Course Overviews MYP Mathematics, UWC Thailand 2022-2023

All units taught in grades 6 to 10 are continuously being developed and improved to best meet the needs of the students at UWCT. Therefore, the following overview is only a reflection of current plans for the course. Some changes to these course overviews may occur as a result of planning done throughout the academic year.

Grade	Unit Number and Title	Key and Related Concepts	Global Context	Statement of Inquiry	Inquiry Questions	Approaches To learning skills taught / learnt / developed in this unit	Content (topics / knowledge/ subject specific skills)	Summative Assessment and MYP Criteria Assessed
6	1: Number Concepts	Logic Justification Representation	Scientific and technical innovation - processes and solutions	Logical processes use patterns to represent and justify solutions	**Factual:** What do numerals represent? How do we represent our working in mathematical notation? **Conceptual:** Is estimation more appropriate than finding an exact answer? How do we justify our solution? **Debatable:** When is the "correct" answer not the best solution? How do we logically justify what is 'best'?	**Communication skills** Give and receive meaningful feedback: Interpret and use effectively modes of non-verbal communication Reading, writing and using language to gather and communicate information Use and interpret a range of discipline-specific terms and symbols **Critical thinking skills** Managing time and tasks effectively. Plan short- and long-term assignments; meet deadlines	**Whole Numbers:** Addition and Subtraction Worded problems with addition and subtraction Number Puzzles Multiplication Division Multiplying and dividing by 10, 100, 1000 2 - Step Problems Multiplying and dividing by whole numbers Index Notation Bidmas Puzzle Rounding **Number Properties:** Square and cubic numbers Divisibility rules Factors Prime Numbers Composite Numbers Multiples	Criteria A Test *Criteria D and C* *How many books are in the library?* *Not done in 2021/22 because of remote teaching*
6	2: Fractions and Decimals Part of this unit was taught online from the beginning of the year.	Relationships Equivalence Pattern	Scientific and technical innovation Processes and Solutions	The equivalence of fractions and other mathematical relationships require processing and solving to find patterns	**fFactual:** How can we represent portions or parts of an amount? **Factual:** What are different ways to express parts of a total? **Conceptual:** Are fractions and decimals present in real life? **Debatable:** Can fractions and decimals help us in real life situations?	**Communication skills** Exchanging thoughts, messages and information effectively through interaction. Give and receive meaningful feedback. **Self-managing skills** Bring necessary equipment and supplies to class Practise strategies to overcome distractions **Critical thinking skills** Analysing and evaluating issues and ideas Propose and evaluate a variety of solutions	• Finding equivalent fractions • Simplifying fractions • Converting between improper fractions and mixed numbers • Adding and subtracting fractions • Multiplying fractions • Dividing Fractions • Performing mixed operations with fractions • Finding equivalent decimals • Simplifying fractions • Converting between fractions and decimals • Adding and subtracting decimals • Multiplying decimals • Dividing decimals • Performing mixed operations with decimals • Solve problems involving fractions or decimals	Criterion A Test on fractions Criteria A and C Operations with Fractions and Decimals Test
6	3: Algebra Patterning	Form Models Representations	Scientific and technical innovation -principles and discoveries	Algebra helps us form mathematical models which represent patterns which we discover	**Factual:** Are patterns important in the world today? **Conceptual:** How can a variable transform itself? **Debatable:** What is the unknown?	**Communication skills** Reading, writing and using language to gather and communicate information Organize and depict information logically	**Online 1st edition textbook** Be able to recognise a pattern and continue it To be able to find a particular term in a sequence To be able to find the position of a particular term in a sequence. To be able to find the formula for an arithmetic sequence.	B and D task Matchstick patterns where students need to find the pattern and predict the formula

						Thinking skills Draw reasonable conclusions and generalizations Propose and evaluate a variety of solutions Practise visible thinking strategies and techniques	Looking at arithmetic sequences, matchsticks, fish, and chairs around tables to try and predict how many pieces will be in a future picture	
6	4: Statistics	Relationships Justification Generalization	Globalisation and sustainability -data driven decision making	Statistical relationships are used to justify and generalize decisions	**Factual:** How do you collect data? **Conceptual:**What information does a chart or table give? How do charts, tables, and graphs help you interpret data? **Debatable:** Do statistics always tell the truth?	**Research skills** Collect and analyse data to identify solutions and make informed decisions Process data and report results **Thinking skills** Gather and organize relevant information to formulate an argument Interpret data	**Statistics:** To know how to collect data and know the difference between Samples and populations To identify and analyse categorical data through pie charts, dot plots and bar graphs. To identify and analyse numerical discrete data through pie charts, dot plots and bar graphs.	A and C test How are pieces of data represented in graphs, pie charts and various other ways. Students need to be able to break down angles in a circle.
