

MYP Subject Overview Mathematics

Grade 6 Year 1	Grade 7 Year 2	Grade 8 Year 3	Grade 9 Year 4	Grade 10 Year 5
<ol style="list-style-type: none"> 1. Numbers 2. Algebra 3. Geometry 4. Ratios & Percentages 	<ol style="list-style-type: none"> 1. Sets & Venn Diagrams 2. Geometry – Area 3. Algebra 4. Geometry – Polygons & Pythagorean Theory 	<ol style="list-style-type: none"> 1. Real numbers 2. Algebra 3. Trigonometry 4. Statistics 	<ol style="list-style-type: none"> 1. Coordinate Geometry & Simultaneous equations 2. Functions: Quadratic equation, relation & function, polynomials 3. Exponential & logarithm 4. Circle Geometry 	<ol style="list-style-type: none"> 1. Relations & Functions 2. Quadratic Function 3. Advanced trigonometry 4. Probability 5. Statistics

MYP Subject Overview
Mathematics
Grade 6 (MYP 1)

33 hours		ATL Skills	Content
Unit Title (1)	Numbers	<p>Thinking Skills – Critical Thinking Apply critical thinking to solve problems, analyze patterns, and reason logically. Use pattern recognition to formulate general rules. Apply logic in magic squares and justify reasoning. Analyze geometric patterns and coordinate relationships. Evaluate and justify mathematical design decisions.</p> <p>Thinking Skills – Creative Thinking Use innovative approaches to represent numbers in a meaningful & engaging format</p> <p>Self-Management Skills – Organization Skills Manage time effectively, organize calculations and solutions. Plan investigations, check work methodically. Maintain accuracy & organization. Manage multi-step projects</p> <p>Self-Management Skills – Reflection Skills Reflect on mathematical processes and outcomes.</p> <p>Communication Skills Present reasoning clearly. Use mathematical language, symbols, and notation accurately. Communicate through diagrams and representations. Produce coherent and structured mathematical reports.</p>	<p>Whole Numbers</p> <ul style="list-style-type: none"> Exponent notation: powers, indices, base, exponent Squares & cubic numbers Factors, multiples, prime & composite numbers Even & odd numbers Divisibility tests Number line concepts: positive, negative numbers, opposites Order of operations: brackets, indices, multiplication/division, addition/subtraction Coordinate vocabulary: axes, origin, coordinates (x, y), positive & negative coordinates
MYP Objectives	A – Knowing & Understanding B – Investigating Patterns C – Communicating D – Applying mathematics in real-life contexts		
Key concept	Form		
Related concepts	Quantity Representation		
Global context	Scientific & Technical Innovation Mathematics as a universal language used to represent quantities & solve problems in science and technology		
Statement of inquiry	Quantities can be represented in different forms , allowing us to interpret, analyze, & respond to changes in scientific & real-life contexts .		

MYP Subject Overview
Mathematics
Grade 6 (MYP 1)

25 hours		ATL Skills	Content
Unit Title (2)	Algebra	<p>Thinking Skills – Critical Thinking Recognize patterns in algebraic expressions & apply generalization to simplify & transform them. Break complex expressions into manageable parts using models such as the pyramid model & area model. Select appropriate algebraic strategies & justify each step logically when collecting like terms, applying the distributive property, & solving equations.</p> <p>Thinking Skills – Transfer Skills Apply algebraic concepts and strategies to unfamiliar problems & authentic real-life situations. Model situations using expressions, equations, & formulae. Transfer understanding of patterns, generalization, & logical reasoning beyond routine exercises to new mathematical & real-world contexts.</p> <p>Self-Management Skills – Organization Follow structured steps when simplifying expressions & solving equations. Check the accuracy of work systematically. Manage time effectively during class activities, assessments, & problem-solving tasks. Demonstrate perseverance when solving increasingly complex algebraic problems.</p> <p>Self-Management Skills – Reflection Reflect on errors & misconceptions to improve understanding & performance</p> <p>Communication Skills Read, write, and interpret algebraic expressions accurately using correct notation and vocabulary. Explain mathematical reasoning verbally & in writing. Communicate solutions clearly when simplifying expressions, using models, and solving equations. Interpret and explain results in both mathematical and real-life contexts.</p>	<p>Algebra</p> <ul style="list-style-type: none"> Mathematical vocabulary related to algebra (term, coefficient, constant, variable, expression, equation) Product notation and exponent notation The distributive property Rules for collecting like terms Inverse operations used to solve equations Common algebraic formula
MYP Objectives	A – Knowing & Understanding D – Applying mathematics in real-life contexts		
Key concept	Logic		
Related concepts	Pattern Generalization Models		
Global context	Scientific & Technical Innovation How humans use algebraic models & symbolic language to represent, analyze, & solve problems in science, technology, & everyday life.		
Statement of inquiry	By recognizing and generalizing patterns , we use algebra as a logical language to build expressions & models that represent & solve real-world problems.		

