

Mathematics – Year 7 (MYP Year 1)

Strands & Concepts	Benchmarks - Students are able to:
<p>1. NUMBER (Relates to objectives A, B, C & D)</p> <p>Number systems:</p> <ul style="list-style-type: none"> • The four number operations • Integers, fractions, decimals • Prime numbers and factors including greatest common divisor and least common multiple • Estimation • Units of measurement • Number sequences 	<p>1.1 Order numbers</p> <p>1.2 Transform between different forms of numbers;</p> <p>1.3 Simplify numerical expressions in the number systems and forms of number;</p> <p>1.4 Recognize and classify numbers in different number systems;</p> <p>1.5 Use the four number operations (addition, subtraction, multiplication and division) with integers, decimals and simple fractions;</p> <p>1.6 Represent a number as the product of its prime factors and using this representation to find the greatest common divisor and least common multiple;</p> <p>1.7 Use different forms of rounding, decimal approximation;</p> <p>1.8 Use appropriate forms of rounding to estimate results;</p> <p>1.9 Convert between different units of measurement, and;</p> <p>1.10 Predict the next term in the number sequence (linear, triangular, Fibonacci).</p>
<p>2. ALGEBRA (Relates to objectives A, B, C & D)</p> <p>Expressions & Equations:</p> <ul style="list-style-type: none"> • Operations with algebraic terms and substitution • Linear equations 	<p>2.1 Expanding and simplifying algebraic expressions</p> <p>2.2 Factorizing algebraic expressions</p> <p>2.3 Using substitution to evaluate expressions</p> <p>2.4 Finding general rules/formulae for sequences</p> <p>2.5 Solving the linear function $f(x) = mx + c$, its graph</p> <p>2.6 Sketching and interpreting graphs</p> <p>2.7 Solving equations algebraically and using graphs</p>
<p>3. GEOMETRY & TRIGONOMETRY (Relates to</p>	<p>3.1 Solving problems using the properties of angles in intersecting and parallel lines</p> <p>3.2 Solving problems using the properties of angles in regular and</p>

<p>objectives A, B, C & D)</p> <p>Geometry:</p> <ul style="list-style-type: none"> • Geometrical elements and their classification • Distance • Angle properties • Triangle properties • Perimeter/area/volume • Cartesian plane • Constructions 	<p>irregular polygons</p> <p>3.3 Finding the perimeter (circumference), area and volume of regular two-dimensional (2D) and three-dimensional (3D) shapes</p> <p>3.4 Identifying the different components of the Cartesian plane: axes, origin, coordinates (x, y) and points</p> <p>3.5 Understanding and using the Cartesian plane, plot graphs</p> <p>3.6 Using geometry tools to make basic constructions and using these in solving problems.</p> <p>3.7 Transforming a figure by rotation, reflection, translation and enlarging.</p>
<p>4. STATISTICS & PROBABILITY (Relates to objectives A, B, C & D)</p> <p>Statistics</p> <ul style="list-style-type: none"> • Graphical analysis and representation (pie charts, histograms, line graphs) • Population sampling • Measures of central tendency/location (mean, mode, median) • Measures of dispersion (range) 	<p>4.1 Constructing and interpreting graphs</p> <p>4.2 Selecting samples and making inferences about populations</p> <p>4.3 Calculating the mean, median and mode</p>
<p>5. DISCRETE MATHEMATICS (Relates to objectives A, B, C & D)</p>	<p>5.1 Performing operations</p> <p>5.2 Interpreting Venn diagrams</p> <p>5.3 Using Venn diagrams to solve problems in real-life contexts</p> <p>5.4 Logic puzzles and problems</p>

Logic

- Venn diagrams
- Logic problems

Mathematics – Year 8 (MYP Year 2)

