Subject group overview: Maths

Grade 6

UNIT TITLE	NUMBER RULES							Duration	9 Weeks	
Subject(s)	Standard mathematics	Key Concept	Communication	Related Concept(s)	Quantity, Systems, Representation	Global Context	Scientific and technical innovation	Global Context Exploration(s)	Ingenuity and progress, Mathematical puzzles	
ATL Skills	I. Communication skills II. Collaboration skills- V. Reflection skill VIII. Critical thinking skills X. Transfer skills	Subject-group objectives	Ai. Aii. Aiii. Bi. Bii. Biii. Ci. Cii. Ciii. Civ.	Statement of Inquiry	Different systems and forms of representation develop as civilizations evolve and humans interact.					
Content	For more info: please see the supplement **OIS MYP Maths Scheme of Work**. Prerequisite: - Identify place value of specific digits in numbers - Write numbers in numeric form and words - Write numbers in expanded form - Multiply and divide single- and multi-digit numbers			Skills: - Simplify numerical expressions using the order of operations - Evaluate expressions with positive integer exponents - Evaluate roots (perfect square and cube numbers) - Use divisibility rules - Show the prime factorization of a number - Determine the GCF and LCM of a number using at least 2 methods.						

UNIT TITLE	GLOBAL INEQUALITY (PARTS OF A WHOLE)							Duration	12 Weeks	
Subject(s)	Standard mathematics	Key Concept	Form	Related Concept(s)	Equivalence, Quantity	Global Context	Fairness and development	Global Context Exploration(s)	Inequality	
ATL Skills	I. Communication skills II. Collaboration skills	Subject-group objectives	Bi. Bii. Biii. Di. Dii. Diii. Dv.	Statement of Inquiry	Inequality and difference become clearer through the use of equivalent forms of quantities.					
Content	For more info: please see the supplement **OIS MYP Maths Scheme of Work**. Prerequisite: - Say and write decimal numbers - Round number correctly - Reduce fractions to simplest form - Mentally multiply and divide by powers of 10 - Find missing values in equivalent fractions - Conceptually understand fractions as expressing parts of a whole - Vocabulary words for fractions - Simplify fractions - Change an improper fraction to a mixed number and vice versa			Skills: - Represent equivalent numbers in fraction, decimal and percentage form - Show how to convert between different forms - Calculate percentage increase and decrease - Apply different mathematical strategies to solve problems involving percentages - Use the calculator to solve problems involving non-whole number percentages - Represent and compare fractions in different forms - Simplify different forms of fractions - Add, subtract, multiply and divide fractions - Apply mathematical strategies to solve problems involving fractions						

Subject group overview: Maths

UNIT TITLE	VISUAL PATTERNS (INTRODUCTION TO ALGEBRA)							Duration	8 Weeks
Subject(s)	Standard mathematics	Key Concept	Logic	Related Concept(s)	Generalization, Patterns, Simplification	Global Context	Scientific and technical innovation	Global Context Exploration(s)	Systems, Models, Methods, Products, Processes and solutions
ATL Skills	I. Communication skills VIII. Critical thinking skills	Subject-group objectives	Ai. Aii. Aiii. Bi. Bii. Biii. Ci. Cii. Di. Dii. Diii. Div. Dv.	Statement of Inquiry	Algebra provides us with a way to represent, generalize, and understand the patterns in the world around us.				
Content	For more info: please see the supplement **OIS MYP Maths Scheme of Work**. Prerequisite: - Addition and subtraction using a number line and skip counting - Multiply and divide - Convert between different metric units - Perform calculations following the order of operations (Unit 1) - Evaluate exponents and perfect squares (Unit 1) Knowledge: - Introduction to Algebra Creating tables, graphs, and equations for geometric patterns (e.g. matchsticks) - Writing and simplifying expressions - Substitution and evaluation - Distributive property a(b+c) - Factorization of expressions - Story problems and problem solving strategies - Linear versus non-linear graphs, equations, tables, and stories - Application problems	Skills: - Define, compare and order integers - Add and subtract positive and negative numbers - Multiply and divide positive and negative numbers - Use correct terminology when analyzing algebraic patterns and sequences - Show equivalence of simple algebraic expressions - Represent patterns as diagrams, sequences, tables and words - Create and simplify basic algebraic expressions (formed from a pattern) - Generalize a mathematical pattern using algebra - Solve applications involving basic algebraic expressions - Solve single-step and basic two-step algebraic equations (not necessarily using opposite operations) - Apply the distributive property using area diagrams							