6	5: Points, Lines, and Angles	Form Generalisations Representations	Orientation in space and time -other(use of mathematical orientation diagram)	The orientation of points, angles and lines can be represented in a variety of forms	**Factual:** How are angles measured? **Conceptual:** How does the relationship between angles change as lines are moved? **Debatable:** Is the number of degrees at a point fixed?	**Communication skills** Give and receive meaningful feedback Interpret and use effectively modes of non-verbal communication Use and interpret a range of discipline-specific terms and symbols **Thinking skills** Interpret data Draw reasonable conclusions and generalizations Test generalizations and conclusions	Points and lines Angles Angles at a point Vertically opposite angles Bisecting angles Complementary angles	A task Identifying lines, rays and segments. Names of angles, measuring angles, vertically opposite angles There will be a criterion A assessment on points, lines and angles combined with the next unit, Transformations.
6	6: Transformations	Creativity Pattern Change	Personal and cultural expression -Beauty	The patterns we see in transformations demonstrate creativity and beauty	**Factual:** Which transformation does not preserve congruence? **Conceptual:** How can transformations be viewed on different interactive programs? **Debatable** Are geometric transformations actually changes?	**Self-management skills** Create plans to prepare for summative assessments (examinations and performances) What don't I yet understand? How can I share my skills to help peers who need more practice? **Thinking skills** Generating novel ideas and considering new perspectives Create original works and ideas; use existing works and ideas in new ways	Translations Reflections Rotations Enlargement/Reduction (Dilation)	A Task Students will identify different kinds of transformations and to what degree There will be a criterion A assessment on Transformations combined with the previous unit, points, lines and angles.

6	7: Geometric Shapes	Form Equivalence Quantity	Scientific and technical innovation -systems	The systems of geometric shapes are derived from the quantity, form and possible equivalence of their attributes.	**Factual:** What are the names of the first 4 regular polygons? **Conceptual:** How does the number of sides of a regular polygon affect its central angle size? **Debatable:** When does a regular polygon become a circle?	**Communication** Make inferences and draw conclusions **Thinking** Practice observing carefully in order to recognise problems Draw reasonable conclusions and generalizations	Properties of: • polygons • circles • triangles • quadrilaterals • solids • Nets of solids	Recognising patterns B Investigation Interior and exterior angles of regular polygons
6	8: Positive and Negative Numbers	Systems Pattern Representation	Scientific and technical innovation: -processes and solutions	We process numbers via systems which give us a visual representation of patterns, and the resulting solutions	**Factual:** What is the opposite of a given whole number? **Conceptual:** Why does negative 5 times negative 3 equal positive 15? **Debatable:** Is zero positive, negative or neither?	**Communication** Use appropriate forms of writing for different purposes and audiences **Thinking** Apply skills and knowledge in unfamiliar situations	Opposites Combined effects The number line extended Adding and subtracting negative numbers Multiplying and dividing negative numbers	This was not assessed separately it.
