

Mathematics Subject Group Overview

Grade	Unit 1	Unit 2	Unit 3	Unit 4	Unit 5	Unit 6
6	Number Systems - Civilizations and Human Interactions Concepts: Relationships, Representation and Systems Global Context (Exploration): Orientation in Space and Time (Evolution, constraints and adaptation) Inquiry: Different systems and forms of representation adapt as civilizations evolve and humans interact Assessment: 1. Unit Test (Criterion A) 2. Application (Criteria C & D) 3. Investigation (Criterion B) ATL skills: Organization: Bring necessary equipment and supplies to class; Keep to class schedules and assignment deadlines. Content summary: - Representing and comparing number systems. - Reading, writing, simplifying	Equivalent Forms of Numbers - Calculating Fairness Concepts: Form, Equivalence and Quantity Global Context (Exploration): Fairness and Development (Inequality, difference and inclusion) Inquiry: Inequality and difference become clearer through the use of equivalent forms of quantity Assessment: 1. Unit Test (Criterion A) 2. Application (Criteria C & D) 3. Investigation (Criterion B) ATL skills: Affective: Mindfulness: Practice strategies to overcome distractions; Perseverance: Demonstrate persistence and perseverance; Resilience: Practice strategies of 'bouncing back' after adversity, mistakes and failures. Content summary: Represent numbers in different forms -	Angle Properties and Deductive Reasoning - Mathematical Elements in Art Concepts: Form and Measurement Global Context (Exploration): Personal and Cultural Expression (Artistry, craft, creation and beauty) Inquiry: Artistic and creative expression are enhanced through an understanding of how measurement defines forms Assessment: 1. Unit Test (Criterion A) 2. Investigation (Criterion B) ATL skills: Critical Thinking: Propose and evaluate a variety of solutions Content summary: - Naming and classifying different geometric elements (point, ray, line, segment). - Naming and classifying the different types of angle pairs. - Naming and classifying angles formed by parallel lines cut	Operations with Fractions - Cultural Expressions Concepts: Logic, Quantity and Simplification Global Context (Exploration): Identities and Relationships (Human Connection) Inquiry: Using logic to simplify quantities can help us explore human connections within communities. Assessment: 1. Unit Test (Criterion A) 2. Application (Criteria C & D) 3. Investigation (Criterion B) ATL skills: Reflective Skills: Develop new skills, techniques and strategies for effective learning Content summary: - Compare and order fractions in different forms. - Find the least common denominator in a set of unlike fractions. - Use reciprocals to simplify complex fractions. - Using the four number operations	Perimeter, Area and Volume - Environmental Impacts Concepts: Relationships, Generalisation and Measurement Global Context (Exploration): Globalisation and Sustainability (human impact on the environment) Inquiry: Generalising the relationship between measurements can influence decisions that impact the environment. Assessment: 1. Tiny House Project (Criteria C & D) 2. Investigation (Criterion B) ATL skills: Collaboration Skills: Help others to succeed Content summary: - Generalise the relationship between the area and perimeter of a rectangle, and between the areas of a triangle and a rectangle. - Find the perimeter and area of compound 2D shapes.	Data Management - Trends in Communities Concepts: Relationships, Representation and Justification Global Context (Exploration): Globalisation and Sustainability (urban planning and infrastructure) Inquiry: Being able to represent relationships effectively can help justify the type of infrastructure needed to sustain urban communities. Assessment: 1. Unit Test (Criterion A) ATL skills: Creative Thinking Skills: Create novel solutions to authentic problems Content summary: - Collect, classify and represent univariate data in different forms - Construct (by hand and using technology) and interpret frequency tables, bar graphs and histograms - Determine the best type of graph to use to represent given data. - Read, interpret

	and converting between different number systems. • Simplifying numerical expressions using the order of operations. • Using appropriate forms of rounding to estimate results. • Defining and using the divisibility rules. • Representing a number as an exponent, a square root, and as a product of its prime factors, in order to solve problems. • Determining the Greatest Common Factor in a set of numbers • Determining the Least Common Multiple of a set of numbers	fractions, decimals and percentages. • Convert between equivalent forms of numbers - fractions, decimals and percentages. • Compare different forms of numbers • Estimate the decimal value of a fraction. • Determine the percent of a number. • Calculate percent increase and decrease. • Applying mathematical strategies to solve problems.	by a transversal. • Constructing and measuring angles. • Use variables to represent unknown angle measures. • Solving problems using the various angle properties, including the angles in triangles. • Find missing angle measures with simple equations • Naming and classifying the different types of triangles. • Finding missing angles in triangles.	(addition, subtraction, multiplication and division) with fractions.	• Generalise 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. • Apply mathematical strategies to solve problems involving 2D and 3D geometric shapes.	and draw conclusions from primary and secondary sources of data. • Calculate the Measures of Central Tendency from given sets of data - Mean, Median and Mode • Apply mathematical strategies to solve problems involving statistics.
