Mathematics Subject Overview
MYP Years I-V

MYP-I

Serial No.	Unit Name	Key Concept	Related Concepts	Global Context	Statement Of Inquiry	MYP Objectives	Approaches To Learning	Content	Assessment
1	**Number and number systems**	**Form**	**Mathematics** •representation •systems	Orientation in space and time **focus exploration(s)** • civilizations and human interactions	Different systems and forms of representation develop as civilizations evolve and humans interact.	**Mathematics** **year 1 objectives** **objective a: knowing and understanding** **i.** Select appropriate mathematics when solving problems in both familiar and unfamiliar situations. **Ii-** apply the selected mathematics successfully when solving problems **Iii-** solve problems correctly in a variety of contexts. **Objective c: communicating** **i.** Use appropriate mathematical language (notation, symbols and terminology) in oral and written statements. **Ii-** use appropriate forms of mathematical representation to present information. **Iii-** communicate coherent mathematical lines of reasoning. **Iv-** organize information using a logical structure.	**Collaboration skills** •listen actively to other perspectives and ideas **Information literacy skills** •present information in a variety of formats and platforms	Representing numbers and place value, expanded form Number systems with different bases. Powers, indices, and roots. Factors, multiples, and prime numbers. Greatest common factor and lowest common multiple. Factors and divisibility. Number systems from different civilizations.	**Summative**: Research on binary number system. **Criterion C** Communicating

2	**Percentages**	**Form**	**Mathematics** • equivalence •quantity	Fairness and development **focus exploration(s)** • inequality, difference and inclusion	Inequality and difference become clearer through the use of equivalent forms of quantities.	**Mathematics year 1 objectives** **objective a: knowing and understanding** **i.** Select appropriate mathematics when solving problems in both familiar and unfamiliar situations **ii-** apply the selected mathematics successfully when solving problems **iii-** solve problems correctly in a variety of contexts. **Objective c: communicating** **i.** Use appropriate mathematical language (notation, symbols and terminology) in both oral and written statements **ii-** use appropriate forms of mathematical representation to present information. **Iii-** organize information using a logical structure. **Objective d: applying mathematics in real-life contexts** -**i**. Identify relevant elements of authentic real-life situations -**ii**. Select appropriate mathematical strategies when solving authentic real-life situations	**Collaboration skills** •practise empathy **organization skills** •plan short- and long-term assignments; meet deadlines	i:different forms of percentages 2: converting fractions and percentages 3: converting decimals and percentages 4: applications of percentages 5: percentage increase and decrease	**Summative**: Community meal plan for the janitorial staff **Criterion A** Knowing and understanding **Criterion C** Communicating **Criterion D** Applying mathematics in real life contexts.

3	**Information handling**	•relations hips	**Mathematics** •Justification •representation	Identities and relationships **focus exploration(s)** • trend in communities	Being able to represent relationships effectively can help justify characteristics and trends uncovered in communities.	**Mathematics year 1 objectives** **objective a: knowing and understanding** **-i.** Select appropriate mathematics when solving problems in both familiar and unfamiliar situations **ii-** apply the selected mathematics successfully when solving problems **-iii**. Solve problems correctly in a variety of contexts. **Objective c: communicating** **-i**. Use appropriate mathematical language (notation, symbols and terminology) in both oral and written statements **-ii**. Use appropriate forms of mathematical representation to present information **-iii**. Communicate coherent mathematical lines of reasoning **-iv**. Organize information using a logical structure. **Objective d: applying mathematics in real-life contexts** **-i.** Identify relevant elements of authentic real-life situations **-ii.** Select appropriate mathematical strategies when solving authentic real-life situations **-iii.** Apply the selected mathematical strategies successfully to reach a solution	**Media literacy skills** •communicate information and ideas effectively to multiple audiences using a variety of media and formats **critical-thinking skills** •identify trends and forecast possibilities **information literacy skills** •collect, record and verify data **reflection skills** •develop new skills, techniques and strategies for effective learning	Types of data representation of data types of graphs comparison of data and showing trends misleading graphs	**Summative**: Organize a bake sale For the charity purpose Represent the quantities sold of different baked goods, showcasing the popularity of items by using any kind of graph. **Criterion C** Communicating **Criterion D** Applying mathematics in real life contexts.

						-iv. Explain the degree of accuracy of a solution **-v.** Describe whether a solution makes sense in the context of the authentic real-life situation.			

4	**Algebraic statements**	•logic	**Mathematics** •models •patterns •generalization	Scientific and technical innovation **focus exploration(s)** • patterns in nature	A logical process helps to model and generalize patterns in the natural world.	**Mathematics year 1 objectives** **objective a: knowing and understanding** **-i.** Select appropriate mathematics when solving problems in both familiar and unfamiliar situations **-ii**. Apply the selected mathematics successfully when solving problems **-iii.** Solve problems correctly in a variety of contexts. **Objective b: investigating patterns** **-i.** Apply mathematical problem-solving techniques to recognize patterns **-ii.** Describe patterns as relationships or general rules consistent with findings **-iii.** Verify whether the pattern works for other examples. **Objective c: communicating** **-i.** Use appropriate mathematical language (notation, symbols and terminology) in both oral and written statements **-ii.** Use appropriate forms of mathematical representation to present information **-iii.** Communicate coherent mathematical lines of reasoning **-iv.** Organize information using a logical structure. **Objective d: applying**	**Communication skills** •use appropriate forms of writing for different purposes and audiences **reflection skills** •consider content **creative-thinking skills** •practise visible thinking strategies and techniques	Patterns in different forms - diagrams, sequences, tables and words simplifying algebraic expressions generalizing mathematical patterns patterns as functions algebraic equations patterns in nature	**Summative**: Create a report on famous sequence that occurs all around us. Research where you find this sequence and other special relationships that are based on the pattern of this sequence. **Criterion B** Investigating Patterns **Criterion C** Communicating **Criterion D** Applying mathematics in real life contexts.