6	9: Location	Time, Place and Space Representation Communication	Orientation in space and time -scale	The locations of natural or mathematical spaces and places are represented accurately through scale diagrams.	**Factual:** Do the coordinates (3, 2) and (2, 3) represent the same location? **Conceptual:** How can direction and distance instructions guide others to a location? **Debatable:** Are maps ever totally accurate?	**Communication** Use appropriate forms of writing for different purposes and audiences Use a variety of media to communicate with a variety of audiences **Thinking (creative)** Create original works and ideas. **Transfer skills** Apply skills and knowledge in unfamiliar situations	Map references Finding points Coordinates Positive and negative coordinates Direction Using a scale	Location Criterion D Phuket map reading task

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7	1: Number Fluency	Logic Justification, pattern	Scientific & technical innovation - Processes and solutions	Logical processes aid number fluency, by using patterns to justify solutions.	**Factual:** How can we perform complex calculations quickly and easily? What patterns help us in doing so? **Conceptual:** When is it appropriate to use estimation? When should you use mental computation? How do you justify your solution? **Debatable:** Are there other possible number systems? Can there be more than one correct answer to a mathematical problem?	**Communication skills** Exchanging thoughts, messages and information effectively through interaction. Give and receive meaningful feedback: Interpret and use effectively modes of non-verbal communication Reading, writing and using language to gather and communicate information Use and interpret a range of discipline-specific terms and symbols **Critical thinking skills** Managing time and tasks effectively. Plan short- and long-term assignments; meet deadlines	Rounding and Estimation Order of operations Index notation Square and cube numbers Divisibility Rules Factors and Multiples Prime and composite numbers Roots	Criterion A: Test Criteria B & C: Frogs and toads investigation

7	2: Geometry .	Form Representation, Space	Orientation in space & time -scale	The representation of the geometric form of various shapes defines the space they occupy.	**Factual:** How are points, lines, line segments, rays, and angles related? **Conceptual:** Is there only one true geometrical system? **Debatable:** Which is more accurate, measurement or calculation?	**Communication skills** Use appropriate forms of writing for different purposes and audiences Understand and use mathematical notation Organize and depict information logically **Thinking skills** Use brainstorming and visual diagrams to generate new ideas and inquiries Consider multiple alternatives, including those that might be unlikely or impossible	Angles and lines Points and lines Angle properties Angle pairs Parallel lines Bisectors Polygons Triangles Angles of triangle Isosceles triangles Quadrilaterals Angles of quadrilaterals.	Combine with next unit Criteria A and C: Angles, Perimeter and Area test. Or: Ferris Wheel Investigation, Criterion B and C. (Scaffolding included)
7	3: Measurement - Length, Area and Volume	Relationships Quantity, representation	Globalization & sustainability -scarcity of resources	Relationships exist between measurements of quantity that can help us make the best use of our natural resources.	**Factual:** How can patterns be used to determine standard formulas for area and perimeter? **Conceptual:** Where would you find symmetry? **Debatable:** Which designs are most suitable for a fixed volume?	**Self-management skills** Perseverance Self-motivation **Research skills** Access information to be informed and inform others Collect and analyse data to identify solutions and make informed decisions Process data and report results	Length and Area Perimeter Area of polygons Area of composite shapes Volume Capacity Area of circles	Combine with previous unit Criteria A and C: Angles, Perimeter and Area test. Criterion D: Volume and capacity investigation
7	4: Probability	Logic Generalization Representation	Identities and relationships -Mathematical identities, modelling v reality…	Logic is used when generalising relationships to model probabilities and represent real-life outcomes	**Factual:** How is the likelihood of an event determined and communicated? **Conceptual:** How realistic is an expected value? **Debatable:** Can we justify decisions based on theoretical predictions?	**Self-management skills** Plan short- and long-term assignments; meet deadlines Use appropriate strategies for organizing complex information **Thinking skills** Apply skills and knowledge in unfamiliar situations Inquire in different contexts to gain a different perspective	Discrete probability Assigning numbers to probability Sample space Theoretical probability Complementary events Tree diagrams Relationship between theoretical and experimental probability	Criteria A and C: Probability Assessment