Strands & Concepts	Benchmarks - Students are able to:
<p>1. NUMBER (Relates to objectives A, B, C & D)</p> <p>Number systems:</p> <ul style="list-style-type: none"> • Integers, fractions, decimals • The four number operations • Estimation • Units of measurement • Ratio, percentage 	<p>1.1 Recognizing and classifying numbers in different number systems</p> <p>1.2 Using the four number operations (addition, subtraction, multiplication and division) with integers, decimals and more difficult fractions</p> <p>1.3 Using different forms of rounding and decimal approximation</p> <p>1.4 Using appropriate forms of rounding to estimate results</p> <p>1.5 Dividing a quantity in a given ratio</p>
<p>2. ALGEBRA (Relates to objectives A, B, C & D)</p> <p>Expressions & Equations:</p> <ul style="list-style-type: none"> • Addition, subtraction, multiplication and division of algebraic terms • Substitution • Linear functions and equations 	<p>2.1 Expanding and simplifying algebraic expressions</p> <p>2.2 Factorizing algebraic expressions</p> <p>2.3 Using substitution to evaluate expressions</p> <p>2.4 Changing the subject of the formula</p> <p>2.5 Solving equations involving algebraic fractions</p> <p>2.6 Using the laws of exponents</p> <p>2.7 Finding and justifying or proving general rules/formulae for sequences</p> <p>2.8 Graphing different types of functions and understanding their characteristics</p> <p>2.9 Sketching and interpreting graphs</p> <p>2.10 Solving equations algebraically and using graphs</p> <p>Extended only:</p> <p>2.11 Finding the sum of the series</p> <p>2.12 Finding unknowns (ratio, term, and so on)</p>
<p>3. GEOMETRY & TRIGONOMETRY (Relates to objectives A, B, C & D)</p> <p>Geometry:</p> <ul style="list-style-type: none"> • Geometrical elements and 	<p>3.1 Naming and classifying different geometrical elements (point, line, angle, regular and irregular planar figures, solids)</p> <p>3.2 Solving problems using the properties of angles in different figures or positions</p> <p>3.3 Solving problems using the properties of acute, right and obtuse angles in triangles</p> <p>3.4 Solving problems using the properties of angles in intersecting and parallel lines</p> <p>3.5 Solving problems using the properties of angles in regular and</p>

<p>their classification</p> <ul style="list-style-type: none"> • Angle properties • Triangle properties • Perimeter/area/volume • Cartesian plane <p>Constructions</p>	<p>irregular polygons</p> <p>3.6 Solving problems using the properties of angles in circles.</p> <p>3.7 Finding the perimeter (circumference), area and volume of regular and irregular two-dimensional (2D) and three-dimensional (3D) shapes.</p> <p>3.8 Identifying the different components of the Cartesian plane: axes, origin, coordinates (x, y) and points</p> <p>3.9 Understanding and using the Cartesian plane and plot graphs</p> <p>3.10 Measuring distances between two points</p> <p>3.11 Measuring distances between a line and a point.</p> <p>3.12 Using geometry tools to make basic constructions and using these in solving problems</p>
<p>4. STATISTICS & PROBABILITY (Relates to objectives A, B, C & D)</p> <p>Statistics:</p> <ul style="list-style-type: none"> • Graphical analysis and representation (pie charts, histograms, line graphs) • Measures of central tendency/location (mean, mode, median, quartile, percentile) • Measures of dispersion (range) • Probability of an event • Probability of exclusive and combined events • Probability of successive trials 	<p>4.1 Constructing and interpreting graphs</p> <p>4.2 Calculating the mean, median and mode</p> <p>4.3 Choosing the best measure of central tendency</p> <p>4.4 Calculating probabilities of simple events</p> <p>4.5 Calculating probabilities of mutually exclusive events and combined events</p> <p>4.6 Using tree diagrams to determine the probability of repeated events</p> <p>Extended only:</p> <p>4.7 Drawing the line of best fit</p> <p>4.8 Calculating conditional probability</p>
<p>5. DISCRETE MATHEMATICS (Relates to objectives A, B, C & D)</p>	<p>5.1 Performing operations</p> <p>5.2 Ability to solve problems in real-life contexts</p> <p>5.3 Devising and describing procedures for performing complete calculations</p> <p>5.4 Logic puzzles and problems</p>

Logic:

- Problem solving
- Logic

Mathematics – Year 9 (MYP Year 3)