Subject group overview: Maths

UNIT TITLE	DESIGNING REFUGEE HOUSING						Duration	8 Weeks	
Subject(s)	Standard mathematics	Key Concept	Relationships	Related Concept(s)	Approximation, Generalization	Global Context	Scientific and technical innovation	Global Context Exploration(s)	Products
ATL Skills	Social Research	Subject-group objectives	Ai. Aii. Aiii. Ci. Cii. Ciii. Civ. Di. Dii. Diii. Div. Dv.	Statement of Inquiry	Being able to calculate and estimate the characteristics of solids helps improve decisions about impact and reasonability of design. Knowing how to analyze shapes and the space they occupy allows for more efficient and sustainable use of limited physical space.				
Content	For more info:please see the supplement **OIS MYP Maths Scheme of Work**. Prerequisite: - Calculate perimeter of simple shapes - Solve problems using percentages (Unit 2) - Round numbers correctly			Skills: - Find the area of simple and compound shapes and solids using formulas - Generate the relationship between the area and perimeter of a rectangle and that of a triangle - Apply mathematical strategies to maximize area with a given perimeter - Find the perimeter and area of compound 2D shapes (including estimation using 1 x 1 cm boxes) - Generalize the relationship between the area of 2D shapes and the volume of their corresponding prisms - Find the surface area and volume of regular 3D prisms					

Subject group overview: Maths

Grade 7

UNIT TITLE	COMPETITION VS COOPERATION						Duration		10 Weeks	
Subject(s)	Standard mathematics	Key Concept	Aesthetics, Logic	Related Concept(s)	Equivalence, Quantity, Simplification	Global Context	Personal and cultural expression	Global Context Exploration(s)	Beauty	
ATL Skills	III. Organization skills IX. Creative thinking skills X. Transfer skills	Subject-group objectives	Ai. Aii. Aiii. Ci. Cii. Ciii. Civ. Di. Dii. Diii. Div. Dv.	Statement of Inquiry	We can use a logical process to simplify quantities and establish equivalence to analyze society's imposed standards of beauty through proportions.					
Content	For more info: please see the supplement **OIS MYP Maths Scheme of Work**. - Ratio - Simplify - Equivalent - Proportion - Representation - Graph - Table - Equation									

UNIT TITLE	INTERCONNECTEDNESS OF HUMAN-MADE SYSTEMS						Duration		10 Weeks	
Subject(s)	Standard mathematics	Key Concept	Relationships	Related Concept(s)	Equivalence, Models, Patterns, Representation	Global Context	Orientation in space and time	Global Context Exploration(s)	Frequency and variability	
ATL Skills	VIII. Critical thinking skills	Subject-group objectives	Ai. Aii. Aiii. Bi, Bii, Biii.	Statement of Inquiry	There are four main ways to express and model relationships: Symbolically, Numerically, Visually, and Verbally.					
Content	For more info: please see the supplement **OIS MYP Maths Scheme of Work**. Prerequisite: - Multiply decimal numbers - Perform mathematical operations with fractions (G6) - Solve problems with percentages (G6) - Plot points on a Cartesian plane (G7)			Skills - Simplify to a unit rate - Convert rates to different units using dimensional analysis - Express rates using graphs, tables and a linear equation - Determine slope, x-intercept and y-intercept - Cartesian coordinate system - Reading/interpreting maps, graphs, charts, and visual displays - Gradient/slope/rate of change/coefficient of x y-intercept/initial value - Slope intercept form of equations						

Subject group overview: Maths

UNIT TITLE	PUZZLES AND TRICKS						Duration	6 Weeks	
Subject(s)	Standard mathematics	Key Concept	Form	Related Concept(s)	Equivalence, Simplification	Global Context	Scientific and technical innovation	Global Context Exploration(s)	Mathematical puzzles
ATL Skills	Thinking	Subject-group objectives	Ai. Aii. Aiii. Bi. Bii. Biii. Ci. Cii. Ciii. Civ. Cv.	Statement of Inquiry	Producing equivalent forms through simplification can help to clarify, solve and create puzzles and tricks.				
Content	For more info: please see the supplement **OIS MYP Maths Scheme of Work**. Prerequisite - Perform operations with integers - Perform operations with fractions (G6)			Skills: - Define polynomials based on the number of terms - Write and simplify algebraic expressions - Write and solve algebraic equations and inequalities - Apply strategies to solve problems involving algebraic equations - Represent inequalities on a number line					