7	5: Algebra: Expressions and Equations	Logic Simplification Systems	Scientific & technical innovation -systems	We can use algebra in mathematical systems, so as to logically simplify and solve equations	**Factual:** Why do we use variables? **Conceptual:** What is the unknown? **Debatable:** Can we make reliable generalisations beyond the range of experience?	**Self-management skills** Managing state of mind Perseverance **Thinking skills** Apply skills and knowledge in unfamiliar situations	Writing algebraic expressions Key-words in Algebra Equal expressions Collecting like terms Algebraic products Evaluating algebraic expressions Equations Solving simple equations Maintaining balance	Criteria A and C: Test Criterion B:Frogs investigation

							Inverse operations Solving equations Equations with repeated unknowns Word problems	
7	6: Statistics	Relationships Representation Patterns	Identities & relationships -data management	Statistics observed in data sources can be used to represent relationships and patterns	**Factual:** How can we present data? **Conceptual:** How do we select and interpret statistics calculations? **Debatable:** Can we trust statistics?	**Communication skills** Use appropriate forms of writing for different purposes and audiences Interpret and use effectively modes of non-verbal communication **Thinking skills** Gather and organize relevant information to formulate an argument Interpret data Draw reasonable conclusions and generalizations	Types of data Organization & display of data Frequency tables Frequency graphs Measures of centre: mean, median, mode Choosing the appropriate measure Grouped data Mean from grouped data Measuring the spread of data - range, Cumulative frequency Scatter Plots Line of best fit Predicting the future.	Criterion A: Statistics Test Criterion D: Statistical Investigation
7	7: The Coordinate Plane	Form Representation Systems	Orientation in space and time -other (co-ordinates)	The co-ordinate plane is one form of representing orientation in space	**Factual:** What is the role of the axes in the coordinate plane? **Conceptual:** What is the significance of the quadrants on the coordinate plane? **Debatable:** Are infinite lines on the coordinate plane actually useful?	**Communication** Use appropriate forms of writing for different purposes and audiences **Thinking** Apply skills and knowledge in unfamiliar situations	Number grids Positive and negative coordinates Plotting points from a table of values Graphing straight lines Horizontal and vertical lines	No summative assessment.
7	IDU Inside Out	Connections Change Generalisations	Globalisation and sustainability Data driven decision making	Connections can be made by generalising data, so making decisions to sustain/change a healthier lifestyle	**Factual:** How do we represent data? **Conceptual:** How do we analyse data? **Debatable:** Can you make reliable predictions using the data you have collected?	**Transfer skills** Use effective learning strategies in subject groups and disciplines	Types of data Organization & display of data Frequency tables Frequency graphs Measures of centre: mean, median, mode Choosing the appropriate measure Grouped data Mean from grouped data Measuring the spread of data - range, Cumulative frequency Scatter Plots Line of best fit Predicting the future.	Statistics Averages Averages from a table.

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8	1: Number Fluency	Logic Representation Quantity	Scientific and Technical Innovation -Systems	Number skills allow us to logically represent arithmetic quantities.	**Factual:** How can we understand numbers and their properties better by decomposing them? **Conceptual:**How do I demonstrate the relationship between numbers, quantities and place value for whole numbers up to 1,000? **Debatable:**When is the “correct” answer not the best solution?	Communication ☑ Understand and use mathematical notation ☑ Take effective notes in class Critical Thinking ☑ Identify obstacles and challenges	BIDMAS, factors, prime factors, LCM, HCF, negative numbers, multiplying and dividing by powers of ten, fractions, equivalent fractions, mixed numbers and improper fractions, adding and subtracting fractions, multiplying and dividing fractions, ratio	A, B A by test B by investigation (Repeating fractions)