7	Integers(Human Explorations) Concepts: Form,	Algebraic Expressions & Equations	2D & 3D Geometry Concepts: Form, Space Global Context:	Ratios & Proportions Concepts: Relationships, Equivalence, Quantity and	Rates Concepts: Relationships. Equivalence & Quantity	

	Quantity & Representation Global Context: Orientation in Time and Space Inquiry: Different forms of a quality can be used to represent both scales and duration. Assessment: 1. Unit Test (Criteria A) 2. Project (Criteria C & D) 3. Investigation (Criteria B) - To Come Next Year 4. Poster (Criteria C) ATL skills: Communication Take effective notes in class; Organize & depict information logically Content summary - Defining, Comparing & Ordering Integers - Defining & Evaluating the Absolute Value of a number - Using a number line to represent integers. - Using a coordinate plane to represent integers - Performing the operations of multiplication, division,	Concepts: Relationships, Generalization & Patterns Global Context: Scientific and technical innovation Inquiry: Generalising patterns can establish relationships which exist within puzzles & mysteries. Assessment: 1. Unit Test (Criteria A) 2. Project (Criteria C & D) 3. Investigation (Criteria B) ATL skills: Self Management: Affective Skills; Practice focus & concentration; Demonstrate Persistence & perseverance Content summary: - Understand what a variable is. - Understanding what an algebraic expression is and how to create one - Using correct terminology when analyzing algebraic patterns and sequences. - Translating from words to expressions (one operation) - Representing	Globalisation and sustainability Statement of Inquiry: Form defines space to determine/optimize efficient use of resources Assessment: 1. Unit Test (Criteria A) 2. Project (Criteria C & D) 3. Investigation (Criteria B & C) ATL skills: Communication: Understanding and using mathematical notation; Thinking skills - transfer: Combine knowledge understanding and skills to create products or solutions Content summary - Classifying shapes by interior and exterior angle measures - Review area/perimeter and develop formulas for circles and trapezoids - Finding the surface area and volume of 3-dimensional shapes, including rectangular prisms, cylinders, pyramids and spheres - Solving problems including 2D and 3D shapes (Shaded Regions) - Applying mathematical strategies to solve problems	Simplification Global Context: Orientation in Space and Time - Scale Inquiry: Scaling quantities involves relationships represented through equivalence Assessment: 1. Unit Test (Criteria A) 2. Project Investigation (Criteria C & D) 3. Investigation (Criteria B & C) ATL skills: Communication: use and interpret a range of discipline-specific terms and symbols; make inferences and draw conclusions Content summary: - Defining and simplifying ratios. - Understand the concept of a ratio and use ratio language (3 ways to represent) - Dividing a quantity into a given ratio - Defining Proportion and demonstrating Proportional relationships - Scale factor and scale models - Converting between unit rates (mm, cm, m, km within Problems & Warm Ups) - Proportions as percents - Applying	Global Context: Science & Technical Innovation - Systems, models & Puzzles Statement of Inquiry: Establishing relationships of equivalence between quantities illustrates the interconnectedness of human-made systems. Assessment: 1. Unit Test (Criteria A) 2. Project Investigation (Criteria C & D) 3. Investigation (Criteria B & C) ATL skills: Communication; Understanding and using mathematical notation; Organise and depict information logically Content summary: - Defining rate and unit rate as a rate of change and is between 2 different quantities - Unit rate as a proportional relationship on a graph - Defining and recognizing a constant rate of change - Each point on the graph of a unit rate is a equivalent ratio - Applying mathematical strategies to solve problems using rates and unit rates.	