34 hours		ATL Skills	Content
Unit Title (3)	Geometry	<p>Thinking Skills – Critical Thinking Analyse geometric properties & relationships. Solve problems using reasoning & evidence. Interpret measurement data & justify conclusions. Evaluate solutions in real-life contexts.</p> <p>Thinking Skills – Creative Thinking Design aesthetic & functional geometric spaces. Create original layouts & scale drawings. Generate & refine design ideas.</p> <p>Thinking Skills – Transfer Apply geometry to authentic situations such as rooms, gardens, architecture & design. Use mathematical knowledge in unfamiliar contexts.</p> <p>Research Skills – Information literacy Collect, record and analyse data. Research & compare geometric properties. Organize information using tables, diagrams & reports</p> <p>Social Skills – Collaboration Work effectively in teams. Share responsibility and make group decisions. Build consensus from collected evidence.</p> <p>Self-Management Skills – Organization Plan investigations & projects. Manage time & tasks effectively. Organize mathematical work systematically.</p> <p>Self-management – Reflection Reflect on accuracy, effectiveness and design choices. Evaluate the practicality of solutions & learning processes</p> <p>Communication Use mathematical language & notation accurately. Communicate reasoning through diagrams, reports & presentations. Organize & present information logical</p>	<p>Geometry</p> <ul style="list-style-type: none"> • Definitions & classifications of polygons according to the number of sides. • Types of triangles: scalene, isosceles, equilateral, & right triangles. • Properties of triangles, including that the sum of interior angles is 180°. • Properties of isosceles triangles, including equal sides & equal base angles. • Types and properties of quadrilaterals: parallelogram, rectangle, square, rhombus, and trapezium. • That the sum of interior angles in a quadrilateral is 360°. • Definitions of length, perimeter, area, radius, diameter, & circumference. • Formulae for: <ul style="list-style-type: none"> - Perimeter of polygons - Area of triangles, rectangles, squares, parallelograms, & trapeziums - Circumference of circles - Area of circles - Composite figures (Shaded Areas)
MYP Objectives	A – Knowing & Understanding B – Investigating Patterns C – Communicating D – Applying mathematics in real-life contexts		
Key concept	Form		
Related concepts	Quantity Space Measurement		
Global context	Personal & Cultural Expression The way in which we reflect on and enjoy our creativity/our appreciation of the aesthetic.		
Statement of inquiry	By understanding geometric forms and quantities , we can design functional and aesthetic spaces in our daily lives, including art, homes, gardens, and architecture.		

MYP Subject Overview
Mathematics
Grade 6 (MYP 1)

20 hours		ATL Skills	Content
Unit Title (4)	Ratios & Percentage	<p>Thinking Skills – Critical Thinking Analysing proportional relationships, comparing representations (ratio, fraction, decimal, percentage), evaluating which representation is most useful in different contexts, solving multi-step percentage problems logically</p> <p>Thinking Skills – Creative Thinking Generating multiple solution methods, designing original real-world ratio and percentage problems, proposing creative representations of proportions, brainstorming future technological applications of proportional reasoning.</p> <p>Thinking Skills – Transfer Applying proportional reasoning to authentic contexts such as shopping, business, science labs, recipes, sports statistics, and technological innovation.</p> <p>Self-Management Skills – Organization Managing time during assessments and problem-solving activities, organizing notes and formula sheets, breaking tasks into smaller steps, tracking mastery of subtopics using checklists</p> <p>Self-management – Reflection Reflecting on common mathematical errors, adjusting strategies, evaluating whether solutions make sense in authentic contexts, monitoring progress toward learning goals.</p> <p>Communication Skills Using appropriate mathematical language accurately, organizing information using ratio tables and number lines, communicating reasoning step-by-step, presenting conclusions using tables and written explanations.</p> <p>Research Skills – Information literacy Collecting and analysing real-world data such as prices and unit rates, interpreting shopping receipts and nutrition labels, comparing data representations, investigating business and scientific applications of ratios and percentages.</p> <p>Social Skills – Collaboration Working collaboratively in group investigations and mini-lessons, discussing debatable mathematical questions, peer review of problem-solving strategies, collaborative inquiry tasks</p>	<p>Ratios & Percentage</p> <ul style="list-style-type: none"> • Definition of ratio, rate, proportion, percentage. • How to write ratios in lowest terms • How to convert between fractions, decimals, percentages • Formulas for percentage increase, decrease, discount, percentage change • Difference between unit cost & rate
MYP Objectives	A – Knowing & Understanding D – Applying mathematics in real-life contexts		
Key concept	Form		
Related concepts	Quantity Representation		
Global context	Scientific & Technical Innovation		
Statement of inquiry	The form of a proportional relationship (ratio, rate, or percentage) allows us to represent and compare quantities efficiently, driving scientific and technical innovation through precise decision-making.		

15 hours		ATL Skills	Content
Unit Title (1)	Sets & Venn Diagrams	<p>Thinking Skills – Critical Thinking Analysing relationships between sets, recognizing and analysing patterns in data, evaluating whether conclusions logically follow from survey data and Venn diagrams, interpreting overlapping regions and logical relationships. reasoning.</p> <p>Thinking Skills – Transfer Applying set theory and Venn diagrams to unfamiliar real-life situations such as survey analysis, classification problems, sports preferences, languages spoken, and data interpretation tasks</p> <p>Thinking Skills – Creative Thinking Designing surveys, selecting effective representations, creating different product formats such as posters, reports, slideshows, and digital infographics to communicate mathematical findings creatively</p> <p>Self-management – Reflection Reflecting on communication using mathematical language, evaluating effectiveness of data analysis, reflecting on how Venn diagrams simplify complex data and support logical thinking.</p> <p>Communication Skills Using mathematical notation and symbols accurately, organizing mathematical explanations logically, presenting information through Venn diagrams, tables, reports, posters, slideshows, and infographics. Communicating coherent mathematical reasoning, organizing information using logical structure, explaining what Venn diagrams reveal better than tables alone.</p> <p>Research Skills – Information literacy Collecting, recording, verifying, and organizing survey data systematically, analysing survey results using frequency tables and Venn diagrams, checking accuracy before analysis.</p> <p>Social Skills – Collaboration Peer discussion on shading regions, collaborative group work on 3-set Venn diagrams, peer feedback to refine conclusions and representations, group survey investigations.</p>	<p>Sets & Venn Diagrams</p> <ul style="list-style-type: none"> Vocabulary of sets and notation (\in, \emptyset, \cap, \cup, ') Venn diagrams, represent data, interpret results. Definition of sets and element Universal set and complement Intersection and union of sets Venn diagrams with 2 and 3 sets Numbers in regions & shading Problem solving using Venn diagrams
MYP Objectives	<p>A – Knowing & Understanding</p> <p>B – Investigating Patterns</p> <p>C – Communicating</p> <p>D – Applying mathematics in real-life contexts</p>		
Key concept	Relationships		
Related concepts	Representation Generalization		
Global context	<p>Scientific & Technical Innovation</p> <p>How we use logical representation to solve problems in real-life situations.</p>		
Statement of inquiry	<p>Mathematical relationships can be represented & generalized through sets & Venn diagrams, helping us analyse & solve real-life problems logically & efficiently.</p>		