Strands & Concepts	Benchmarks - Students are able to:
<p>1. NUMBER (Relates to objectives A, B, C & D)</p> <p>Number systems:</p> <ul style="list-style-type: none"> • Exponents, standard form (scientific notation) • Rationals, irrationals and real numbers • Number lines • Units of measurement 	<p>1.1 Transformation between different forms of numbers</p> <p>1.2 Simplification of numerical expressions in the number systems and forms of number</p> <p>1.3 Recognizing and classifying numbers in different number systems</p> <p>1.4 Using the four number operations (addition, subtraction, multiplication and division) with integers, decimals and simple fractions</p> <p>1.5 Expressing the solution set of a linear inequality on the number line</p> <p>Extended only:</p> <p>1.6 Using the rules of indices to simplify numerical expressions involving radicals and exponents</p>
<p>2. ALGEBRA (Relates to objectives A, B, C & D)</p> <p>Expressions & Equations</p> <ul style="list-style-type: none"> • Addition, subtraction, multiplication and division of algebraic terms • Factorization • Rearranging algebraic expressions • Algebraic fractions • Integer exponents (including negative number exponents) • Linear expressions 	<p>2.1 Expanding and simplifying algebraic expressions</p> <p>2.2 Factorizing algebraic expressions</p> <p>2.3 Using substitution to evaluate expressions</p> <p>2.4 Changing the subject of the formula</p> <p>2.5 Solving equations involving algebraic fractions</p> <p>2.6 Using the laws of exponents</p> <p>2.7 Solving the linear function $f(x) = mx + c$ and its graph</p> <p>2.8 To identify the gradient and y-intercept of a linear function</p> <p>2.9 Graphing different types of functions and understanding their characteristics</p> <p>2.10 Sketching and interpreting graphs</p> <p>2.11 Solving equations algebraically and using graphs</p> <p>2.12 Solving and graphing linear inequalities</p>

<p>and graphs</p> <ul style="list-style-type: none"> Linear equations 	
<p>3. GEOMETRY & TRIGONOMETRY (Relates to objectives A, B, C & D)</p> <p>Geometry</p> <ul style="list-style-type: none"> Distance Angle properties Triangle properties Perimeter/area/volume The Cartesian plane Constructions Simple isometric transformations Loci Similarity and congruence theorems 	<p>3.1 Solving problems using the properties of angles in different figures or positions</p> <p>3.2 Solving problems using the properties of acute, right and obtuse angles in triangles</p> <p>3.3 Solving problems using the properties of angles in intersecting and parallel lines</p> <p>3.4 Solving problems using the properties of angles in regular and irregular polygons</p> <p>3.5 Solving problems involving triangles by using Pythagoras' theorem and its converse</p> <p>3.6 Solving problems involving triangles by using properties of similar triangles</p> <p>3.7 Solving problems involving triangles by using properties of congruent triangles</p> <p>3.8 Finding the perimeter (circumference), area and volume of regular and irregular two-dimensional (2D) and three-dimensional (3D) shapes</p> <p>3.9 Identifying the different components of the Cartesian plane: axes, origin, coordinates (x, y) and points</p> <p>3.10 Transforming a figure by rotation, reflection, translation and enlarging</p> <p>3.11 Using locus concept to solve problems in two dimensions</p>
<p>4. STATISTICS & PROBABILITY (Relates to objectives A, B, C & D)</p> <p>Statistics</p> <ul style="list-style-type: none"> Graphical analysis and representation Population sampling Measures of central tendency/location Measures of dispersion 	<p>4.1 Constructing and interpreting graphs</p> <p>4.2 Selecting samples and making inferences about populations</p> <p>4.3 Calculating the mean, median and mode</p> <p>4.4 Choosing the best measure of central tendency</p> <p>Extended only:</p> <p>4.5 Drawing the line of best fit</p>
<p>5. DISCRETE</p>	<p>5.1 Performing operations</p>

<p>MATHEMATICS (Relates to objectives A, B, C & D)</p> <p>Logic</p> <ul style="list-style-type: none">• Logic problems• Problem solving	<p>5.2 Ability to solve problems in real-life contexts</p> <p>5.3 Devising and describing procedures for performing complete calculations</p> <p>5.4 Logic puzzles and problems</p>
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Mathematics – Year 10 (MYP Year 4)