						mathematics in real-life contexts **-i.** Identify relevant elements of authentic real-life situations **-ii.** Select appropriate mathematical strategies when solving authentic real-life situations **-iii**. Apply the selected mathematical strategies successfully to reach a solution **-iv.** Explain the degree of accuracy of a solution **-v.** Describe whether a solution makes sense in the context of the authentic real-life situation.			

5	**Geometric representations**	•form	**Mathematics** •approximation •space	Personal and cultural expression **focus exploration(s)** • artistry, craft, creation, beauty	Artistry and creativity are enhanced through an understanding of how space and approximation help to define forms.	**Mathematics** **year 1 objectives** **objective a: knowing and understanding** **-i.** Select appropriate mathematics when solving problems in both familiar and unfamiliar situations **-iii.** Solve problems correctly in a variety of contexts. **Objective b: investigating patterns** **-i.** Apply mathematical problem-solving techniques to recognize patterns **-ii.** Describe patterns as relationships or general rules consistent with findings **-iii.** Verify whether the pattern works for other examples. **Objective c: communicating** **-i.** Use appropriate mathematical language (notation, symbols and terminology) in both oral and written statements **-ii.** Use appropriate forms of mathematical representation to present information **-iii.** Communicate coherent mathematical lines of reasoning **objective d: applying mathematics in real-life contexts** **-ii.** Select appropriate mathematical strategies when solving authentic	**Information literacy skills** •use memory techniques to develop long-term memory **transfer skills** •make connections between subject groups and disciplines	Rays, line segments and lines classifying, measuring and constructing angles angles formed by intersecting lines and parallel lines with a transversal classification of triangles interior and exterior angles of triangles	**Summative**: Create your own work of art(painting, drawing, sculpture, mosaic or any other piece of art) that includes the elements that you have seen throughout the unit (rays, lines, line segment, angles, triangles). **Criterion C** Communicating

						real-life situations **-iii.** Apply the selected mathematical strategies successfully to reach a solution **-iv.** Explain the degree of accuracy of a solution **-v.** Describe whether a solution makes sense in the context of the authentic real-life situation.			

6	**Boundary measures**	•relationships	**Mathematics** •generalization •measurement	Globalization and sustainability **focus exploration(s)** • environmental impacts	Generalizing the relationship between measurements can influence decisions that impact the environment.	**Mathematics** **year 1 objectives** **objective a: knowing and understanding** **-i.** Select appropriate mathematics when solving problems in both familiar and unfamiliar situations **-ii.** Apply the selected mathematics successfully when solving problems **-iii.** Solve problems correctly in a variety of contexts. **Objective b: investigating patterns** **-i.** Apply mathematical problem-solving techniques to recognize patterns **-ii.** Describe patterns as relationships or general rules consistent with findings **-iii.** Verify whether the pattern works for other examples. **Objective c: communicating** **-i.** Use appropriate mathematical language (notation, symbols and terminology) in both oral and written statements **-ii**. Use appropriate forms of mathematical representation to present information **-iii.** Communicate coherent mathematical lines of reasoning **-iv.** Organize information using a logical structure. **Objective d: applying**	**Reflection skills** •consider ethical, cultural and environmental implications **creative-thinking skills** •design improvements to existing machines, media and technologies	Venn diagrams perimeter and area of triangles, rectangles and compound shapes 2d shapes and the volume of corresponding prisms volume of rectangular and triangular prisms surface area of rectangular and triangular prisms relationships between surface area and volume of prisms	**Summative**: Determine the best possible shape of a cereal box in order to minimize packaging. **Criterion C** Communicating **Criterion D** Applying mathematics in real life contexts.

						mathematics in real-life contexts **-i.** Identify relevant elements of authentic real-life situations **-ii.** Select appropriate mathematical strategies when solving authentic real-life situations **-iii.** Apply the selected mathematical strategies successfully to reach a solution **-iv.** Explain the degree of accuracy of a solution **-v.** Describe whether a solution makes sense in the context of the authentic real-life situation.			