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	addition and subtraction with integers. (Including GEMDAS) • Applying mathematical strategies to solve problems involving integers. • Using Integers & Absolute Value with Orders of Operations • Solving Word Problems with Integers	patterns in different forms - diagrams, sequences, tables, words. • Evaluating expressions for different values • Creating and simplifying basic algebraic expressions (collecting like terms, distributing constants over a binomial) • Generalizing a mathematical pattern using algebra, and solving applications involving algebraic patterns. • Knowing that $\frac{1}{3}x$ is the same as $x/3$ • The commutative, associative, and identity properties • Solving one-step equations & understanding inverse operations	involving 3D shapes	mathematical strategies to solve problems using proportional reasoning		
8	Exponents - Discoveries and Developments	Algebraic Expressions - The Bottom Line -	Equations and Inequalities - A balancing Act	Coordinate Geometry - Human Impact Concepts: Relationships,		

	Concepts: Form, Representations, Simplification Global Context: Orientation in Space and Time (Natural landscapes and resources) Inquiry: Representing and Simplifying quantities in different forms can help explore natural landscapes and resources Assessment: 1. Unit Test (Criterion A) 2. Investigation (Criterion B) 3. Applications task (Criteria C & D) ATL skills: Organization (Managing Time, Materials and Tasks Effectively) Content summary: - Rational and Irrational numbers - Algebraic Expressions with Integer Exponents - Scientific Notation	Algebraic Expressions Concepts: Form, Simplification and Equivalence Global Context: Identities and Relationships (Competition and Cooperation) Inquiry: Producing equivalent forms of expressions through simplification can help identify relationships to make informed decisions. Assessment: 1. Unit Test (Criterion A) 2. Investigation (Criterion B) 3. Application Task (Criteria C & D) ATL skills: Affective (Mindfulness, Perseverance, Self-motivation and resilience.) Content summary: - Translating and simplifying algebraic expressions - Using the Properties of Real Numbers to simplify algebraic expressions - Evaluating algebraic Expressions with Substitution - Expanding brackets	Concepts: Logic, Equivalence and Justification Global Context (Exploration): Scientific and Technical Innovation (processes and models) Inquiry: Logic helps us model the processes that justify equivalence. Assessment: 1. Unit Test (Criterion A) 2. Investigation (Criterion B) 3. Application Task (Criteria C & D) ATL skills: Critical Thinking (Test generalizations and conclusions) Content summary: - Solve one-step, two-step and multi-step equations in one variable. - Translate equations and inequalities. - Use the Properties of equality to justify solving equations. - Solve one and two-step inequalities and represent the solutions on a number line. - Apply mathematical strategies to solve problems involving	Patterns, Change Global Context: Globalisation and Sustainability (Human Impact on the Environment) Inquiry: The relationship of humans' impact on the environment can be represented by patterns and change. Assessment: 1. Unit Test (Criterion A) 2. Investigation (Criterion B) 3. Application Task (Criteria C & D) ATL skills: Reflective Skills (Consider personal learning strategies) Content summary: - Solving problems involving right triangles using Pythagoras' Theorem. - Determining whether or not two triangles are similar. - Using the properties of similar triangles to find missing measurements. - Finding the gradient of a line using the slope triangle - Comparing proportional and nonproportional relationships - Representing Linear Relationships in different ways. - Determining the characteristics of	
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		$2(3x-1)$ and $(x-3)(x+4)$ - Factoring the GCF from a polynomial (single brackets only) - Factoring a trinomial into binomial factors (using area models only) - Modelling algebraic expressions - Finding the value of a variable in formula	algebraic equations and inequalities.	linear relationships (gradient, y-intercept) Applying mathematical strategies to solve rate problems using a linear model.		