MYP Subject Overview
Mathematics
Grade 7 (MYP 2)

25 hours		ATL Skills	Content
Unit Title (2)	Geometry	<p>Thinking Skills – Critical Thinking Analysing relationships between dimensions, evaluating efficiency of designs, reasoning about how surface area and volume change, justifying design decisions mathematically.</p> <p>Thinking Skills – Transfer Applying prior knowledge of 2D geometry to model 3D designs, transferring formulas to unfamiliar design challenges, predicting how changing dimensions affects efficiency, surface area, and volume.</p> <p>Thinking Skills – Creative Thinking Designing shaded recreational areas and animal troughs, generating multiple design solutions, modelling geometric structures creatively using graph paper, cardboard models, and digital tools.</p> <p>Self-Management – Organization Organizing calculations, managing multi-step design projects, structuring mathematical justifications logically, presenting models systematically.</p> <p>Self-management – Reflection Reflecting on use of prior knowledge in new contexts, evaluating contribution to group decision-making, monitoring reasoning and misconceptions during investigations.</p> <p>Communication Skills Using mathematical language, symbols, diagrams, nets, and logical reasoning clearly in written and visual formats, presenting design justifications effectively.</p> <p>Research Skills – Information literacy Investigating relationships between dimensions and efficiency, collecting measurements from nets, exploring geometric patterns, analysing how changing dimensions impacts models and structures.</p> <p>Social Skills – Collaboration & Decision-Making Negotiating design ideas within groups, reaching consensus on final designs, discussing pros and cons of solutions, justifying choices using mathematical evidence.</p>	<p>Geometry</p> <ul style="list-style-type: none"> Formulas for area and perimeter of 2D shapes: squares, rectangles, triangles, parallelograms, rhombus, trapezoids, & circles. Formulas for surface area and volume of 3D solids: cubes, rectangular prisms, cylinders, spheres, & square-based pyramids. Units of measurement for area (cm^2, m^2) & volume (cm^3, m^3). Key geometric terms: base, height, radius, diameter, slant height, & circumference.
MYP Objectives	<p>A – Knowing & Understanding</p> <p>B – Investigating Patterns</p> <p>C – Communicating</p> <p>D – Applying mathematics in real-life contexts</p>		
Key concept	Relationships		
Related concepts	Representation Generalization		
Global context	<p>Scientific & Technical Innovation</p> <p>How we use mathematical models to represent, improve & innovate real-world designs & structures.</p>		
Statement of inquiry	<p>Understanding relationships between dimensions, area, surface area & volume allows us to model & measure the physical world accurately, leading to innovative & efficient design, construction & problem solving.</p>		

35 hours		ATL Skills	Content
Unit Title (3)	Algebra	<p>Thinking Skills – Critical Thinking Applying logical reasoning to simplify expressions and solve equations, analysing patterns, recognizing equivalent expressions, justifying algebraic reasoning, evaluating whether solutions are reasonable in context.</p> <p>Thinking Skills – Transfer Applying algebraic reasoning to unfamiliar and authentic real-life situations such as cost analysis, area models, scientific relationships, and perimeter investigations.</p> <p>Thinking Skills – Creative Thinking Generalizing algebraic patterns, constructing formulas from recursive patterns, creating algebraic models for perimeter and area situations, exploring multiple approaches to simplification and equation solving.</p> <p>Self-Management – Organization Planning solution strategies, managing time during multi-step problem solving, organizing algebraic procedures systematically, checking accuracy during equations and simplification tasks.</p> <p>Self-management – Reflection Reflecting on mistakes and misconceptions, evaluating why formulas work, analysing efficiency of strategies, explaining reasoning behind algebraic model.</p> <p>Communication Skills Using correct algebraic notation and terminology, organizing reasoning in structured explanations, presenting solutions clearly using tables, graphs, equations, and written justifications.</p> <p>Research Skills – Information literacy Investigating patterns, collecting and organizing algebraic data in tables and graphs, analysing relationships between variables, interpreting symbolic models in authentic contexts.</p> <p>Social Skills – Collaboration & Decision-Making Working in mixed-ability groups, peer tutoring, collaborative problem-solving, peer and self-assessment using success criteria, group investigations into algebraic patterns.</p>	<p>Algebra</p> <p>Algebraic Expressions</p> <ul style="list-style-type: none"> Product and exponent notation Writing & interpreting expressions Algebraic substitution Collecting like terms Algebraic products & fractions Multiplying & dividing algebraic fractions <p>Laws of Algebra</p> <ul style="list-style-type: none"> Exponent laws Distributive law <p>Equations</p> <ul style="list-style-type: none"> Solving linear equations Maintaining balance Inverse operations & equation-solving strategies Algebraic flowcharts
MYP Objectives	A – Knowing & Understanding D – Applying mathematics in real-life contexts		
Key concept	Logic		
Related concepts	Pattern Generalization Models		
Global context	<p>Scientific & Technical Innovation</p> <p>How algebraic rules, models, & symbolic language are used to generalize patterns, represent relationships, & solve increasingly complex problems in mathematics, science, & everyday life.</p>		
Statement of inquiry	<p>By identifying patterns & applying algebraic laws logically, we use algebraic expressions & equations as models to represent relationships & solve real-world problems accurately.</p>		