8	2: Transformations	Aesthetics Pattern Represntation	Personal and cultural expression -Artistry	Geometric transformations and patterns are used to represent the aesthetics of culture.	**Factual:** What is a transformation? **Conceptual:**How is geometric transformations supporting tribal art forms? **Debatable:**Why are geometric transformations so appealing?	Creative Thinking ☑ Create original works and ideas; use existing works and ideas in new ways ☑ Create novel solutions to authentic problems	Transformations, rotation, reflection, enlargement, translation	A, C (Tribal designs)

8	3: Coordinate Geometry	Identity Models Space	Orientation in space and time - Other	Coordinate geometry helps us understand our place in time and space and this gives us a model on which to identify our position.	**Factual:** What notation do we use to represent coordinates in 2d and 3d space? **Conceptual:** Why is this useful? **Debatable:** How are position words useful?	Communication Communicating through algebra, through tables of values and through use of graphs	Identify points on a cartesian plane, gradient, rate of change, y = mx + c, draw a straight line graph, find the line equation, apply to real world problems	A D Planning a celebration meal
8	4: Pythagoras and Radicals	Form Representation Simplification	Orientation in space and time -Other	Understanding the underlying form of right triangles allows us to represent, simplify and solve geometric problems.	**Factual:**Investigate how the lengths of sides in a right angled triangle are always consistently related **Conceptual:**What arithmetic operations work with radicals? **Debatable:** Was the hypotenuse found or discovered? Who invented the $\sqrt{}$ sign?	Communication - make inferences and draw conclusions Organisation - plan short and long-term assignments	Right-angled triangles, square numbers, square roots, Pythagoras, problem solving	B - Pythagoras investigation A - Test
8	5: Linear Algebra	Communication Representation Equivalence	Scientific and technical innovation Mathematical puzzles	Linear algebra allows us to communicate and represent equivalent real life problems	**Factual:**What are the tools needed to solve linear equations and inequalities? **Conceptual:**What information and strategies would you use to solve a multi-step word problem? **Debatable:** What is the unknown?	Self management - affective	Factorising linear expressions, rearrange simple formula, derive a rule for an arithmetic sequence, solve (two-step) equations, solve linear equations with fractional coefficients, expand brackets Chaps 7, 8 and 19 (includes index laws), simultaneous equations	A - test
8	6: Statistics This is the IDU unit	Relationships Representation (Maths) Environment (Sci)	Globalisation and sustainability - Human impact on the environment	Statistics allows us to represent the relationships which impact on sustaining our environment	**Factual:** How can you collect, organize, and display data? How can you represent data **Conceptual:** How do you interpret the data you have collected? **Debatable:** Do statistics always lie?	**Transfer skills** Use effective learning strategies in subject groups and disciplines **Self management -** organisation (plan short and long term assessments). ☑ Plan short- and long-term assignments; meet deadlines The summative is a 3-lesson project, ensure time is allocated wisely. ☑ Keep an organized and logical system of information files/notebooks ☑ Select and use technology effectively and productively	Data collection, constructing and interpreting graphs, calculating mean, median and mode, calculating the interquartile range	Investigation (Pumpkins) by C, D **20/21 This is an IDU and task is changing - based on data collection in Science Investigation C/D - River study**
8	7: Length, Area, Volume	Change Change Quantity	Scientific and technical innovation -Processes and Solutions	Solutions for optimal packaging can change through varying quantities.	**Factual:** What tools and units are used to measure the attributes of an object? **Conceptual:** How do you decide which unit of measurement to use? **Debatable:** What makes efficient packaging?	Social - collaboration	Finding the perimeter and circumference, area and volume of regular and irregular two dimensional and three dimensional shapes. Focus on prisms in 3D. Compound shapes. Nets	A - test C, D - Painting the school
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	There will be 2 Grade 9 Maths classes. One class will cover the core MYP 4 material, and the other will cover core and extended mathematics. Students will be placed in a class based on evidence (attainment and attitude) obtained during the first 6 weeks of Grade 9.							