9	Numerical and Abstract Reasoning Concepts: Form, Equivalence, Representation, Simplification, Change Global Context: Identities and Relationships Inquiry: Understanding the representation of mathematics in different forms over time and space, can help us change between equivalent forms and simplify expressions. Assessment: 1. Investigation (Criterion B) 2. Unit test (Criterion A) ATL skills: - Reflection: - Identify strengths & weaknesses of	Coordinate Geometry Concepts: Form, Change, Model, Space Global Context: Orientation in Time and Space Inquiry: Visualising and analysing forms in space can help us model change and make predictions about the world around us, improving decision making. Assessment: 1. Investigation (Criteria C & D) 2. Unit test (Criterion A) ATL skills: - Organisation skills: - Use appropriate strategies for organising complex information	Thinking with Models Concepts: Logic, Models, Systems, Represent Global Context: Scientific and Technical Innovation Inquiry: Algebraic thinking and logic empower us to design systems with equivalent models, enabling us to represent and uncover the mysteries of the unknown. Assessment: 1. Investigations (Criterion B) 2. Unit tests (Criteria A) ATL skills: Creative thinking skills: - Gather and organise relevant information to formulate an argument - Create novel solutions to authentic problems	Reasoning with Data Concepts: Relationship, Quantity and Representation Global Context: Globalization and Sustainability Inquiry: Representations of relationships between quantities can allow us to visualize trends in populations and consider sustainable solutions to local and global issues. Assessment: 1. Statistical Report (Criterion C & D) ATL skills: Communication skills: - Give and receive meaningful feedback - Make inferences and draw conclusions - Use appropriate forms of writing for different audiences - Organise and depict information logically	Spatial Reasoning/2D and 3D Geometry Concepts: Logic, Change and Equivalence Global Context: Globalization and Sustainability Inquiry: The generalisation of relationships within shapes can help engineers and architects create and justify new sustainable structures. Assessment: 1. End of year exam (Criterion A) ATL skills: Communication skills: - Negotiate ideas and knowledge with peers and teachers - Interpret and use effective modes of non-verbal communication - Transfer skills	

	personal learning strategies - Communication: - Taking effective notes in class & making summary notes - Understanding and using mathematical notation (formulas) - Making inferences and drawing conclusions (about patterns) Content summary: - Number types - Rounding (dp. and sf.) - Operating with fractions - Order of operations - Exponent laws (product, quotient & power laws) - Exponent laws (zero, negative and fractional (unit fractions)) - Operating with surds - Simplifying surds (extension)	- Set goals that are challenging and realistic - Collaboration: - Manage and resolve conflict and work collaboratively in teams. - Help others succeed. Content summary: - Coordinate points & cartesian plane - Pythagoras' theorem - Distance formula - Midpoint - Gradient - Solutions to linear equations - Graphing equations of lines (from tables and from gradient-intercept form) - X and Y-intercepts - Finding equations of lines (from graphs, a point and gradient and 2 points) - Graphing lines with GDC (extension) - Parallel & perpendicular lines - Proportional change & direct variation	- Apply existing knowledge to create new ideas and processes - Practise visible thinking strategies and techniques - Use brainstorming and visual diagrams - Affective skills: - Demonstrate persistence and perseverance Content summary: - Solving equations - Rearranging equations - Translating mathematical expressions - Translating and solving word problems with one variable (numbers, age problems) - Solving systems of equations (by graphing solutions, GDC, equating y's, substitution) - Solving word problems with systems - Number of solutions to systems (Investigation)	- Structure information in summaries and reports Content summary: - Measures of centre (mean, median, mode) - GDC to process data (data & spreadsheet) - Measures of Spread (range, quartiles & IQR) - Box-and-whisker plot (5-point number summary) - Frequency tables & bar charts - Grouped frequency tables & histograms - Cumulative graph (extension) - Relative frequency (extension)	- Apply skills and knowledge in unfamiliar situations - Critical-thinking skills - Gather and organise relevant information to formulate an argument Content summary: - Perimeter & area - Application of perimeter & area 3D shapes (surface area and volume) - Volume of standard polyhedra (pyramids, cones, spheres, cylinders and prisms) - Applications of surface area & volume	