30 hours		ATL Skills	Content
Unit Title (4)	Geometry: Lines, Angles, Polygons & Pythagoras' Theorem	<p>Thinking Skills – Critical Thinking Justifying angle calculations using theorem names, analysing why certain polygons tessellate, evaluating the reasonableness of geometric solutions, investigating relationships between geometric properties.</p> <p>Thinking Skills – Transfer Applying angle relationships and polygon formulas in unfamiliar contexts, transferring understanding of angle sums to tessellations, applying Pythagoras' theorem to navigation, construction, and 3D distance problems.</p> <p>Thinking Skills – Creative Thinking Using brainstorming and visual diagrams during tessellation investigations, generating geometric patterns, constructing mathematical explanations visually and spatially.</p> <p>Self-Management – Organization Writing structured mathematical reports, organizing calculations and diagrams logically, using geometric notation accurately, presenting findings through tables, diagrams, and written explanations.</p> <p>Self-management – Reflection Reflecting on pattern discovery, evaluating contribution to discussions, analysing reasoning processes, checking whether solutions make sense in context.</p> <p>Communication Skills Explaining reasoning clearly, communicating coherent mathematical arguments, justifying solutions with theorem names, using symbols such as \angle, \parallel, \perp, and correctly.</p> <p>Research Skills – Information literacy Investigating polygon angle sums, measuring and analysing side lengths and angles, collecting data in tables, identifying patterns from measurements and geometric constructions.</p> <p>Social Skills – Collaboration & Decision-Making Negotiating findings during tessellation activities, comparing physical and mathematical results, collaborative group investigations, challenging and refining peer reasoning.</p>	<p>Geometry Lines & Angles:</p> <ul style="list-style-type: none"> Point, line, line segment, ray; collinear & concurrent lines. Types of angles, Complementary & supplementary angles. Angle properties. Parallel lines & perpendicular lines. Transversal angles <p>Plane Geometry:</p> <ul style="list-style-type: none"> Circle terminology. Classification of triangles by side length. Classification of triangles by angle. Angle sum of a triangle; exterior angle of a triangle. Isosceles triangle theorem. Special quadrilaterals & their properties. Angle sum of a quadrilateral. Angle sum of an n-sided polygon. Interior angle of a regular n-sided polygon. Exterior angle sum of any convex polygon. <p>Pythagoras' Theorem:</p> <ul style="list-style-type: none"> Right-angled triangle. Pythagoras' theorem: $c^2 = a^2 + b^2$ Historical context: Egyptians used a 3:4:5 rope triangle; Pythagoras of Samos (~500 BC) proved the theorem. Pythagorean triples. Converse of Pythagoras' theorem.
MYP Objectives	A – Knowing & Understanding B – Investigating Patterns C – Communicating D – Applying mathematics in real-life contexts		
Key concept	Relationships		
Related concepts	Representation Generalization Space		
Global context	Scientific & Technical Innovation How do geometric relationships & mathematical reasoning enable us to represent, analyse & solve problems in the physical world.		
Statement of inquiry	Understanding relationships between lines, angles, and geometric properties of triangles & polygons, and applying the Pythagorean theorem, allows us to represent , model & measure the physical world accurately, supporting innovative design, construction & problem-solving.		

30 hours		ATL Skills	Content
Unit Title (1)	The Set of Real Numbers	<p>Thinking Skills – Critical Thinking Evaluating when scientific notation or standard form is more appropriate, analysing precision and accuracy, comparing rational and irrational numbers, determining efficient forms for calculation and simplification.</p> <p>Thinking Skills – Transfer Applying laws of indices in Integrated Science contexts, transferring understanding of exponents and radicals into scientific formulas, using scientific notation to compare microscopic and astronomical scales.</p> <p>Thinking Skills – Creative Thinking Exploring multiple representations of numbers, investigating relationships between radicals and rational exponents, discovering index laws through inquiry and calculator patterns.</p> <p>Self-Management – Organization Breaking investigations into phases, managing inquiry tasks systematically, setting goals for pattern investigations, organizing numerical data and general rules logically.</p> <p>Communication Skills Using mathematical notation and symbols correctly, organizing information logically, presenting comparisons of magnitudes coherently in the “Micro to Macro” project, explaining mathematical reasoning clearly.</p> <p>Research Skills – Information literacy Investigating polygon angle sums, measuring and analysing side lengths and angles, collecting data in tables, identifying patterns from measurements and geometric construction.</p> <p>Social Skills – Collaboration & Decision-Making Pair classification tasks, collaborative discussions about irrational numbers, peer questioning during inquiry exploration, collaborative reasoning about number-system relationships.</p>	<p>Sets of Real Numbers</p> <ul style="list-style-type: none"> • The Real Number system (Natural, Integer, Rational, Irrational). • Algebraic & numerical expressions. • Standard form & scientific notation. • The definition of a "surd" (radical) & perfect square. • Simplify Radicals • The index laws for positive, negative, and zero exponents.
MYP Objectives	<p>A – Knowing & Understanding B – Investigating Patterns C – Communicating D – Applying mathematics in real-life contexts</p>		
Key concept	Forms		
Related concepts	Equivalence Quantity System		
Global context	<p>Scientific & Technical Innovation Exploring the very small & very large; how we represent the "form" of a quantity to make it manageable</p>		
Statement of inquiry	<p>Representing quantities in different forms allows us to simplify complex systems & communicate the magnitude of scientific innovations effectively</p>		