UNIT TITLE	MEASUREMENT (2D AND 3D GEOMETRY)						Duration	8 Weeks	
Subject(s)	Standard mathematics	Key Concept	Relationships	Related Concept(s)	Quantity, Representation.	Global Context	Orientation in space and time	Global Context Exploration(s)	Scale, Duration, Frequency and variability
ATL Skills	IX. Creative thinking skills	Subject-group objectives	Ai. Aii. Aiii. Di. Dii. Diii. Div. Dv.	Statement of Inquiry	There are several different ways to measure, quantify and represent the properties, objects and spaces in the world around us.				
Content	For more info: please see the supplement **OIS MYP Maths Scheme of Work**. - 2 dimensional and 3 dimensional geometry Area and circumference/perimeter of 2 dimensional polygons (regular and complex) - Surface area of 3 dimensional shapes (e.g. rectangular prism) - Volume of 3 dimensional shapes (e.g. cone) - Surface area and volume of complex shapes (e.g. open top cylinder) - Scale factor and its relationship to dimensions, surface area, and volume - Using skills to create a scale model of a real life object								

Subject group overview: Maths

UNIT TITLE	GAMES AND PLAY (PROBABILITY)						Duration	8 Weeks		
Subject(s)	Standard mathematics	Key Concept	Logic	Related Concept(s)	Representation, Simplification	Global Context	Personal and cultural expression	Global Context Exploration(s)	Ritual and play	
ATL Skills	I. Communication skills III. Organization skills X. Transfer skills	Subject-group objectives	Ai. Aii. Aiii. Ci. Cii. Ciii. Civ. Cv.	Statement of Inquiry	Statistics allows us a way to analyze and understand ourselves and the world around us. A logical system of representation can help explore and analyze games that humans play.					
Content	For more info: please see the supplement **OIS MYP Maths Scheme of Work**. - Definition of probability, outcomes, sample space, fair game - Complementary events - Analyzing a game using a tree diagram, area diagram, or list Deciding if a game is fair Measures of central tendency (e.g. median) - Frequency bar graphs and related single variable data displays - Histograms, Box and Whisker Plots - Applying skills by sampling (e.g. survey) and analyzing the results									

Subject group overview: Maths

Grade 8

UNIT TITLE	DISCOVERIES AND DEVELOPMENTS (EXPONENTS, RADICALS)						Duration	6 Weeks	
Subject(s)	Standard mathematics	Key Concept	Relationships	Related Concept(s)	Equivalence, Simplification	Global Context	Scientific and technical innovation	Global Context Exploration(s)	Systems, Processes and solutions, Industrialization and engineering, Digital life
ATL Skills	VIII. Critical thinking skills	Subject-group objectives	Ai. Aii. Aiii. Bi. Bii. Ci. Cii. Ciii. Civ. Cv. Dii. Diii. Div. Dv.	Statement of Inquiry	Analyzing an expression or quantity allows for creating equivalent expressions and simplification.				

Content	For more info: please see the supplement **OIS MYP Maths Scheme of Work**. Prerequisite: - Solve simple equations - Evaluate positive exponents - Multiply fractions - Apply the distributive property (introduced in G6) - Solve problems involving rates - Find the area and circumference of a circle Knowledge: - Know and apply the properties of integer exponents to generate equivalent numerical expressions. - Use numbers expressed in the form of a single digit times an integer power of 10 to estimate very large or very small quantities, and to express how many times as much one is than the other. - Perform operations with numbers expressed in scientific notation, including problems where both decimal and scientific notation are used. - Use scientific notation and choose units of appropriate size for measurements of very large or very small quantities. - Make sense of problems and persevere in solving them - Reason abstractly and quantitatively	Skills: - Identify and represent rational numbers - Evaluate expressions with negative integer and zero exponents - Simplify expressions with exponents - Begin to use rational exponents (investigation) - Represent numbers in scientific notation - Perform operations with numbers in scientific notation

