓ international system (SI) units ✓ perimeter and areas of 2D shapes - triangles, quadrilaterals, polygons, circles, compound shapes ✓ surface area and volume of 3D shapes - prisms, cylinders, spheres, pyramids, cones ✓ areas and volumes of similar shapes and objects ✓ transformations: reflection, rotation, enlargement, translation ✓ trigonometric ratios in right-angle triangles ✓ angles of elevation and depression ✓ 3D problem solving ✓ sine rule, cosine rue	✓ experimental probability ✓ theoretical probability ✓ sample space ✓ compound events ✓ mutually exclusive and independent events ✓ quantitative and qualitative data ✓ discrete and continuous data ✓ cumulative data ✓ measuring the centre - mean, median, mode ✓ measuring the spread - range, interquartile range, standard deviation ✓ representing and interpreting data from diagrams - bar charts, pie charts, pictograms, line graphs