MYP-II

Serial No.	Unit Name	Key Concept	Related Concepts	Global Context	Statement Of Inquiry	MYP Objectives	Approaches To Learning	Content	Assessment
1	**Ratio and Proportion**	•Logic	**Mathematics** •Quantity •Simplification •Equivalence	Identities and relationships **Focus exploration(s)** • Competition and cooperation	Using a logical process to simplify quantities and establish equivalence can help analyze competition and cooperation.	**Mathematics** **Year 1 Objectives** **Objective A: Knowing and understanding** **-i.** Select appropriate mathematics when solving problems in both familiar and unfamiliar situations **-ii.** Apply the selected mathematics successfully when solving problems **-iii.** Solve problems correctly in a variety of contexts. **Objective B: Investigating patterns** **-i.** Apply mathematical problem-solving techniques to recognize patterns **-ii**. Describe patterns as relationships or general rules consistent with findings **-iii.** Verify whether the pattern works for other examples. **Objective C: Communicating**	**Transfer skills** •Apply skills and knowledge in unfamiliar situations **Affective skills** •Practise positive thinking **Organization skills** •Create plans to prepare for summative assessments (examinations and performances)	Simplifying ratios Equivalent ratios Other ways to represent ratios Solving proportions Proportional reasoning	**Summative**: Solve the problems based on the concepts. **Criterion C** Communicating **Criterion D** Applying mathematics in real life contexts.

						-i. Use appropriate mathematical language (notation, symbols and terminology) in oral and written statements **-ii.** Use appropriate forms of mathematical representation to present information **-iii.** Communicate coherent mathematical lines of reasoning **-iv.** Organize information using a logical structure. **Objective D: Applying mathematics in real-life contexts** **-i.** Identify relevant elements of authentic real-life situations **-ii.** Select appropriate mathematical strategies when solving authentic real-life situations **-iii.** Apply the selected mathematical strategies successfully to reach a solution **-iv.** Explain the degree of accuracy of a solution **-v.** Describe whether a solution			

						makes sense in the context of the authentic real-life situation.			

2	**Probability**	•Logic	**Mathematics** • Representation •Systems	Personal and cultural expression **Focus exploration(s)** • Game and play	A logical system of representation can help explore and analyze games that humans play.	**Mathematics** **Year 1 Objectives** **Objective A: Knowing and understanding** **-i.** Select appropriate mathematics when solving problems in both familiar and unfamiliar situations **-ii.** Apply the selected mathematics successfully when solving problems **-iii.** Solve problems correctly in a variety of contexts. **Objective B: Investigating patterns** **-ii.** Describe patterns as relationships or general rules consistent with findings **Objective C: Communicating** **-i.** Use appropriate mathematical language (notation, symbols and terminology) in oral and written statements **-ii.** Use appropriate forms of mathematical representation to present information **-iv.** Organize information using a	**Critical-thinking skills** •Evaluate and manage risk	Events and outcomes Representing the sample space Defining and representing probability Calculating probability Complementary events Types of probability Theoretical versus experimental probability	**Summative**: Design a game that demonstrates the principles of probability, showcasing its logical concepts and principles. **Criterion A:** Knowing and understanding **Criterion B:** Investigating patterns **Criterion C** Communicating **Criterion D** Applying mathematics in real life contexts.

						logical structure. **Objective D: Applying mathematics in real-life contexts** **-i.** Identify relevant elements of authentic real-life situations **-ii.** Select appropriate mathematical strategies when solving authentic real-life situations **-v.** Describe whether a solution makes sense in the context of the authentic real-life situation.			

3	**Mono-variate data**	•Form	**Mathematics** • Representation •Quantity	Fairness and development **Focus exploration(s)** • Accessing equal opportunities	Different forms of representation can help justify conclusions regarding access to equal opportunities.	**Mathematics** **Year 1 Objectives** **Objective A: Knowing and understanding** **-i.** Select appropriate mathematics when solving problems in both familiar and unfamiliar situations **-ii.** Apply the selected mathematics successfully when solving problems **-iii.** Solve problems correctly in a variety of contexts. **Objective B: Investigating patterns** **-iii.** Verify whether the pattern works for other examples. **Objective C: Communicating** **-i.** Use appropriate mathematical language (notation, symbols and terminology) in both oral and written statements **-ii.** Use appropriate forms of mathematical representation to present information **-iii.** Communicate coherent mathematical lines of reasoning **-iv.** Organize	**Collaboration skills** •Practise empathy **Critical-thinking skills** •Interpret data **Information literacy skills** •Process data and report results	Stem-and-leaf plots Measures of central tendency (mean, median, mode) The effect of outliers Measures of dispersion (range and quartiles) Box and whisker plots	**Summative**: Organize a bake sale For the charity purpose • Calculate the average amount of items sold. • identifies the most frequently sold item. **Criterion C** Communicating **Criterion D** Applying mathematics in real life contexts.

						information using a logical structure. **Objective D: Applying mathematics in real-life contexts** **-i.** Identify relevant elements of authentic real-life situations **-iii.** Apply the selected mathematical strategies successfully to reach a solution **-v.** Describe whether a solution makes sense in the context of the authentic real-life situation.			

4	**Positive and negative numbers**	•Form	**Mathematics** •Representation •Quantity	Orientation in space and time **Focus exploration(s)** • Human explorations	Being able to represent different forms of quantities has helped humans explore and describe our planet.	**Mathematics** **Year 1 Objectives** **Objective B: Investigating patterns** **-i.** Apply mathematical problem-solving techniques to recognize patterns **-ii.** Describe patterns as relationships or general rules consistent with findings **-iii.** Verify whether the pattern works for other examples. **Objective D: Applying mathematics in real-life contexts** **-i.** Identify relevant elements of authentic real-life situations **-ii.** Select appropriate mathematical strategies when solving authentic real-life situations **-iii.** Apply the selected mathematical strategies successfully to reach a solution **-iv.** Explain the degree of accuracy of a solution **-v.** Describe whether a solution	**Transfer skills** •Make connections between subject groups and disciplines **Reflection skills** •Consider personal learning strategies	What is an integer? Absolute value The coordinate grid Multiplication and division Addition and subtraction Multiple operations	**Summative**: Follow the voyage of a famous explorer and then plot out your own voyage of discovery (create a map of each trip) **Criterion D** Applying mathematics in real life contexts.

						makes sense in the context of the authentic real-life situation.			