Subject group overview: Maths

UNIT TITLE	PRODUCTS, PROCESSES AND SOLUTIONS						Duration	10 Weeks	
Subject(s)	Standard mathematics	Key Concept	Form	Related Concept(s)	Equivalence, Representation.	Global Context	Scientific and technical innovation	Global Context Exploration(s)	Processes and solutions, Mathematical puzzles
ATL Skills	VIII. Critical thinking skills	Subject-group objectives	Ai. Aii. Aiii. Bi. Bii. Biii. Di. Dii. Diii. Div. Dv.	Statement of Inquiry	The forms in which mathematicians write algebraic expressions and equations to represent parabolic phenomenon have changed over time.				
Content	For more info: please see the supplement **OIS MYP Maths Scheme of Work**. - Quadratics - Definition of a quadratic - Distributive property - Expansion (e.g. difference of squares) - Factoring - Determining maximums and minimums - Line of symmetry - Roots/intercepts - Solutions - Applying quadratics to real life								

UNIT TITLE	SOCIAL ENTREPRENEURSHIP						Duration	10 Weeks	
Subject(s)	Standard mathematics	Key Concept	Relationships	Related Concept(s)	Change, Equivalence, Models	Global Context	Globalization and sustainability	Global Context Exploration(s)	Human impact on the environment, Population and demography, Data-driven decision-making
ATL Skills	I. Communication skills VI. Information literacy skills	Subject-group objectives	Ai. Aii. Aiii. Ci. Cii. Ciii. Civ. Cv. Di. Dii. Diii. Div. Dv.	Statement of Inquiry	Equations provide us a way to model the relationship between quantities in the world around us.				
Content	For more info: please see the supplement **OIS MYP Maths Scheme of Work**. - Understanding the GDC: Creating a report on how to use the GDC Lines of best fit and regression lines on the GDC and by hand. - Correlation coefficient and justifying if a model is a good fit or not. - Inequalities: Solving inequalities Graphing 1 and 2 dimensional inequalities - Introduction to Linear Programming								

Subject group overview: Maths

UNIT TITLE	GEOMETRY						Duration	6 Weeks	
Subject(s)	Standard mathematics	Key Concept	Form	Related Concept(s)	Models, Space, Systems	Global Context	Scientific and technical innovation	Global Context Exploration(s)	Methods, Mathematical puzzles, Principles and discoveries
ATL Skills	IX. Creative thinking skills	Subject-group objectives	Ai. Aii. Aiii. Bi. Bii. Biii. Ci. Cii. Ciii. Civ. Cv.	Statement of Inquiry	Geometry provides us with the methods to explore the form of physical properties in the world around us and justify, through different methods, their meanings.				
Content	For more info: please see the supplement **OIS MYP Maths Scheme of Work**. - Congruence - Similarity - Transformations of shapes (translations, reflections, enlargements, rotations) - Pythagorean Theorem (proof, applications)								

UNIT TITLE	TRIGONOMETRY						Duration	4 Weeks	
Subject(s)	Standard mathematics	Key Concept	Form	Related Concept(s)	Models	Global Context	Identities and relationships	Global Context Exploration(s)	Mathematical identities, Modeling versus reality, Equations and variations, The mathematics of epidemics on social media
ATL Skills	VIII. Critical thinking skills IX. Creative thinking skills X. Transfer skills	Subject-group objectives	Ai. Aii. Aiii. Ci. Cii. Ciii. Civ. Cv. Di. Dii. Diii. Div. Dv.	Statement of Inquiry	Trigonometry is the study of the relationship between the lengths of a triangle and its angles. Given some information about a triangle we can use trigonometry to calculate more information including measurements which are too large to physically measure in real-life situations				
Content	For more info: please see the supplement **OIS MYP Maths Scheme of Work**. - Classifying Angles (acute, obtuse, reflex) - Angle Properties (alternate, complementary etc, internal/external angles in a triangle/polygon) - Right-angled triangle trigonometry								

Subject group overview: Maths

UNIT TITLE	PROGRAMMING							Duration	2 Weeks	
Subject(s)	Standard mathematics	Key Concept	Logic	Related Concept(s)	Systems	Global Context	Scientific and technical innovation	Global Context Exploration(s)	Systems, Models, Methods, Products, Processes and solutions	
ATL Skills	II. Collaboration skills IX. Creative thinking skills	Subject-group objectives	Ci. Cii. Ciii. Civ. Cv.	Statement of Inquiry	By using logic, we can create a wide variety of programs, sometimes interconnected, on systems such as the graphing calculator or Scratch.					
Content	For more info: please see the supplement **OIS MYP Maths Scheme of Work**. - Understand TI Basic and Scratch - Commands to display text - Request user input - Display graphs - Calculate values - Present conditional statements - Present loops - Embed programs within one main program - Effectively test & amp; debug programs - Work collaboratively to solve problems									