9	1: Number fluency	Form Quantity Systems	Scientific and technical innovation -Methods	Systems of numbers and quantities can be written (and applied) in different forms.	**Factual:**What number or symbol is needed to make number sentences true? **Conceptual:**How do I demonstrate the relationship between numbers, quantities and place value for whole numbers up to 1,000? Are there different forms which I can use? **Debatable:**When is the "correct" answer not the best solution? How do you know when one method is more suitable than another?	Communication ☑ Understand and use mathematical notation ☑ Organize and depict information logically Critical Thinking ☑ Apply skills and knowledge in unfamiliar situations	Basic rules of indices (exponent laws including fractional exponents), standard form (scientific notation), operations with numbers in standard form, prime factorisation	A by test (leveled 1-2, 3-4, 5-6 and 7-8) covering the content of this unit (indices) B/C Knights investigation. Finding patterns and communicating results/predictions
9	1(a): Measurement	Form Quantity Models	Globalisation and sustainability -Consumption	Understanding the form and quantity of packaging models sustainable consumption.	**Factual:**What units are used to measure length, area and volume? **Conceptual:**is there a difference between volume and capacity? **Debatable:** why might producers choose packaging which is extreme in quantity?	Thinking	Length, area, surface and volume of a range of 2D and 3D shapes	A by quiz (multiple choice) (levelled covering length, area and volume) D by investigation (Tubes) Students are to make an open ended cylinder with a piece of card of fixed dimensions...and then with a piece of card of fixed area(but variable dimensions)

9	2: Algebra	Logic Representation Model	Scientific and technical innovation -processes and solutions	Algebra enables us to give a logical representation of scientific processes.	**Factual:**What is the unknown? How is this represented? **Conceptual:**What information and strategies would you use to solve a multi-step word problem? What processes will you use? **Debatable: C**an the patterns or relationships support your predictions? Are there ever any solutions which are invalid?	Critical thinking ☑ Analysing and evaluating issues and ideas ☑ Practise observing carefully in order to recognise problems ☑ Gather and organize relevant information to formulate an argument ☑ Draw reasonable conclusions and generalizations	Expanding brackets, combining like terms, solving linear equations, solving equations with algebraic fractions, solving linear inequalities. Factorising linear and quadratic expressions.	B, C by investigation (Borders) (this investigation covers drawing diagrams to try and find numerical sequences, which can then be expressed algebraically) A by test (factorising only) (levelled and testing factorisation of linear and quadratic expressions)
9	3: Straight Line Graphs	Logic Representation Space	Scientific and technical innovation -Models	Straight line graphs can logically represent scientific models.	**Factual:**Why are graphs helpful? How can you find the gradient of a straight line graph? **Conceptual:**Are you able to solve a linear inequality by graphing? **Debatable:** Do mathematical models conceal as much as they reveal?	Communication ☑ Interpret and use effectively modes of non-verbal communication (graphs and tables) -E3 ☑ Use and interpret a range of discipline-specific terms and symbols (y=mx+c, meaning of each component, Ax + By = C) Thinking -Transfer skills ☑ Combine knowledge, understanding and skills to create products or solutions	Parallel and perpendicular lines, the relationship between their gradients, measuring (and calculating) the distance between two points, understanding and using the cartesian plane, finding the midpoint of two points, the linear function f(x) = mx + c, its graph gradient and y-intercept. Graphing linear inequalities	A by test (a levelled test covering distance between two points, midpoints, gradients and equations of lines) D by investigation (Mobile phones) - 3 mobile plans are given, graphs drawn and then conclusions made as to which plan is 'best'.
9	4: Probability	Communication Model Representation	Scientific and technical innovation -Models	We can use theoretical probability to model and represent real (simplified) life situations.	**Factual:**How is the probability of an event determined and communicated? **Conceptual:** How is the probability of an event described? **Debatable:** Are probabilities ever accurate?	Critical thinking ☑ Gather and organize relevant information to formulate an argument ☑ Identify trends and forecast possibilities Students will be taught how to present the problem Communication ☑ Use and interpret a range of discipline-specific terms and symbols ☑ Understand and use mathematical notation Specific probability symbols will be taught, used in class and in final assessment (in place of words)	Calculating probabilities of simple events, with and without replacement. Solving problems using tree diagrams and venn diagrams. Number sets, notation, union and intersection	A by test (a levelled test covering basic probability and applications of probability spaces, venn diagrams and tree diagrams) C/D by real-life problem (Tennis Tournament).4 players in semi-finals each having probability of beating other players. Who is most likely to win Grand Final?