20 hours		ATL Skills	Content
Unit Title (2)	Algebra	<p>Thinking Skills – Critical Thinking Decomposing complex expressions into factors, analysing which factorization strategy is most efficient, evaluating different approaches to solving quadratics, determining whether expressions are factorable or prime.</p> <p>Thinking Skills – Transfer Applying algebraic factorization to physics trajectories and economics optimization problems, connecting quadratic models to scientific and technical innovation, applying factorization in authentic contexts such as archways and ball paths.</p> <p>Thinking Skills – Creative Thinking Exploring multiple ways to factor expressions, modelling real-world structures using quadratics, visualizing algebra using algebra tiles and geometric representations.</p> <p>Self-Management – Organization Planning short- and long-term tasks, organizing logical structures for multi-step quadratic solving, managing sequential procedures such as rearranging, factorizing, and solving systematically.</p> <p>Self-management – Reflection Reflecting on unsuccessful factorization attempts, adjusting strategies independently, evaluating why factorization works instead of memorizing procedures mechanically.</p> <p>Communication Skills Using discipline-specific notation and symbols correctly, communicating transitions between expanded and factored forms clearly, explaining the Null Factor Law logically through mathematical reasoning.</p> <p>Research Skills – Information literacy Comparing paper-based factorization methods with GeoGebra and Desmos visualizations, investigating how factors relate to x-intercepts, making connections between multiple information sources.</p> <p>Social Skills – Collaboration & Decision-Making Group problem-solving with teacher and peer feedback, collaborative inquiry into factoring strategies, discussing different solution approaches and reasoning processes.</p>	<p>Algebra</p> <ul style="list-style-type: none"> • Terms, coefficients, variables; equal expressions; product notation; exponent notation: removing the highest common factor (HCF) • Solving linear & quadratic equations, • Solving quadratic equation by factoring • Difference of two squares, • Quadratic trinomials. • Null Factor Law
MYP Objectives	A – Knowing & Understanding C – Communicating D – Applying mathematics in real-life contexts		
Key concept	Forms		
Related concepts	Equivalence Simplification		
Global context	<p>Scientific & Technical Innovation</p> <p>Understanding how different forms of expressions (expanded vs. factored) allow us to solve complex physical and technical problems.</p>		
Statement of inquiry	By manipulating the form of algebraic expressions through factorization, we establish equivalence that allows us to simplify complex relationships & solve quadratic models in the real world.		

26 hours		ATL Skills	Content
Unit Title (3)	Trigonometry	<p>Thinking Skills – Critical Thinking Analysing trigonometric patterns, interpreting & evaluating measurement data, breaking complex real-life problems into mathematical models, & proposing justified solutions to unfamiliar trigonometric situations.</p> <p>Thinking Skills – Transfer Apply trigonometric knowledge & problem-solving strategies in unfamiliar and authentic contexts, using mathematical models to solve real-world measurement problems & gain new perspectives.</p> <p>Thinking Skills – Creative Thinking Generate innovative solutions for indirect measurement problems & explore multiple strategies for measuring inaccessible heights & distances.</p> <p>Self-Management – Organization Students develop organization skills by planning investigations & projects, managing time effectively, & maintaining accurate & systematic records of measurements, calculations, & findings.</p> <p>Self-management – Reflection Reflect on the effectiveness, accuracy, & reliability of their methods & solutions, identify areas for improvement, & evaluate their learning throughout the investigation process.</p> <p>Communication Skills Communicate mathematical ideas using correct trigonometric terminology, notation, diagrams, tables, & reports. They explain their reasoning clearly & share findings through presentations, discussions, & technical reports.</p> <p>Research Skills – Information literacy Collect, verify, analyse, & report data from investigations, while evaluating & selecting relevant sources & information related to trigonometry & measurement.</p> <p>Research Skills – Media literacy Locate, organize, & ethically use information from a variety of sources & acknowledge references appropriately using APA conventions.</p> <p>Social Skills – Collaboration Work collaboratively during investigations, share responsibilities, contribute to decision-making, build consensus from evidence, & take on different roles to achieve common goal.</p>	<p>Trigonometry</p> <ul style="list-style-type: none"> • Right-angled trigonometry: sine, cosine, & tangent ratios. • The relationship between angles & side ratios. • Trigonometric identities: Quotient, Pythagorean, Complementary, & Supplementary rules. • Applications of trigonometry: Angles of elevation & depression in real-life contexts. <p>Key Terms</p> <ul style="list-style-type: none"> • Hypotenuse, Opposite, Adjacent. • Ratio. • Clinometer. • Angle of Elevation, Angle of Depression. • Identity. • Inverse Trigonometry.
MYP Objectives	A – Knowing & Understanding B – Investigating Patterns C – Communicating D – Applying mathematics in real-life contexts		
Key concept	Relationships		
Related concepts	Measurement Models Space		
Global context	Scientific & Technical Innovation		
Statement of inquiry	Formulating mathematical models allows us to understand the geometric relationships within shapes, helping us find innovative solutions for precise measurement in the real world.		

MYP Subject Overview
Mathematics
Grade 8 (MYP 3)