Subject group overview: Maths

Grade 9

UNIT TITLE	NUMBER AND ALGEBRA						Duration	6 Weeks	
Subject(s)	Standard mathematics	Key Concept	Relationships	Related Concept(s)	Generalization, Patterns, Representation.	Global Context	Identities and relationships	Global Context Exploration(s)	Mathematical identities, Modelling versus reality, Equations and variations, The mathematics of epidemics on social media
ATL Skills	I. Communication skills:	Subject-group objectives	Ai. Aii. Aiii. Bi. Bii. Biii. Ci. Cii. Ciii. Civ. Cv.	Statement of Inquiry	Algebra enables us to describe patterns and relationships.				
Content	For more info: please see the supplement **OIS MYP Maths Scheme of Work**. - Estimating and rounding - Surds (simplifying, writing in simplest form etc.) - Exponent rules and scientific notation - Simplifying, expanding, factorizing and solving linear and quadratic expressions (extended students should be able to work with higher order polynomials). - Rational in irrational numbers (showing a recurring decimal is rational, extended students: proving root 2 is irrational)								

UNIT TITLE	SIMILARITY AND TRIGONOMETRY						Duration	6 Weeks	
Subject(s)	Standard mathematics	Key Concept	Relationships	Related Concept(s)	Models	Global Context	Orientation in space and time	Global Context Exploration(s)	The mathematics of perspective
ATL Skills	III. Organization skills V. Reflection skills VIII. Critical thinking skills	Subject-group objectives	Ai. Aii. Aiii. Ci. Cii. Ciii. Civ. Cv. Dii. Diii. Dv.	Statement of Inquiry	Similarity forms the basis of trigonometry which enables us to calculate missing angles and lengths in triangles.				
Content	For more info: please see the supplement **OIS MYP Maths Scheme of Work**. - Determining unknown lengths using similarity - Connecting similarity to trigonometric ratios. - Using trigonometry to determine unknown angles and lengths in right-angled triangles. - Using trigonometry to solve real world problems.								

Subject group overview: Maths

UNIT TITLE	COORDINATE GEOMETRY						Duration	6 Weeks
Subject(s)	Standard mathematics	Key Concept	Relationships	Related Concept(s)	Patterns, Space	Global Context	Orientation in space and time	Global Context Exploration(s)
ATL Skills	III. Organization skills VIII. Critical thinking skills IX. Creative thinking skills X. Transfer skills	Subject-group objectives	Ai. Aii. Aiii. Bi. Bii. Biii. Ci. Cii. Ciii. Civ. Cv. Di. Dii. Diii. Dv.	Statement of Inquiry	Coordinate geometry enables us to determine position, distance, speed and direction in relation to other objects.			
Content	For more info: please see the supplement **OIS MYP Maths Scheme of Work**. - Determining the distance between two points and the midpoint - Determining the gradient and equation of a line - Determining the equation of perpendicular lines - Determining the distance of a point to a line - Plotting and solving inequalities - Determining intercepts and solving systems of linear equations							

Note: "Simulating weather behavior" appears under Global Context Exploration(s) for the Coordinate Geometry unit.

UNIT TITLE	PROBABILITY						Duration	6 Weeks
Subject(s)	Standard mathematics	Key Concept	Logic	Related Concept(s)	Models, Patterns, Representation.	Global Context	Scientific and technical innovation	Global Context Exploration(s)
ATL Skills	I. Communication skills VIII. Critical thinking skills	Subject-group objectives	Ai. Aii. Aiii. Bi. Bii. Biii. Ci. Cii. Ciii. Civ. Cv. Di. Dii. Diii. Dv.	Statement of Inquiry	If we organise data in a logical way we can use probability to predict the likelihood of outcomes and make informed decisions.			
Content	For more info: please see the supplement **OIS MYP Maths Scheme of Work**. - Experimental probability - Simple theoretical probability - Probability using Venn diagrams - Dependent and independent events - Mutual exclusivity - The addition rule - Conditional probability							

Note: "Mathematical puzzles" appears under Global Context Exploration(s) for the Probability unit.