Strands & Concepts	Benchmarks - Students are able to:
<p>1. NUMBER (Relates to objectives A, B, C & D)</p> <p>Number systems:</p> <ul style="list-style-type: none"> • Set of positive integers and zero, integers, rationals, radicals, irrationals and real numbers • Fractional exponents 	<p>1.1 Recognizing and classifying numbers in different number systems</p> <p>1.2 Use different forms of rounding and decimal approximation</p> <p>1.3 Use significant figures</p> <p>Extended only:</p> <p>1.4 Review the rules of indices to simplify numerical expressions involving radicals and exponents</p>
<p>2. ALGEBRA (Relates to objectives A, B, C & D)</p> <p>Expressions and Equations</p> <ul style="list-style-type: none"> • Algebraic operations • Factorization of linear and quadratic expressions • Integer exponents (including negative number exponents) • Simultaneous and quadratic equations <p>Functions:</p> <ul style="list-style-type: none"> • Quadratic • Trigonometric 	<p>2.1 Review expanding and simplifying algebraic expressions</p> <p>2.2 Review factorizing algebraic expressions</p> <p>2.3 Using the laws of exponents</p> <p>2.4 Sketching and interpreting graphs</p> <p>2.5 Solving equations algebraically and using graphs</p> <p>Extended only:</p> <p>2.6 Graphing different types of functions and understanding their characteristics</p> <p>2.7 Solving non-linear inequalities</p>

<p>3. GEOMETRY & TRIGONOMETRY (Relates to objectives A, B, C & D)</p> <p>Geometry</p> <ul style="list-style-type: none"> • Geometrical classification of solids • Angle properties of circles • Triangle properties • Perimeter/area/volume • The Cartesian plane <p>Trigonometry</p> <ul style="list-style-type: none"> • Trigonometric ratios in right-angled triangles • Simple isometric transformation • Similarity and congruence theorems • Trigonometric ratios for angles bigger than 90° • Sine and cosine rules 	<p>3.1 Naming and classifying different geometrical elements (point, line, angle, regular and irregular planar figures, solids)</p> <p>3.2 Solving problems using the properties of angles in different figures or positions</p> <p>3.3 Solving problems using the properties of acute, right and obtuse angles in triangles</p> <p>3.4 Solving problems using the properties of angles in intersecting and parallel lines</p> <p>3.5 Solving problems using the properties of angles in regular and irregular polygons</p> <p>3.6 Solving problems using the properties of angles in circles</p> <p>3.7 Solving problems using the properties of properties of similar triangles</p> <p>3.8 Solving problems using the properties of properties of congruent triangles</p> <p>3.9 Finding the surface area and volume of regular and irregular three-dimensional (3D) shapes</p> <p>3.10 Relating angles and sides of right-angled triangles using sines, cosines and tangents</p> <p>3.11 Solving problems in right-angled triangles using trigonometric ratios</p> <p>3.12 Using geometry tools to make basic constructions and using these in solving problems</p> <p>Extended only:</p> <p>3.13 Justifying or proving theorems for congruence, similarity, shape and angles</p> <p>3.14 Using the sine and cosine rules to solve problems</p>
<p>4. STATISTICS & PROBABILITY (Relates to objectives A, B, C & D)</p> <p>Probability</p> <ul style="list-style-type: none"> • Probability of an event • Probability of exclusive and 	<p>4.1 Calculating probabilities of simple events</p> <p>4.2 Calculating probabilities of mutually exclusive events and combined events</p> <p>4.3 Using tree diagrams to determine the probability of repeated events</p> <p>Extended only:</p> <p>4.4 Calculating conditional probability</p>

<p>combined events</p> <ul style="list-style-type: none"> • Probability of successive trials 	
<p>5. DISCRETE MATHEMATICS (Relates to objectives A, B, C & D)</p> <p>Venn Diagrams</p>	<p>5.1 Drawing and interpreting Venn diagrams 5.2 Using Venn diagrams to solve problems in probability</p>

Mathematics – Year 11 (MYP Year 5)