14 hours		ATL Skills	Content
Unit Title (4)	Statistics	<p>Thinking Skills – Critical Thinking analysing patterns, trends, & relationships in data, interpreting statistical representations, comparing datasets, evaluating the impact of outliers, & using evidence to justify conclusions & make informed decisions.</p> <p>Thinking Skills – Transfer Skills apply statistical knowledge & skills to authentic real-life situations, transferring their understanding of data collection, representation, measures of centre, & interpretation to investigate relationships, solve problems, & support decision-making in unfamiliar contexts.</p> <p>Communication Skills using graphs, tables, diagrams, reports, and appropriate mathematical language. explain relationships, present interpretations logically, & communicate evidence-based conclusions using accurate statistical terminology & representations.</p> <p>Research Skills – Information literacy designing surveys, collecting and organizing data, constructing frequency tables, processing statistical results, evaluating data reliability, and using appropriate tools and methods to gather, analyse, and interpret information accurately.</p> <p>Self-Management Skills – Organization managing time effectively, maintaining accurate records, organizing data systematically, and following structured procedures throughout the statistical investigation process.</p> <p>Self-management – Reflection reflect on the reliability & accuracy of their investigations, evaluate the effects of outliers & data representations, & consider how statistics can be used to understand real-world issues & improve the quality of their conclusions.</p> <p>Collaboration Skills working together to collect and analyse data, sharing responsibilities, respecting different interpretations, participating in group discussions, and providing constructive peer feedback to improve conclusions and understanding.</p>	<p>Statistics Key terms:</p> <ul style="list-style-type: none"> • Statistics • Discrete data & Continuous data • Frequency table • Grouped data • Mean, Median & Mode • Histogram • Cumulative frequency • Measures of centre <p>Do:</p> <ul style="list-style-type: none"> • Classify data as discrete or continuous. • Organize data into frequency and grouped frequency tables. • Calculate mean, median, mode • Construct and interpret histograms. • Collect and organize real-life data through surveys and investigations.
MYP Objectives	A – Knowing & Understanding C – Communicating		
Key concept	Relationships		
Related concepts	Representation Generalization interpretation		
Global context	Scientific & Technical Innovation		
Statement of inquiry	Understanding how data is represented and analysed allows us to identify patterns, make predictions, and support decision-making in scientific and real-world contexts.		

35 hours		ATL Skills	Content
Unit Title (1)	Coordinate Geometry & Simultaneous Equations	<p>Thinking Skills – Critical Thinking Analyze spatial relationships between points, lines, and regions in the coordinate plane. Evaluate how the placement of bakery locations affects delivery zones. Analyze why perpendicular bisectors are the most efficient method for dividing space based on distance. Compare different possible bakery placements & evaluate which arrangement creates the most balanced delivery regions.</p> <p>Communication Skills: Present mathematical steps clearly & in a logical sequence (midpoints → gradients → perpendicular bisectors → Voronoi regions). Use correct mathematical notation & vocabulary (gradient, midpoint, equation of a line, perpendicular bisector, & Voronoi region). Represent mathematical thinking using clear diagrams, coordinate grids, tables, and equations.</p> <p>Self-Management Skills: Organization Skills Plan the modelling project in stages: Choose bakery locations, construct perpendicular bisectors, Create Voronoi diagram, Analyze & reflect. Set personal goals & meet deadlines using a simple timeline or checklist. Monitor progress and adjust plans if needed.</p> <p>Social Skills: Collaboration Work in pairs or small groups during planning and construction stages, share ideas & strategies for constructing perpendicular bisectors accurately. Give & receive constructive peer feedback on the clarity, accuracy, and fairness of delivery zones.</p> <p>Research Skills: Information Literacy Interpret simplified real-world maps or coordinate grids. Collect & organize spatial data (points, distances, midpoints) systematically. Evaluate how realistic the mathematical model is and recognize its limitations.</p>	<p>Coordinate Geometry</p> <ul style="list-style-type: none"> • Coordinate plane, ordered pairs • Gradient • Distance formula between two points • Midpoint • Equation of a straight line • y-intercept • Parallel lines • Perpendicular lines • Perpendicular bisector • Solving simultaneous linear equations by: <ul style="list-style-type: none"> ○ Elimination ○ Substitution ○ Graphing
MYP Objectives	A – Knowing & Understanding B – Investigating Patterns C – Communicating D – Applying mathematics in real-life contexts		
Key concept	Relationships		
Related concepts	Models Representation Space		
Global context	Scientific & Technical Innovation		
Statement of inquiry	Relationships between lines and points can be represented algebraically and geometrically to model fair and efficient real-world systems		

50 hours		ATL Skills	Content
Unit Title (2)	Functions	<p>Thinking Skills – Critical Thinking Analyse and evaluate information to make informed judgments & identify patterns & relationships. Test generalizations and conclusions & draw reasonable conclusions & generalizations.</p> <p>Communication Skills Use a variety of speaking techniques to communicate ideas effectively, use appropriate forms of writing for different purposes, use mathematical language and notation correctly & organize information logically</p> <p>Research Skills – Information Literacy Collect, record, verify & interpret data, present information in a variety of formats</p> <p>Self-Management Skills – Organization Plan & complete tasks on time, set goals and monitor progress.</p> <p>Self-management Skills – Reflection Reflect on learning experiences, & reflecting on chosen mathematical methods</p>	<p>Functions Quadratic Equations</p> <ul style="list-style-type: none"> • Standard form $ax^2 + bx + c = 0$ • Roots / solutions • Null factor law • Solve equations of the form $x^2 = k$ • Solve quadratic equations by: <ul style="list-style-type: none"> ○ Factorisation ○ Completing the square ○ Quadratic formula & Discriminant • Interpret solutions in real-life contexts <p>Relations & Functions</p> <ul style="list-style-type: none"> • Relation & Function • Mapping diagram & graphs • Function notation $f(x)$ • Domain & Range • Natural domain • Vertical line test • Represent relations using: <ul style="list-style-type: none"> ○ Tables ○ Graphs ○ Equations • Compare different types of functions (linear, quadratic, exponential) <p>Polynomials</p> <ul style="list-style-type: none"> • Perform operations: Addition, Subtraction, Multiplication • division Term, coefficient, Degree • Expansion • Remainder theorem • Factor theorem
MYP Objectives	A – Knowing & Understanding C – Communicating D – Applying mathematics in real-life contexts		
Key concept	Relationships		
Related concepts	Representation Generalization Simplification		
Global context	Scientific & Technical Innovation		
Statement of inquiry	The way we represent & generalize relationships influences our ability to model, simplify, & solve complex real-word problems.		