5	**Equations and Expressions**	•Form	**Mathematics** •Equivalence •Simplification	Scientific and technical innovation **Focus exploration(s)** • Puzzles and tricks	Producing equivalent forms through simplification can help to clarify, solve and create puzzles and tricks.	**Mathematics Year 1 Objectives** **Objective A: Knowing and understanding** **-i.** Select appropriate mathematics when solving problems in both familiar and unfamiliar situations **Objective B: Investigating patterns** **-i.** Apply mathematical problem-solving techniques to recognize patterns **-ii.** Describe patterns as relationships or general rules consistent with findings **-iii.** Verify whether the pattern works for other examples. **Objective C: Communicating** **-i.** Use appropriate mathematical language (notation, symbols and terminology) in both oral and written statements **-ii.** Use appropriate forms of mathematical representation to present information **-iii.** Communicate coherent	**Creative-thinking skills** •Apply existing knowledge to generate new ideas, products or processes **Communication skills** •Make inferences and draw conclusions	Classifying algebraic expressions Simplifying expressions Writing expressions Solving equations Writing equations Application of equations Representing inequalities Solving inequalities	**Summative**: Analyse a mathematical puzzle and then create one of your own. **Criterion B:** Investigating patterns **Criterion C** Communicating

						mathematical lines of reasoning **-iv.** Organize information using a logical structure.			

6	**Eco-friendly Packaging** (**Interdisciplinary unit)**	•Development	**Design** •Perspective •Evaluation **Mathematics** •Space	Globalization and sustainability **Focus exploration(s)** • Consumption, conservation, scarcity	Statement of Inquiry: Sustainable products can be developed through an understanding of different perspectives. Conceptual Understanding: Throughout this unit, students will develop an appreciation for the sustainable design of products, ensuring they meet the diverse needs of users. This will be achieved through an inquiry into various perspectives that significantly contribute to product development. In this context, the application and assessment of	**Design** **Year 1 Objectives** **Objective A: Inquiring and analysing** **-iii.** Describe the main features of an existing product that inspires a solution to the problem **Objective B: Developing ideas** **-ii.** Present feasible design ideas, which can be correctly interpreted by others **Objective C: Creating the solution** **-iii.** Follow the plan to create the solution, which functions as intended **Objective D: Evaluating** **-iii.** Outline how the solution could be improved **-iv.** Outline the impact of the solution on the client/target audience. **Mathematics** **Year 1 Objectives** **Objective C: Communicating** **-i.** Use appropriate mathematical language (notation,	**Critical-thinking skills** •Analyse complex concepts and projects into their constituent parts and synthesize them to create new understanding **Transfer skills** •Combine knowledge, understanding and skills to create products or solutions	**Design** Know * Fundamental safety expectations for working with cardboard/paper fabrication tools and materials * Basic perspectives influencing packaging design, including Graphic Design, User considerations, and Recycling principles * The Elements and Principles of Graphic Design Understand * The positive/negative impact of choices related to tool safety on their peers * The collaborative contribution of each perspective to the overall product design process * How the Elements and Principles of Graphic Design synergize to	**Summative**: • Design Eco-friendly food packaging considering diverse perspectives and sustainable materials, utilizing Geometric Calculations. • Create a reflective process journal exploring the creative process behind designing eco-friendly packaging in your e-portfolio. **Interdisciplinary criteria based** **Criterion A:** Evaluating **Criterion B:** Synthesizing **Criterion C:** Reflecting

					mathematical principles will guide the sustainable use of materials, particularly in the prototyping and production phases. Additionally, students will explore the nature and sustainability of product packaging, considering perspectives from different design stakeholders such as packaging designers, users, recyclers, marketers, and retailers. The incorporation of geometric calculations and reasoning will form the foundation of their decision-making	symbols and terminology) in both oral and written statements **-ii.** Use appropriate forms of mathematical representation to present information **-iv.** Organize information using a logical structure. **Objective D: Applying mathematics in real-life contexts** **-i.** Identify relevant elements of authentic real-life situations **-ii.** Select appropriate mathematical strategies when solving authentic real-life situations **-iii.** Apply the selected mathematical strategies successfully to reach a solution **-v.** Describe whether a solution makes sense in the context of the authentic real-life situation.		visually communicate information in existing products Be Able To * Safely and responsibly develop product packaging using appropriate tools and materials * Navigate the balance between the needs and preferences of diverse perspectives while conceptualizing product ideas and/or final products * Skillfully combine the Elements and Principles of Graphic Design to effectively convey information about their own products * Make design decisions grounded in a sustainable understanding of efficient materials usage, applying mathematical	