Strands & Concepts	Benchmarks - Students are able to:
<p>1. NUMBER (Relates to objectives A, B, C & D)</p> <p>Forms of numbers:</p> <ul style="list-style-type: none"> • Exponents, surds/radicals • Direct and inverse proportion • Number sequences • Fractional exponents 	<p>1.1 Setting up equations and graphing direct and inverse relationships</p> <p>1.2 Predicting the next term in a sequence (linear, quadratic, triangular, Fibonacci)</p> <p>Extended only:</p> <p>1.3 Using the rules of indices to simplify numerical expressions involving radicals and exponents</p>
<p>2. ALGEBRA (Relates to objectives A, B, C & D)</p> <p>Expressions and Equations</p> <ul style="list-style-type: none"> • Factorization of linear and quadratic expressions • Linear, simultaneous, and quadratic equations • Inequalities • Arithmetic & geometric series • Matrices <p>Functions:</p> <ul style="list-style-type: none"> • Linear, quadratic, logarithmic, reciprocal, 	<p>2.1 Using the laws of exponents</p> <p>2.2 Finding and justifying or proving general rules/formulae for sequences</p> <p>2.3 Solving the linear function $f(x) = mx + c$, and its graph</p> <p>2.4 To identify the gradient and y-intercept of a linear function</p> <p>2.5 Determining the range, given the domain</p> <p>2.6 Sketching and interpreting graphs</p> <p>2.7 Solving equations algebraically and using graphs</p> <p>Extended only:</p> <p>2.8 Using the laws of logarithms</p> <p>2.9 Graphing different types of functions and understanding their characteristics</p> <p>2.10 Determining inverse and composite functions and their graphs</p> <p>2.11 Solving non-linear inequalities</p> <p>2.12 Developing and justifying or proving general rules/formulae for sequences</p> <p>2.13 Finding the sum of the series</p> <p>2.14 Performing basic operations with matrices</p>

<p>trigonometric and radical functions</p> <ul style="list-style-type: none"> • Domain and range • Inverse and composite functions. 	
<p>3. GEOMETRY & TRIGONOMETRY (Relates to objectives A, B, C & D)</p> <p>Geometry</p> <ul style="list-style-type: none"> • Simple isometric transformation • Vectors and vector spaces • Similarity and congruence theorems <p>Trigonometry</p> <ul style="list-style-type: none"> • Trigonometric ratios in right-angled triangles • Trigonometric ratios for angles bigger than 90° • Sine and cosine rules 	<p>3.1 Measuring distance between two points 3.2 Measuring distance between a line and a point 3.3 Relating angles and sides of right-angled triangles using sines, cosines and tangents 3.4 Solving problems in right-angled triangles using trigonometric ratios 3.5 Using geometry tools to make basic constructions and using these in solving problems</p> <p>Extended only:</p> <p>3.6 Justifying or proving simple trigonometric identities to simplify and solve equations where $0^\circ \leq \theta \leq 360^\circ$ 3.7 Using the sine and cosine rules to solve problems</p>
<p>4. STATISTICS & PROBABILITY (Relates to objectives A, B, C & D)</p>	<p>4.1 Constructing and interpreting graphs 4.2 Selecting samples and making inferences about populations 4.3 Calculating the mean, median and mode 4.4 Choosing the best measure of central tendency 4.5 Calculating probabilities of simple events 4.6 Calculating probabilities of mutually exclusive events and combined events 4.7 Using tree diagrams to determine the probability of repeated</p>

<p>Statistics</p> <ul style="list-style-type: none"> Graphical analysis and representation Population sampling Measures of central tendency/location Measures of dispersion Probability of successive trials Normal distribution and standard deviation Linear regression Correlation <p>Probability</p> <ul style="list-style-type: none"> Conditional probability 	<p>events</p> <p>Extended only:</p> <p>4.8 Making inferences about normal distributed data given the mean and the standard deviation</p> <p>4.9 Drawing the line of best fit</p> <p>4.10 Calculating conditional probability</p>
<p>5. DISCRETE MATHEMATICS (Relates to objectives A, B, C & D)</p> <p>Venn Diagrams</p>	<p>5.1 Drawing and interpreting Venn diagrams</p> <p>5.2 Using Venn diagrams to solve problems in probability</p>