Subject group overview: Maths

UNIT TITLE	STATISTICS						Duration	6 Weeks	
Subject(s)	Standard mathematics	Key Concept	Form	Related Concept(s)	Quantity, Representation .	Global Context	Personal and cultural expression	Global Context Exploration(s)	Beauty
ATL Skills	II. Collaboration skills III. Organization skills VI. Information literacy skills	Subject-group objectives	Ai. Aii. Aiii. Biii. Ci. Cii. Ciii. Civ. Cv.	Statement of Inquiry	A collection of data paints a picture that can inform and inspire.				
Content	For more info: please see the supplement **OIS MYP Maths Scheme of Work**. - Mean, mode, median, range, interquartile range - Stem-and-leaf, box-and-whisker plots, cumulative frequency diagrams - Standard deviation - Transformations of data								

UNIT TITLE	MEASUREMENT						Duration	6 Weeks	
Subject(s)	Standard mathematics	Key Concept	Form	Related Concept(s)	Models, Space	Global Context	Globalization and sustainability	Global Context Exploration(s)	Design and scale
ATL Skills	VIII. Critical thinking skills	Subject-group objectives	Ai. Aii. Aiii. Bi. Bii. Biii. Di. Dii. Diii.	Statement of Inquiry	Modeling real world objects using known shapes can enable us to investigate the physical properties of these objects and help understand why something is designed / created the way it is.				
Content	For more info: please see the supplement **OIS MYP Maths Scheme of Work**. - Speed, distance, time - Area, circumference / perimeter - Surface area, volume - Optimisation								

Subject group overview: Maths

Grade 10

UNIT TITLE	FUNCTIONS AND TRANSFORMATIONS						Duration	8 Weeks	
Subject(s)	Standard mathematics	Key Concept	Form	Related Concept(s)	Models.	Global Context	Scientific and technical innovation	Global Context Exploration(s)	Industrialization and engineering
ATL Skills	I. Communication skills: III. Organization skills VI. Information literacy skills VIII. Critical thinking skills X. Transfer skills	Subject-group objectives	Ai. Aii. Aiii. Ci. Cii. Ciii. Civ. Cv. Di. Dii. Diii. Div.	Statement of Inquiry	Shape can be described using mathematical functions, and many shapes are related to each other. Understanding these relationships is essential to transition from the design phase to the building phase in the manufacturing process.				
Content	For more info: please see the supplement **OIS MYP Maths Scheme of Work**. - Expanding, simplifying and factorizing quadratic expressions. - Solving quadratic equations by factorizing, the quadratic formula and completing the square. - Function notation - Plotting quadratic equations. - The relationship between the quadratic $y=a(x-p)^2+q$ and its vertex. - The relationship between two different quadratics. - Translating functions - The limit definition of the derivative (extension) - Complex solutions to equations (extension) - Transformations (stretches and reflections) of functions (extension)								

UNIT TITLE	TRIGONOMETRY						Duration	8 Weeks	
Subject(s)	Standard mathematics	Key Concept	Relationships	Related Concept(s)	Generalization, Models.	Global Context	Scientific and technical innovation	Global Context Exploration(s)	Models
ATL Skills	III. Organization skills VIII. Critical thinking skills	Subject-group objectives	Ai. Aii. Aiii. Bi. Bii. Ci. Cii. Ciii. Civ. Cv.	Statement of Inquiry	Trigonometry enables us to determine direction, distance and position and map out large areas with only a few pieces of information.				
Content	For more info: please see the supplement **OIS MYP Maths Scheme of Work**. - Right-angled triangle trigonometry - Degrees and radians - The sine and cosine rules for non-right-angled triangles - The ambiguous case of the sine rule - Trigonometric ratios of any angle using the unit circle - Solving trigonometric equations - Mathematical modelling								