					processes related to sustainability and materials usage in packaging design.	**Interdisciplinary criteria based** **Objective A: Evaluating** **i.** analyse disciplinary knowledge **ii**. evaluate interdisciplinary perspectives. **Objective B: Synthesizing** **i.** create a product that communicates a purposeful interdisciplinary understanding **ii.** justify how their product communicates interdisciplinary understanding. **Objective C: Reflecting** **i**. discuss the development of their own interdisciplinary learning **ii.** discuss how new interdisciplinary understanding enables action.		skills. **Mathematics** Content Know * The basic formulas for calculating the surface area of a rectangle (and square), triangle, and circle * The basic formulas for calculating the volume of a cuboid, prism, and cylinder Understand * How to apply formulas to calculate the surface area of an existing shape * How to apply formulas to calculate the volume of an existing form * How to develop a net for an existing 3-dimensional shape. Be Able To * Select the correct methods for analyzing the design decisions of others based	

								on mathematical reasoning * Be able to justify their use of materials by calculating the surface area and 3-dimensional volume of their product * Develop a net of a 3-dimensional shape/construction	

MYP-III

Serial No.	Unit Name	Key Concept	Related Concepts	Global Context	Statement Of Inquiry	MYP Objectives	Approaches To Learning	Content	Assessment
1	**Numbers**	•Form	**Mathematics** •Quantity •Simplification •Representation	Orientation in space and time **Focus exploration(s)** • Discoveries and Development	Representing and simplifying quantities in different forms can help explore remarkable discoveries and developments.	**Mathematics** **Year 3 Objectives** **Objective A: Knowing and understanding** **-i.** Select appropriate mathematics when solving problems in both familiar and unfamiliar situations **-ii.** Apply the selected mathematics successfully when solving problems **-iii.** Solve problems correctly in a variety of contexts. **Objective B: Investigating patterns** **-i.** Select and apply mathematical problem-solving techniques to discover complex patterns **-ii.** Describe patterns as relationships and/or general rules consistent with findings **-iii.** Verify and justify relationships and/or general rules. **Objective C: Communicating** **-i.** Use appropriate mathematical language (notation, symbols and terminology) in both oral and written explanations **-ii.** Use appropriate forms of mathematical representation to present information **-iii.** Move between different forms of mathematical	**Affective skills** •Practise positive thinking **Information literacy skills** •Use memory techniques to develop long-term memory	Introducing the number Rational and irrational numbers Exponents Scientific notation	**Summative**: Solve the problems based on the concepts. **Criterion C** Communicating **Criterion D** Applying mathematics in real life contexts.

						representation -**iv.** Communicate complete and coherent mathematical lines of reasoning **-v.** Organize information using a logical structure. **Objective D: Applying mathematics in real-life contexts** **-i**. Identify relevant elements of authentic real-life situations **-ii.** Select appropriate mathematical strategies when solving authentic real-life situations **-iii.** Apply the selected mathematical strategies successfully to reach a solution **-iv.** Explain the degree of accuracy of a solution **-v.** Explain whether a solution makes sense in the context of the authentic real-life situation.			

2	**Triangles**	•Relationships	**Mathematics** • Generalization •Systems	Scientific and technical innovation **Focus exploration(s)** • Principles, processes and solutions	Generalizing the relationship between measurements can help develop principles, processes, and solutions.	**Mathematics** **Year 3 Objectives** **Objective A: Knowing and understanding** **-i.** Select appropriate mathematics when solving problems in both familiar and unfamiliar situations **-ii.** Apply the selected mathematics successfully when solving problems **Objective B: Investigating patterns** **-ii.** Describe patterns as relationships and/or general rules consistent with findings **-iii.** Verify and justify relationships and/or general rules. **Objective C: Communicating** **-i.** Use appropriate mathematical language (notation, symbols and terminology) in both oral and written explanations **-ii.** Use appropriate forms of mathematical representation to present information **-v.** Organize information using a logical structure. **Objective D: Applying mathematics in real-life contexts** **-i**. Identify relevant elements of authentic real-life situations **-ii.** Select appropriate mathematical strategies when solving authentic real-life situations **-v.** Explain whether a solution makes sense in the context of the authentic real-life situation.	**Critical-thinking skills** •Test generalizations and conclusions **Communication skills** •Give and receive meaningful feedback	Introducing triangle Theorems and proof Relationships between triangles Pythagoras Theorem	**Summative:** Construct a mathematical model that visually represents Pythagoras' theorem. **Criterion A:** Knowing and understanding **Criterion B:** Investigating patterns **Criterion C** Communicating **Criterion D** Applying mathematics in real life contexts.

3	**Data with two attributes**	•Relationships	**Mathematics** •Models •Quantity	Identities and relationships **Focus exploration(s)** • What it mean to be human	Modeling the relationship between quantities can highlight what it means to be human.	**Mathematics** **Year 3 Objectives** **Objective C: Communicating** **-i.** Use appropriate mathematical language (notation, symbols and terminology) in both oral and written explanations **-ii.** Use appropriate forms of mathematical representation to present information **-iii.** Move between different forms of mathematical representation **-iv.** Communicate complete and coherent mathematical lines of reasoning **-v.** Organize information using a logical structure.	**Organization skills** •Select and use technology effectively and productively **Media literacy skills** •Locate, organize, analyse, evaluate, synthesize and ethically use information from a variety of sources and media (including digital social media and online networks)	Introducing bivariate data Representing bivariate data Analyzing bivariate data Correlation and causation	**Summative**: Organize a bake sale For the charity purpose • Draw a scatter plot that display the relationship between the price of baked goods and the quantity sold. **Criterion C** Communicating **Criterion D** Applying mathematics in real-life contexts.