9 Extend	The Power of Equivalence Concepts: Form, Equivalence, Simplification	Organizing Urban Development: Coordinate Geometry Concepts: Form, Change, Representation, Space	Thinking with Models Concepts: Logic, Models, Patterns, System Global Context: Scientific and Technical Innovation Inquiry: Algebraic thinking enables us to use logic to	Spatial Reasoning/2D and 3D Geometry Concepts: Logic, Change and Equivalence Global Context: Scientific and Technical Innovation	Reasoning with Data Concepts: Relationships, Quantity and Representation Global Context: Globalization and Sustainability	

	Global Context: Scientific and technical innovation Inquiry: Using mathematical principles, relationships can be expressed or simplified as equivalent forms. Assessment: 1. Investigation (Criterion B) 2. Unit tests (Criterion A) ATL skills: Creative Thinking (Apply existing knowledge to generate new ideas, products or processes) Content summary: • Revise number skills and basic algebra (simplify, distribution, factor hcf, solve up to 3 step equations) • Formula rearrangement • Revise (integer) laws of exponents. • Rational exponents - numeric and algebraic expressions • Simplifying Expressions using the Laws of surds • Solve	Global Context: Orientation in Time and Space Inquiry: How does urban planning use mathematical relationships to model and organise urban spaces? Assessment: 1. Investigations (Criterion B) 2. Unit tests (Criteria A) 3. Applications in Real Life (criteria C and D) ATL skills: Transfer (Combine knowledge, understanding and skills to create products or solutions) Content summary: • Calculate the gradient of a line • Write an equations of a line • Sketch graphs of lines from equations • Identify key features from the graph of a line • Move between different forms of equations of lines • Equations of parallel and perpendicular lines • Calculate distance on a	design systems that model complex patterns. Assessment: 1. Investigations (Criterion B) 2. Unit tests (Criteria A) ATL skills: Critical thinking (Test generalizations and conclusions) Content summary: • Linear models • Solve systems of linear models. • Interpret parameters and solutions of linear models • Expand and Factor quadratic expressions • Solve quadratic equations by factoring • Mathematical model from a table of values (linear and quadratic)	Inquiry: Representing change and equivalence through the logical manipulation of data allows video game developers to create realistic, and fluid movement of geometrical shapes. Assessment: 1. Real Life Task (Criteria C & D) 2. Unit tests (Criterion A) ATL skills: Creative thinking (Create novel solutions to authentic problems) Content summary: • Transformations (reflection, translation, dilation) (revise 2D shapes, PL for G10) • 2D shapes, including special triangles and quadrilaterals. • Area, perimeter and volume of objects • Right triangles, including right-triangle trigonometry • Problem solving using formula and other skills	Inquiry: How quantities are represented can help to establish underlying relationships and trends in a population allowing us to consider sustainable solutions to local and global issues. Assessment: 1. Investigations (Criteria B) 2. Unit tests (Criteria A) ATL skills: Organization (Select and use technology effectively and productively) Content summary: • Review different types of data and basic graphs • Determine mean, median, range, IQR and standard deviation of data set • Determine statistics based on frequency table • Apply statistics to real life contexts	
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	exponential equations	coordinate plane. - Calculate midpoint of segment - Classify quadrilaterals				