20 hours		ATL Skills	Content
Unit Title (3)	Exponentials & Logarithm	Thinking Skills – Critical Thinking <ul style="list-style-type: none"> Analyse inverse relationships Recognize numerical patterns Generalize logarithmic rules Evaluate exponential growth models Communication Skills <ul style="list-style-type: none"> Use correct notation: \log_{ab} Write structured multi-step solutions Explain reasoning clearly Self-Management Skills <ul style="list-style-type: none"> Plan multi-step equation solving Social Skills <ul style="list-style-type: none"> Pair investigation of log laws Peer feedback on solutions 	Exponentials & Logarithm <ul style="list-style-type: none"> Exponential laws Negative numbers of exponents Radicals & exponents Exponential rules Definition of logarithm Common logarithm (base 10) Rules of logarithms Logarithms in different bases Growth rates Exponential equations Logarithmic equations Logarithms are inverses of exponentials Logarithmic rules come from exponent rules Convert forms Simplify expressions Apply logs in context
MYP Objectives	A – Knowing & Understanding B – Investigating Patterns		
Key concept	Relationships		
Related concepts	Representation Form Equivalence		
Global context	Scientific & Technical Innovation		
Statement of inquiry	The relationship between exponential & logarithmic forms shows how mathematical representations can be transformed to simplify & solve complex problems used in scientific & technological innovation .		

MYP Subject Overview
Mathematics
Grade 9 (MYP 4)

15 hours		ATL Skills	Content
Unit Title (5)	Circle Geometry	<p>Self-management: Organization: Use appropriate strategies for organizing complex information</p> <p>Critical thinking skills Gather and organize relevant information to formulate an argument. Draw reasonable conclusions and generalizations.</p>	<p>Circle Geometry Key terms: - Theorems, radius, diameter, chord, bisector, cyclic, isosceles, tangent</p> <p>Circle theorems Solve for sides and angles using theorems Construction of a circle and label center and radius</p> <p>Relate different angles to each other</p> <p>Identify the arc on which an angle at the centre or circumference stands.</p>
MYP Objectives	A – Knowing & Understanding D – Applying mathematics in real-life contexts		
Key concept	Relationships		
Related concepts	Space Reasoning Measurement		
Global context	Scientific & Technical Innovation Human impact on the environment: what is the best shape for waste containers?		
Statement of inquiry	The study of angle relationships & the properties of geometrical figures can lead to a better utilization of space through deductive reasoning & measurements .		

MYP Subject Overview
Mathematics
Grade 10 (MYP 5)

24 hours		ATL Skills	Content
Unit Title (5)	Relations & Functions	<p>Thinking Skills Analyze whether a given relation satisfies the definition of a function using different tests (mapping rules, vertical line test). Compare multiple representations (table, graph, equation) of the same function and evaluate which representation best reveals key features such as domain, range, and behavior. Identify patterns in data and generalize them into functional rules. Evaluate the suitability of a chosen function for modeling a real-world situation and justify assumptions and decisions.</p> <p>Communication Skills Use correct mathematical language and notation (domain, range, input/output, function notation). Explain reasoning clearly when identifying functions, interpreting graphs, and evaluating outputs. Present information using appropriate representations such as graphs, tables, and equations. Structure written solutions logically and label graphs and tables accurately. Students present their modelling task using graphs, tables, and equations, explaining how each representation supports their conclusions. Peer feedback focuses on clarity, structure, and correct use of mathematical language.</p> <p>Self-Management Skills Plan and manage time effectively when completing investigations and modeling tasks. Break complex tasks into manageable steps (identify variables → choose representation → analyze → reflect). Monitor progress and revise work based on feedback.</p> <p>Social Skills Work collaboratively in pairs or small groups during investigations. Share ideas, ask questions, and build on others' thinking. Provide constructive peer feedback on clarity, accuracy, & interpretation of models.</p> <p>Research Skills Collect and organize data from real-life situations to build functional models. Use digital tools (e.g., Desmos, spreadsheets) to explore and test relationships. Evaluate whether collected data supports a functional relationship. Students gather or are provided with real-world data, test whether it represents a function, and refine their model based on evidence.</p>	<p>Relations & Functions</p> <ul style="list-style-type: none"> • Relation • Function • Domain & range, • Input & output, • Independent & dependent variables • Function notation $f(x)$. • Represent functions algebraically, graphically, numerically, & verbally • Analyze how changes to the function rule affect graphs • Apply functions to solve real-world problems and interpret results <p>• Main features of a function: domain, range, shape, x-intercepts, y-intercept, pattern.</p> <p>• Sign diagram of functions.</p> <p>• Composite functions,</p> <p>• The inverse of a function.</p> <p>• Graphing different types of functions (quadratic, modulus, exponential, logarithmic).</p> <p>• The points of intersection of functions. (Algebraically and graphically; & using technology).</p> <p>• Special functions: Greatest integer, modulus, & identity function in real life problem solving.</p>
MYP Objectives	<p>A – Knowing & Understanding B – Investigating Patterns C – Communicating D – Applying mathematics in real-life contexts</p>		
Key concept	Relationships		
Related concepts	Representation Model		
Global context	<p>Scientific & Technical Innovation How mathematical relationships are used to represent, analyze, & predict behaviour in scientific, technological, & real-world systems.</p>		
Statement of inquiry	<p>When relationships between variables are represented through functional models, we can analyze, predict, & evaluate how systems behave under changing conditions, allowing us to optimize systems in science, economics, and technology.</p>		