4	**Network working principles**	•Logic	**Mathematics** •Change •Models	Globalization and sustainability **Focus exploration(s)** • impact of human decision making	Global networks are built on logic and are changing the way we handle data, make decisions and design models.	**Mathematics** **Year 3 Objectives** **Objective A: Knowing and understanding** **-i.** Select appropriate mathematics when solving problems in both familiar and unfamiliar situations **-ii.** Apply the selected mathematics successfully when solving problems **-iii.** Solve problems correctly in a variety of contexts. **Objective B: Investigating patterns** **-i.** Select and apply mathematical problem-solving techniques to discover complex patterns **-ii.** Describe patterns as relationships and/or general rules consistent with findings **-iii**. Verify and justify relationships and/or general rules. **Objective C: Communicating** **-i.** Use appropriate mathematical language (notation, symbols and terminology) in both oral and written explanations **-ii.** Use appropriate forms of mathematical representation to present information **-iii.** Move between different forms of mathematical representation **-iv.** Communicate complete and coherent mathematical lines of reasoning **-v.** Organize information using a logical structure. **Objective D: Applying mathematics in real-life**	**Media literacy skills** •Locate, organize, analyse, evaluate, synthesize and ethically use information from a variety of sources and media (including digital social media and online networks) **Critical-thinking skills** •Identify obstacles and challenges	* Find out how logic can influence or change our decision-making. * Explore the connection between invisible algorithms and our everyday lives. * Take action by appreciating, and improving, our library and media-center spaces. * (* How old are the games? * How can games be based on logic? * What about other types of riddles? * Can puzzles be modeled? * How does logic lead to	**Summative** Design a quiz that will help someone decide their Learner Profile. The "Which Learner Profile are you?" The quiz should use a decision tree or an algorithm with paths that end at each of the learner profile characteristics, determined by questions with yes or no answer only. **Criterion C** Communicating **Criterion D** Applying mathematics in real life contexts.

						contexts **-i.** Identify relevant elements of authentic real-life situations **-ii.** Select appropriate mathematical strategies when solving authentic real-life situations **-iii.** Apply the selected mathematical strategies successfully to reach a solution **-iv**. Explain the degree of accuracy of a solution **-v.** Explain whether a solution makes sense in the context of the authentic real-life situation.		graph theory? * How can networks globally connect us? * What are decision trees and how do they work? * How can algorithms change things for us? * What do we mean by an invisible algorithm?)	

5	**Linear Models**	•Relation ships	**Mathematics** •Representation •Models	Fairness and development **Focus exploration(s)** • social entrepreneurs	Representing relationships with models can promote and support social entrepreneurship.	**Mathematics** **Year 3 Objectives** **Objective A: Knowing and understanding** **-i.** Select appropriate mathematics when solving problems in both familiar and unfamiliar situations **-iii.** Solve problems correctly in a variety of contexts. **Objective B: Investigating patterns** **-i**. Select and apply mathematical problem-solving techniques to discover complex patterns **-iii.** Verify and justify relationships and/or general rules. **Objective C: Communicating** **-ii.** Use appropriate forms of mathematical representation to present information **-iii.** Move between different forms of mathematical representation **Objective D: Applying mathematics in real-life contexts** **-ii.** Select appropriate mathematical strategies when solving authentic real-life situations	**Communication skills** •Negotiate ideas and knowledge with peers and teachers **Collaboration skills** •Help others to succeed	Introducing linear systems Solving linear equations Solving systems of linear equations Problem-solving with linear systems	**Summative**: Run your own business for a day. **Criterion C** Communicating **Objective D:** Applying mathematics in real-life contexts

6	**Geometric Conversion**	•Form	**Mathematics** •Patterns •Space	Personal and cultural expression **Focus exploration(s)** • Expressing beliefs and values	An understanding of patterns created by forms in space can enhance creativity and help express beliefs and values.	**Mathematics** **Year 3 Objectives** **Objective A: Knowing and understanding** **-i.** Select appropriate mathematics when solving problems in both familiar and unfamiliar situations **-ii.** Apply the selected mathematics successfully when solving problems **Objective B: Investigating patterns** **-i.** Select and apply mathematical problem-solving techniques to discover complex patterns **-ii.** Describe patterns as relationships and/or general rules consistent with findings **-iii.** Verify and justify relationships and/or general rules. **Objective C: Communicating** **-ii.** Use appropriate forms of mathematical representation to present information **-iii.** Move between different forms of mathematical representation **-iv.** Communicate complete and coherent mathematical lines of reasoning **-v.** Organize information using a logical structure. **Objective D: Applying mathematics in real-life contexts** **-i.** Identify relevant elements of authentic real-life situations **-ii.** Select appropriate mathematical strategies when solving authentic real-life	**Reflection skills** •Consider personal learning strategies **Communication skills** •Use a variety of media to communicate with a range of audiences •Interpret and use effectively modes of non-verbal communication	Introducing geometric transformations tessellations Congruence transformations Similarity transformations	**Summative**: Create a tessellation for yourself that reflect you as a person. **Criterion C** Communicating

						situations **-iii.** Apply the selected mathematical strategies successfully to reach a solution **-v.** Explain whether a solution makes sense in the context of the authentic real-life situation			