10	Numbers (the evolution over time of mathematical notations) Concepts: Form, Representation, Equivalence, Simplification, Global Context: Personal and Cultural Expression Inquiry: The forms and representations of mathematical objects have evolved through History to express new quantities and to respond the specific and ever growing needs of civilisations. Assessment: 1. Investigation (Criterion B) 2. Unit test (Criterion A) ATL skills: Organisation skills: - Create plans to prepare for summative assessments - Plan strategies and take action to achieve personal and	Trigonometry Concepts: Relationships, Patterns, Representation, Space Global Context: orientation in space (and time) Inquiry: Patterns and relationships in geometric representations, of place and space, have helped us explore and understand our world. Assessment: 1. Investigation (Criterion B) 2. Evaluating and creating a house design (Criterion C & D) 2. Unit test (Criterion A) ATL skills: Critical-thinking skills - Gather and organise relevant information to formulate an argument - Practise observing carefully in order to recognise problems - Evaluate evidence and arguments	Functions Concepts: Relationships, Model, Change. Global Context: Scientific and technical innovation Inquiry: Modelling relationships can allow us to predict change and consider opportunities and consequences. Assessment: 1. Report (Criteria C & D) 2. Unit test (Criterion A) ATL skills: Communication skills - Understand and use mathematical notations Critical-thinking skills - Gather and organise relevant information to formulate an argument - Interpret data - Draw reasonable conclusions and generalisations Organisation skills - Select and use technology effectively and productively Content summary: - Concept of functions, function notations (review). - Domain and range of functions. - Linear functions.	Algebra Concepts: Relationships, Representation, Simplification, Models Global Context: identities and relationships Inquiry: The abstract symbols that represent and model complex relationships between quantities can be simplified to determine their possible solutions. Assessment: 2. Unit test (Criterion A) ATL skills: Critical-thinking skills - Propose and evaluate a variety of solutions. Organisation skills: - Create plans to prepare for summative assessments - Plan strategies and take action to achieve personal and academic goals - Use appropriate strategies for organising complex information - Select and use technology effectively and productively Content summary: - Revision:	Probability Concepts: Logic, Relationships, Representations, Systems Global Context: identify and relationships Inquiry: Representing and generalising relationships can help to inform trends among events and individuals. Assessment: 1. Investigation (Criterion B) 2. End of year exam (Criterion A) ATL skills: Creative-thinking skills: - Use brainstorming and visual diagrams to generate new ideas and inquiries - Practise visible thinking strategies and techniques - Apply existing knowledge to generate new ideas, products or processes Content summary: - Probability scale (language, percentage, decimals and fractions) - Probability of	IDU - Rising above misrepresentation Concepts: Systems, Relationships, Evidence, Representation, Validity Global Context: Fairness and Development - Fair and accurate reporting Inquiry: The representation of evidence has the potential to significantly impact the fairness, validity, and accuracy of reporting on relationships between variables. Assessment: 1. Climate change data report (Ai, Bi) 2. Presentation to interview panel (Aii, Bii; Ci, Cii) ATL skills: Communication skills: Negotiate ideas and knowledge with peers and teachers Media literacy skills: Understand the impact of media representations and modes of presentation Content summary from mathematics: Selecting appropriate representations depending on data types

	- academic goals - Bring necessary equipment and supplies to class (calculator) Communications skills: - Take effective notes in class and make summary notes Content summary: - Number systems - Exponents (including negative and fractional) - Exponential equations & scientific notation - Logarithms (w/o technology) - Laws of logarithms (practice investigation task) - Arithmetic sequences & series - Geometric Sequences - Application of sequences and series - GDC practice (Nsolve & Sheets) - Interval	- Draw reasonable conclusions and generalisations Transfer skills - Make connections between subject groups and disciplines - Apply skills and knowledge in unfamiliar situations Content summary: - Properties of triangles - Similarity - Scale factor in area and volume (extension). - Pythagoras' theorem solving in 2D - Pythagoras' theorem solving in 3D (extension) - Length of an arc and the area of a sector - Trigonometric ratios - Problem solving with trigonometric ratios (incl. inverse) - Application of trigonometry - Area of