24 hours		ATL Skills	Content
Unit Title (1)	Quadratic Function	<p>Thinking Skills – Critical Thinking Evaluating which solving method (factoring, quadratic formula, completing the square, graphing) is most efficient for a given equation. Analyze how changes in parameters affect graphs. Compare different solving methods and justify which is most efficient in a given situation.</p> <p>Communication Skills: Presenting the steps for solving a complex word problem, clearly defining variables, and justifying the choice of method. Use correct mathematical notation and vocabulary (vertex, axis of symmetry, zeros, discriminant). Present investigation and project findings with clear graphs, tables, and explanations.</p> <p>Self-Management Skills – Organization Planning the Criterion D modeling project, breaking it down into creation, solving, and analysis phases. Plan the modelling project in stages (choose context → build model → check → reflect). Set personal goals and meet deadlines using a simple timeline.</p> <p>Social skills – Collaboration Work in pairs or small groups during investigations. Give constructive peer feedback on clarity, accuracy, and interpretation.</p> <p>Research skills: Information literacy Collect real data for a quadratic context (e.g., ball trajectory). Evaluate source reliability and record data systematically.</p>	<p>Relations & Functions</p> <ul style="list-style-type: none"> Parabola, vertex, axis of symmetry, zeros/roots, intercepts, discriminant. Coefficients a, b, c in $y = ax^2 + bx + c$ Standard, vertex, and factored forms of a quadratic equation. Methods of solving: factoring, completing the square, quadratic formula, graphing. Graph & analyze quadratic functions. Quadratic equations can represent & solve real-world problems involving optimization & motion.
MYP Objectives	A – Knowing & Understanding B – Investigating Patterns C – Communicating D – Applying mathematics in real-life contexts		
Key concept	Relationships		
Related concepts	Representation Model		
Global context	Scientific & Technical Innovation Modeling & optimizing trajectories (e.g., bridges, satellite dishes, projectiles) and maximizing or minimizing conditions (e.g., profit, area).		
Statement of inquiry	Representing quadratic relationships in multiple forms helps us build and test models so we can predict and optimize real situations in science, engineering, and everyday decision-making.		

MYP Subject Overview
Mathematics
Grade 10 (MYP 5)

24 hours		ATL Skills	Content
Unit Title (3)	Advanced Trigonometry	<p>Thinking Skills – Critical Thinking Evaluating which rule (Sine Rule or Cosine Rule) is most efficient based on given information (SAS, ASA, or SSS). Evaluate whether to use Sine Rule, Cosine Rule, or right-angle trig</p> <p>Communication Skills – Information Literacy Presenting steps for solving complex 3D bearings problems, clearly defining angles of elevation and depression. Explaining solutions to 3D trigonometry problems</p> <p>Self-Management Skills – Organization Planning the "Surveyor" project, breaking it down into data collection, calculation, and final analysis phases. Plan steps of the Surveyor project</p> <p>Social Skills – Collaboration Work in pairs during modelling investigations</p> <p>Research Skills Collect real-world measurement data</p>	<p>Trigonometry</p> <ul style="list-style-type: none"> • Trigonometric ratios, • The area of triangle, • The unit circle • The radian versus degree measure of an angle. • The graph & the properties of trigonometric functions. • The True bearing, • 3D models, • The sine & cosine rules. • The relationship between the sine & the cosine ratios in right angled triangle, • Transformations of the trigonometric functions. • Use trigonometric identities & relationship to model real life situations & solving real life problems.
MYP Objectives	A – Knowing & Understanding B – Investigating Patterns C – Communicating D – Applying mathematics in real-life contexts		
Key concept	Relationships		
Related concepts	Measurement Model Space		
Global context	Scientific & Technical Innovation Modelling & optimizing spatial measurements (e.g., navigation, architecture, & astronomical distances).		
Statement of inquiry	Understanding the relationships between angles, sides, and spatial measurements allows us to construct mathematical models that support technological innovations in navigation, architecture, and engineering.		

MYP Subject Overview
Mathematics
Grade 10 (MYP 5)

12 hours		ATL Skills	Content
Unit Title (1)	Probability	<p>Thinking Skills – Critical Thinking</p> <ul style="list-style-type: none"> Evaluating the validity of "luck" by analyzing sample sizes and data bias in news reports. Students analyze the quadratic model of their fountain and decide which solving method best fits their design context (e.g., factoring for simple zeros, quadratic formula for complex cases). They justify their choice and evaluate the efficiency and accuracy of the method used. <p>Communication Skills</p> <ul style="list-style-type: none"> Translating complex tree diagrams into written "Risk Assessment Reports" for the Criterion D project. In their final report or presentation, students organize their findings logically. <p>Self-Management Skills</p> <ul style="list-style-type: none"> Planning a multi-stage simulation, tracking data points over a week-long trial period. 	<p>Probability</p> <ul style="list-style-type: none"> Sample space, mutually exclusive vs independent events, Conditional probability. Formula for conditional probability: $P(A/B) = \frac{A \cap B}{P(B)}$ Experimental & theoretical probability Calculating probabilities of independent events, Combined events Solving problems using tree diagrams and Venn diagrams Calculating conditional probability
MYP Objectives	A – Knowing & Understanding B – Investigating Patterns C – Communicating D – Applying mathematics in real-life contexts		
Key concept	Relationships		
Related concepts	Representation Model Space		
Global context	Scientific & Technical Innovation Exploration of how probability models simulate randomness to predict outcomes in genetics, insurance, and game theory.		
Statement of inquiry	Analyzing the relationships between events allows us to construct mathematical models & representations that help us predict outcomes & manage risk in a world governed by chance.		

4 hours		ATL Skills	Content
Unit Title (6)	Statistics		Statistics <ul style="list-style-type: none"> • Statistics • Discrete data • Continuous data • Frequency table • Grouped data • Mean • Median • Mode • Range • Interquartile range (IQR) • Quartiles • Histogram • Box plot • Cumulative frequency • Cumulative frequency graph • Outlier • Data distribution • Measures of centre • Measures of spread
MYP Objectives	A – Knowing & Understanding C – Communicating D – Applying mathematics in real-life contexts		
Key concept	Relationships		
Related concepts	Representation Generalization interpretation		
Global context	Scientific & Technical Innovation		
Statement of inquiry	Understanding how data is represented and analysed allows us to identify patterns, make predictions, and support decision-making in scientific and real-world contexts.		