MYP-IV

Serial No.	Unit Name	Key Concept	Related Concepts	Global Context	Statement Of Inquiry	MYP Objectives	Approaches To Learning and Learners Profile	Content	Assessment
1	**Exploring Number Diversity**	Form	Patterns	**Globalization and sustainability** **Exploration:** Markets, commodities, and commercialization	Numbers in different forms give us a variety of ways to predict patterns and think about problems of global significance.	**Year 3 Objectives** **Objective A: Knowing and understanding** -i. Select appropriate mathematics when solving problems in both familiar and unfamiliar situations -ii. Apply the selected mathematics successfully when solving problems -iii. Solve problems correctly in a variety of contexts. **Objective B: Investigating patterns** -i. Select and apply mathematical problem-solving techniques to discover complex patterns -ii. Describe patterns as relationships and/or general rules consistent with findings -iii. Verify and justify relationships and/or general rules.	**Communication skills**: • Use and interpret a range of discipline-specific terms and symbols • Understand and use mathematical notations. **Thinking – Creative thinking skills:** • Generating novel ideas and considering new perspectives; Use brainstorming and visual diagrams to generate new ideas and inquiries. **Learner Profile** Communicator	**Review:** - To classify the natural numbers, Integers, rational, real numbers, rational, irrational numbers. - Convert fractions to decimals - Round decimals to significant figures. - Represent the standard form of huge numbers - Identify the radicals or surds - Solve the numerical surds. - Expand and simplify brackets involving numerical surds Find the fractional exponents **SET** - Identify the element of a set - Sets – Rule method - Sets – Representing 3 sets using a Venn diagram. - Investigate the properties of sets. - Sets, including notation and operations up to three sets	Summative: Can rounding help or hinder decision making? Research and explain with reasoning **Criterion D:** Applying mathematics in real-life contexts **Criterion B:** Investigating Patterns.

						Objective C: Communicating -i. Use appropriate mathematical language (notation, symbols and terminology) in both oral and written explanations **Objective D: Applying mathematics in real-life** contexts -i. Identify relevant elements of authentic real-life situations -ii. Select appropriate mathematical strategies when solving authentic real-life situations -iii. Apply the selected mathematical strategies successfully to reach a solution -iv. Explain the degree of accuracy of a solution -v. Explain whether a solution makes sense in the context of the authentic real-life situation			
2	**Exploring Algebra**	Relation ships.	Simplific ation	**Identities and relationships** **Exploration:** Moral reasoning and	Finding and expressing things in common helps us to simplify and improve relationships	**Year 3 Objectives** **Objective A: Knowing and understanding** -i. Select appropriate mathematics when	**Communicati on skills:** Use and interpret a range of Self-management discipline-	Review: - Identify the laws of indices. - Solve problems based on Direct and inverse proportions. Algebra: - Algebraic rules - Linear equations - Expanding expressions	Summative: Expand and simplify different Questions

				ethical judgment		solving problems in both familiar and unfamiliar situations -ii. Apply the selected mathematics successfully when solving problems -iii. Solve problems correctly in a variety of contexts. **Objective B: Investigating patterns** -i. Select and apply mathematical problem-solving techniques to discover complex patterns -ii. Describe patterns as relationships and/or general rules consistent with findings -iii. Verify and justify relationships and/or general rules. **Objective C: Communicating** -i. Use appropriate mathematical language (notation, symbols and terminology) in both oral and written explanations -ii. Use appropriate forms of mathematical representation to present information -iii. Move between different forms of	specific terms and symbols **Self-management – Affective skills:** Practise analyzing and attributing causes for failure. Use appropriate strategies for organizing complex information. **Learner Profile** Thinker	- Binomial expansions - Perfect square, identities. - Factorizing quadratic expressions - Solving quadratic equations - Changing the subject of an equation Linear equation on graph Gradients Quadrants Extrapolate, interpolate graphs Algebra in real-life Simultaneous equations Complex equations Simultaneous equations on graphs	**Criterion B:** Investigating patterns **Criterion C:** Communicating.

						mathematical representation -iv. Communicate complete and coherent mathematical lines of reasoning -v. Organize information using a logical structure			
3	**Trigonometric Mastery**	Relationships	Models	**Scientific and technical innovation** **Exploration:** Modernization, industrialization and engineering	Modeling allows us to solve new spatial relationship problems arising from technical innovation.	**Year 3 Objectives** **Objective A: Knowing and understanding** -i. Select appropriate mathematics when solving problems in both familiar and unfamiliar situations -ii. Apply the selected mathematics successfully when solving problems -iii. Solve problems correctly in a variety of contexts. **Objective B: Investigating patterns** -i. Select and apply mathematical problem-solving techniques to discover complex patterns -iii. Verify and justify relationships and/or general rules. **Objective C: Communicating**	**Social – Collaboration skills:** • Listen actively to other perspectives and ideas. **Thinking – Critical thinking skills:** • Evaluate evidence and arguments. • Gather and organize relevant information to formulate an argument. **Learner Profile** Principled	Pythagoras theorem Trigonometric ratios in right angled triangles. Trigonometry, Application of Sine rule, cosine rule, and tangent rule. Trigonometry in context including angle of elevation/depression/bearings Solve 3D problems involving right angled triangles Transformations of linear/quadratic/ exponential/reciprocal/sine/cosine/log functions (Translations/Reflections/Stretches)	Summative: Creative uses for Drones **Criterion A:** Knowing and understanding.