non-right angle	- Quadratic functions. - Forms of quadratic functions - Application of quadratic functions. - Inverse functions - Composite functions - Transformation of functions (translation, stretch and reflection) - Exponential and logarithmic functions - Higher order polynomials - Reciprocal graphs	collecting like terms, expanding single bracket, factorising into single bracket, solving equations - Rearranging formulae - Expanding double brackets - Factorising into double brackets and factorised form of quadratic functions - Standard form and quadratic formula (verifying with Polyroots) - Word problems involving quadratic equations (application) - Completing the square and application of vertex form	simple events - Probability of combined events - Probability with sample spaces, tree diagrams and venn diagrams - Dependent and independent events - Addition rule (Investigation)	(histograms, bar charts, box-and-whiskers, scatterplots, cumulative graphs) - Using different measures of centre to describe data - Using different measures of spread to describe data - Analysing the distribution of data and how it affects the measures of centre (skewness) - Outliers - Linear regression (application and positive & negative correlations) - Extension: standard deviation and error bars - Interpretations of different representations of data - Using correct vocabulary, terminology and notation to describe data - Evaluating whether conclusions drawn from data set are valid or could be misleading
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	Notation & solving inequalities	- triangles - Non-right-angle trigonometry - Trigonometric functions and transformation of trig. functions.				
10 Extend	Numbers (the evolution over time of mathematical notations) Concepts: Form, Representation, Equivalence, Simplification, Global Context: Scientific and Technical Innovation Inquiry: The equivalent forms and representations of mathematical objects have evolved over time to express new quantities and to respond to the specific and ever growing needs of technical discoveries. Assessment: 1. Investigation of rules (Criteria B) 2. Application (Criterion D) 3.. Unit test (Criteria A) ATL skills: Communication skills: Use and interpret a range of discipline-specific	Geometry and Trigonometry Concepts: Relationships Measurement, Representation, Space Global Context: orientation in space (and time) Inquiry: Geometric representations of place and space have helped us explore relationships in the world around us and to draw conclusions about the unmeasurable Assessment: 1. Double angle formula/proof(Criterion C) 2. Application (Criterion D) 2. Unit test (Criteria A) ATL skills: Communication skills: make inferences and draw conclusions, understand and use mathematical notation	Functions Concepts: Relationships, Representation, Change, Models Global Context: Scientific and technical innovation Inquiry: The functions enable to describe the relationships between quantities, to model their changes and to make informed decisions when designing and developing innovative projects. Assessment: 1. Investigations (Criteria B, C & D) 2. Unit tests (Criteria A) ATL skills: - Critical thinking skills: propose and evaluate a variety of solutions. - Reflection skills: Identify strengths and weaknesses of personal learning strategies Content summary: - Concept of functions, function notations (review). - Domain and range of functions. - Linear functions. - Quadratic functions.	Algebra Concepts: Relationships, Representation, Simplification, Models Global Context: identities and relationships Inquiry: Algebra enables to represent and model complex relationships between quantities using abstract symbols, to simplify them and to determine their possible solutions. Assessment: Unit tests (Criteria A) ATL skills: - Critical thinking skills: propose and evaluate a variety of solutions. Content summary: - Products of binomials - Factorizing and solving quadratic equations, including factored form, vertex form, completing the square, sum and product of roots, splitting the middle term and quadratic formula methods. Applications in context.	