Subject group overview: Maths

UNIT TITLE	SEQUENCES, SERIES AND LOGARHYTHMS						Duration	8 Weeks	
Subject(s)	Standard mathematics	Key Concept	Relationships	Related Concept(s)	Generalization, Models, Patterns.	Global Context	Globalization and sustainability	Global Context Exploration(s)	Population and demography
ATL Skills	I. Communication skills III. Organization skills VI. Information literacy skills	Subject-group objectives	Ai. Aii. Aiii. Bi. Bii. Biii. Ci. Cii. Ciii. Civ. Cv.	Statement of Inquiry	Recognizing patterns enables us to generalize relationships to predict behavior of population models and identify issues which threaten their sustainability.				
Content	For more info: please see the supplement **OIS MYP Maths Scheme of Work**. - Arithmetic sequences and series - Identifying whether a sequence or series is arithmetic or geometric enables us to generalize the pattern and predict future or past behavior. - Geometric sequences and series - Identifying whether a sequence or series is arithmetic or geometric enables us to generalize the pattern and predict future or past behavior. - Infinite geometric sequences - Certain models will generate a sum of an infinite amount of numbers, for example the growth of a fractal tree. We can use infinite geometric series to determine the values of these sums, if they exist. - Arithmetico-geometric series - These contain features of both arithmetic and geometric series and often appear when calculating expectation in probability problems. For example, every time two animals mate they have a certain percentage of becoming pregnant. How many times can they expect to have to mate in order to become pregnant? - Sigma notation - This helps us to write the generalizations of series in a neat way (as opposed to writing as a + ar + ar^2 + ... + ar^(n-1) etc.) - Exponents and logarithms - Before learning about logarithms the only methods of solving an equation such as 2^4=5 has been either guess-and-check or by plotting a graph. Logarithms enable students to quickly calculate which term of a geometric sequence has or exceeds a specific value. This is useful, for example, when studying population growth.								

UNIT TITLE	PROBABILITY						Duration	6 Weeks	
Subject(s)	Standard mathematics	Key Concept	Logic	Related Concept(s)	Models, Patterns.	Global Context	Scientific and technical innovation	Global Context Exploration(s)	Principles and discoveries
ATL Skills	VIII. Critical thinking skills X. Transfer skills	Subject-group objectives	Ai. Aii. Aiii. Bi. Bii. Biii.	Statement of Inquiry	Organising information in a logical manner enables us to identify patterns, predict probabilities of future events and make informed decisions.				
Content	For more info: please see the supplement **OIS MYP Maths Scheme of Work**. - Experimental and simple theoretical probability - Using Venn diagrams - Dependent, independent and mutually exclusive events - Conditional probability - Discrete probability distributions - The binomial distribution - The normal distribution								

Subject group overview: Maths

UNIT TITLE	MEASUREMENT AND OPTIMISATION						Duration	6 Weeks		
Subject(s)	Standard mathematics	Key Concept	Form	Related Concept(s)	Models, Space.	Global Context	Globalization and sustainability	Global Context Exploration(s)	Scarcity of resources (rare earth metals, helium, resource scares) and green technology
ATL Skills	VIII. Critical thinking skills IX. Creative thinking skills X. Transfer skills	Subject-group objectives	Ai. Aii. Aiii. Bi. Bii. Biii.	Statement of Inquiry	We can connect and intersect simple shapes to make complicated models, use these models to find optimum solutions to real world problems, and minimize waste.				
Content	For more info: please see the supplement **OIS MYP Maths Scheme of Work**. - Timezones - Speed, distance and time - Area and circumference/perimeter of 2-dimensional shapes - Surface area and volume of 3-dimensional solids - Optimisation problems								

UNIT TITLE	COMPUTER PROGRAMMING						Duration	8 Weeks		
Subject(s)	Standard mathematics	Key Concept	Logic	Related Concept(s)	Systems	Global Context	Scientific and technical innovation	Global Context Exploration(s)	Products
ATL Skills	I. Communication skills III. Organization skills VI. Information literacy skills	Subject-group objectives	Cii. Civ. Cv. Dii. Diii. Div.	Statement of Inquiry	A program is a system of logical instructions which tells a machine what to do. We are surrounded by machines containing programs written using thousands of lines of code.				
Content	For more info: please see the supplement **OIS MYP Maths Scheme of Work**. - Students will first learn HTML. This is used to create web pages and a web page will be the container for our programs. Topics covered include: displaying basic text, displaying special characters, organising information using tables, creating forms. - Next, students will learn how to modify the appearance of web pages using CSS. Topics include formatting text, tables and forms. - Finally students will learn how to program using JavaScript. Topics include: built-in-functions, creating functions, variables and arrays, conditional statements, loops, responding to user input, drawing using the canvas, recursion (extension).								