9	5: Trigonometry	Time, place and space Representation Space	Scientific and technical innovation -Processes and solutions	Trigonometry uses scientific innovation to represent and solve measurement problems in space	**Factual:** What measures of angle are used? **Conceptual:** How can objects be represented and compared using geometric attributes? **Debatable:** Was trigonometry found or invented?	Communication Creative thinking Make unexpected or unusual connections between objects and/or ideas	Solving problems using the properties of angles in triangles/angles in intersecting and parallel lines/angles in regular and irregular polygons/angles in circles. Using Pythagoras' theorem. Relating angles and sides of right-angled triangles using sine, cosine and tangent. Solving problems in right-angled triangles using trigonometric ratios	A - A test (levelled) - multiple choice B An investigation into trig graphs
9	6: Quadratics	Logic Representation Space	Scientific and technical innovation -methods, processes and solutions	Quadratic functions use scientific methods to logically represent problems and to reach solutions	**Factual:** What is a quadratic? **Conceptual:**Why are they so important? **Debatable:** How can you tell the difference between a catenoid and a parabola?	Self-management - managing time and self motivation in the final assessment For communication - looking specifically at how graphs can show maxima/minima (optimisation type problems) For self-management - managing time (in an online learning situation)	Factorising quadratic equations, graphing quadratic functions. Using different forms of the quadratic function to sketch graphs (x and y intercepts and vertex). Find the quadratic function from the graph.	B, C and D (Guttering task) A test (Summative assessments not given because of online learning) A was tested in 2022 (EoY exam)
9	7: Simultaneous Equations	Relationships Models Representation	Scientific and Technical innovation -Processes and solutions	Decision making can be improved by using a model of simultaneous equations to represent solutions.	**Factual:** What does simultaneous mean? **Conceptual:**How do you know if there is a solution graphically? **Debatable:** Can there be an infinite number of solutions? Or none? How do we know?	Critical thinking skills: which method of solving is most appropriate	Solving equations graphically and algebraically	A (a test, levelled) D a real-life problem, marked against criterion D only Cancelled because of online learning
9	7: Pot Pourri This one is not filled out on Managebac	Systems Patterns Quantity	Identities and Relationships -Lifestyle Choices	We can quantify our lifestyle choices using using the patterns we find in mathematical systems	**Factual:** What is the difference between simple and compound interest. **Conceptual:** What types of borrowing is available. **Debatable:** Planning for the future: what will my future be?	Self-management Communication	A mixture of mini topics to try and cover the whole Grade 9 text book which includes • Inequalities • Perimeter, area, volume • Statistics • Financial Maths • Transformations	D (Financial Maths) A (end of year assessments) Cancelled due to online classes Only mini-topic covered was Inequalities

	May or may not happen (esp because of online learning). Will be added on managebac IF it happens						• Congruence and similarity • Exponential and rational functions • Proportion	
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	There will be 2 Grade 10 Maths classes. One class will cover the core MYP 5 material, and the other will cover core and extended mathematics. Students will be placed in a class based on evidence (attainment and attitude) obtained during the first 6 weeks of Grade 10.							
10	1: Quadratic Equations	Logic Equivalence Representation	Identities and relationships	Decision making can be improved by using a model to represent relationships	**Factual:** What do the solutions of a quadratic equation represent? **Conceptual:** What is the significance of the discriminant of a quadratic equation? **Debatable:** Does every quadratic equation have a solution?	**Self-management**	Collecting like terms Expanding single brackets, expanding single double brackets Expanding double brackets. Changing the subject of an equation. Factorising linear and quadratic expressions. Solving linear equations. Solving quadratic equations by a range of methods solving simultaneous equations. Completing the square technique Word problems solving quadratic, linear and simultaneous equations.	A - by test
10	2: Sequences and Series	Form Generalisation Pattern	Scientific and technical innovation	Sequences and series form patterns that can be generalised (to infinity and beyond)	**Factual:**What are the different ways to represent the patterns or relationships? **Conceptual:**How can you identify a quadratic sequence? **Debatable:** Why do Fibonacci numbers appear in the natural world so often?	**Communication**	Predicting the next term in a number sequence (linear, quadratic, triangular, Fibonacci). Finding and justifying general rules. Finding sums of series (including infinite series)	B; Pizza cutting activity.