Probability Concepts: Logic, Relationships, Representations, Systems Global Context: identify and relationships Inquiry: Representing and generalizing relationships help to inform trends among events and individuals. Assessment: 1. Investigations (Criteria B & D) 2. Unit tests (Criteria A) ATL skills: - Critical thinking skills: propose and evaluate a variety of solutions. - Reflection skills: Identify strengths and weaknesses of personal learning strategies Content summary: - Sample spaces, terminology (review) - Probability of simple events (review) - Theoretical and experimental probability (review)	IDU (with Sciences) - Rising above misrepresentation Concepts: Systems, Relationships, Evidence, Representation, Validity Global Context: Fairness and Development - Fair and accurate reporting Inquiry: The representation of evidence has the potential to significantly impact the fairness, validity, and accuracy of reporting on relationships between variables. Assessment: 1. Climate change data report (Ai, Bi) 2. Presentation to interview panel (Aii, Bii; Ci, Cii) ATL skills: Communication skills: Negotiate ideas and knowledge with peers and teachers Media literacy skills: Understand the impact of media representations and modes of presentation Content summary from mathematics:

	terms and symbols - Organization skills: Create plans to prepare for summative assessments (examinations and performances), Bring necessary equipment and supplies to class - Information literacy skills: Access information to be informed and inform others - Critical-thinking skills: Gather and organize relevant information to formulate an argument Content summary: - Number systems notation (review) - Exponential notations - Laws of exponents - Exponential equations	- Reflection skills: identify strengths and weaknesses of personal learning strategies (self-assessment) - Critical-thinking skills: propose and evaluate a variety of solutions - Transfer skills: use effective learning strategies in subject groups and disciplines Content summary: - Congruence and similarity. Enlargement by a rational factor (dilation) including area and volume - Pythagoras' theorem, converse of Pythagoras' theorem. Problem solving in 2D and 3D - Circle geometry (theorems)	- Polynomial functions of higher degree - Modelling cycle - Exponential function - Logarithmic functions Graphing trigonometric functions. - Absolute value functions Transformations of graphs (translation, stretch, reflection), including quadratic and <u>trigonometric</u> functions - Composite functions - Inverse functions (enrich.) - Rational functions, <u>including limits and asymptotes</u> - Power rule for differentiation (investigation)	- Representing and solving simple inequalities (w/o technology). - Representing and solving systems of inequalities (w/o technology): linear programming (enrich.) - Representing and solving double inequalities (w/o technology). - Representing and solving inequalities involving absolute values (w/o technology).	- Probability with venn diagrams tree diagrams and sample spaces - Counting principles, combinatorics, permutations - Probability calculations. - Additional rule. - Dependent and independent events. - Combined events. - Mutually exclusive events. - Investigation (S): multiplication rule, conditional probability. - Data processing: measure of central tendency (mean, mode, median) (review). - Measure of dispersion: standard deviation (review) - Random variables - Normal distribution	- Selecting appropriate representations depending on data types (histograms, bar charts, box-and-whiskers, scatterplots, cumulative graphs) - Using different measures of centre to describe data - Using different measures of spread to describe data - Analysing the distribution of data and how it affects the measures of centre (skewness) - Outliers - Linear regression (application and positive & negative correlations) - Extension: standard deviation and error bars - Interpretations of different representations of data - Using correct vocabulary, terminology and notation to describe data - Evaluating whether conclusions
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	- Scientific notation - Number sequences, arithmetic and geometric sequences (review). - Arithmetic and geometric series - Logarithms (w/o technology), laws of logarithms. - Investigation (S): change of base - Absolute values. - Measurements and accuracy: interval notations	- Special right-angled triangles - Angle measurement in degrees and radians. - Arc length, sector area. - Right-angled trigonometry (ratios). - Unit circle - Trigonometric identities = Pythagoras' identity, double angle formulae - Area of triangle - Sine and cosine rule applications.				drawn from data set are valid or could be misleading
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