10	3: Trigonometry	Time, place and space Approximation Patterns	Scientific and technical innovation -methods	The methods of trigonometry aid us in measuring place in our universe Patterns in space and time can be used to approximate positions.	**Factual:** What measures of angle are used? **Conceptual:** How can objects be represented and compared using geometric attributes? How do the angles in a triangle affect which trigonometric rule is applicable? **Debatable:** Was trigonometry found or invented?	**Communication** Organise and depict information logically Organise and depict information logically **Thinking** Gather and organise relevant information to formulate an argument Use models and simulations to explore complex systems and issues	Solving problems in right-angled triangles using trigonometric ratios. Advanced trigonometry using non right-angled triangles. Using radians or degrees when solving problems. Modelling using trigonometry.	C, D Shooting investigation B Investigating trigonometric graphs (done as a grade in semester 2)
10	4: Geometry	Logic Measurement Equivalence	Scientific and technical innovation -mathematical puzzles	There is a logic to geometry which involves representation of equivalences in the plane and in space.	**Factual:**How can we test that triangles are congruent? **Conceptual:**How is mathematical similarity related to congruence? **Debatable:**Can congruence exist in the natural world?	**Communication** Give and receive meaningful feedback Read critically and for comprehension **Thinking (Critical)** Use models and simulations to explore complex systems and issues Consider multiple alternatives, including those that might be unlikely or impossible	Pythagoras' Theorem and Pythagorean triples. Congruent triangles. Similarity. Solving similarity problems using the properties of angles in triangles and circles. Solving similarity problems in areas and volumes.	Test (A and C) Pythagoras, Congruence and Similarity test
10	5: Measurement	Form Model Quantity	Globalisation and sustainability -consumption	Structured systems for measurement of quantities are useful when modelling to optimise the use of resources.	**Factual:** How do we calculate area, surface area and volume? **Conceptual:** What does optimization mean for the use of resources? **Debatable:** Is the metric system necessary?	**Communication** Organise and depict information logically	Finding the perimeter, area (surface area) and volume of 2D and 3D shapes. Prisms and pyramids. The effects of enlargements on dimensions. Include spheres, pyramids and prisms - and compound shapes.	D - Investigation (Decorating an apartment)

10	6: Statistics	Relationships Representation Quantity	Scientific and technical innovation	Statistical methods are used to represent and quantify relationships.	**Factual:** How can you collect, organize, and display data? **Conceptual:** How do you interpret the data you have collected? **Debatable:** Do statistics lie?	**Communication** Make inferences and draw conclusions Organise and depict information logically **Research** Collect, record and verify data Present information in a variety of formats and platforms	Grouped discrete and continuous data Histograms and box-and-whisker plots Estimation of mean and median for grouped data, cumulative frequency graphs and interpretation. Measures of dispersion: range, IQR, standard deviation.	A:Students also did an investigation as to compare their height to what their height was in grade 7. The work from this unit is assessed as part of the end-of-year exam.
10	7: Algebraic Fractions	Logic Simplification Equivalence	Scientific and technical innovation	The system of simplifying algebraic fractions leads to better understanding of equivalence in algebra.	**Factual:** How do we simplify algebraic expressions and equations? **Conceptual:** How are equivalent algebraic expressions useful in solving complex equations? **Debatable:** Do algebraic questions relate to the real world?	**Communication** Use appropriate forms of writing for different purposes and audiences **Thinking (transfer skills)** Apply skills and knowledge in unfamiliar situations	Evaluating algebraic fractions Simplifying algebraic fractions Multiplying and dividing algebraic fractions Adding and subtracting algebraic fractions Solving equations with algebraic fractions	No summative assessment (preparation for DP course)