						-ii. Use appropriate forms of mathematical representation to present information -v. Organize information using a logical structure **Objective D: Applying mathematics in real-life contexts** -iv. Explain the degree of accuracy of a solution -v. Explain whether a solution makes sense in the context of the authentic real-life situation.			
4	**How can we move in space?**	Logic	Space	**Personal and cultural expression** **Exploration:** Products, systems, and institutions	Applying mathematical logic to spatial dimensions can open personal, cultural, and social entrepreneurship opportunities.	**Year 3 Objectives** **Objective A: Knowing and understanding** -i. Select appropriate mathematics when solving problems in both familiar and unfamiliar situations -ii. Apply the selected mathematics successfully when solving problems -iii. Solve problems correctly in a variety of contexts. **Objective B: Investigating patterns** -i. Select and apply mathematical problem-solving	**Social – Collaboration skills:** • Giving and receiving meaningful feedback. **Thinking – Creative thinking skills:** • Create original works and ideas; use existing works and ideas in new ways. **Learner Profile** Communicator	Plotting points in cartesian plane. Connecting dots and Pythagoras theorem. Midpoint on graphs, Curves from lines, Gradient y = mx +c, lines, perpendicular lines, Equations on graphs, Construction of perpendicular lines, 3D vectors. Metric conversions Volume of regular polyhedron Movement on a plane— isometric transformations, enlargements and tessellations	Summative: Create an idea for a mobile app **Criterion C:** Communicating

						techniques to discover complex patterns -iii. Verify and justify relationships and/or general rules. **Objective C: Communicating** -i. Use appropriate mathematical language (notation, symbols and terminology) in both oral and written explanations -ii. Use appropriate forms of mathematical representation to present information -iii. Move between different forms of mathematical representation -iv. Communicate complete and coherent mathematical lines of reasoning -v. Organize information using a logical structure. **Objective D: Applying mathematics in real-life contexts** -i. Identify relevant elements of authentic real-life situations			
5	**Statistical Analysis**	Relationships	Change	**Fairness and Development**	We must ask the right questions and measure the	**Year 3 Objectives** **Objective A: Knowing and understanding**	**Communication skills:** • Understand and use	Interpretation of graphs Use of cumulative frequency Standard deviation.	Summative: Anti-bullying campaign

				Exploration: Inequality, difference, and inclusion	correct data to understand relationships so we can use information to make the world a better and fairer place.	-i. Select appropriate mathematics when solving problems in both familiar and unfamiliar situations -ii. Apply the selected mathematics successfully when solving problems -iii. Solve problems correctly in a variety of contexts. **Objective C: Communicating** -i. Use appropriate mathematical language (notation, symbols and terminology) in both oral and written explanations **Objective D: Applying mathematics in real-life contexts** -i. Identify relevant elements of authentic real-life situations -ii. Select appropriate mathematical strategies when solving authentic real-life situations -iii. Apply the selected mathematical strategies successfully to reach a solution	mathematical notation • Organize and depict information logically. **Thinking – Critical thinking skills:** • Evaluate evidence and arguments. • Test generalizations and conclusions. **Research – Information Literacy skills:** • Finding, interpreting, judging, and creating information. **Learner Profile** Caring Open minded	Draw and use histograms with unequal class intervals Calculate limits of compound measures (inequality form) Calculations involving upper and lower bounds	**Criterion A:** Knowing and understanding. **Criterion D:** Applying mathematics in real-life contexts

						-iv. Explain the degree of accuracy of a solution -v. Explain whether a solution makes sense in the context of the authentic real-life situation.			

MYP-V

Serial No.	Unit Name	Key Concept	Related Concepts	Global Context	Statement Of Inquiry	MYP Objectives	Approaches To Learning	Content	Assessment
1	**Mastering Inequalities**	Logic	Quantity	**Fairness and Development** **Exploration:** Inequality, difference, and inclusion	The differences between quantities can be represented by inequalities, which allows us to solve and logically address inequality in Mathematics and life.	**Year 5 Objectives** **Objective A: Knowing and understanding** i. Select appropriate mathematics when solving problems in both familiar and unfamiliar situations **Objective B: Investigating patterns** i. select and apply mathematical problem-solving techniques to discover complex patterns ii. describe patterns as general rules consistent with findings iii. prove, or verify and justify, general rules. **Objective C: Communicating** **i**. use appropriate mathematical language (notation,	**Communication skills:** • Understand and use mathematical notation • Use and interpret a range of discipline specific terms and symbols. **Thinking – Transfer skills:** • Inquire in different contexts to gain a different perspective. **Self-management – Affective skills:** • Resilience practice 'bouncing back' after adversity, mistakes and failures; Practise 'failing well'. **Learner Profile** Caring	Solve algebraic inequalities in one variable using a combination of the properties of inequality. Represent inequalities on a number line. Solve absolute value inequalities in one variable using the Properties of Inequality. Develop inequalities to represent real world situations and use them to solve problems. Represent inequalities using graphs. Find the nth term of a linear sequence. Identify the geometric sequence Absolute values Representing and solving inequalities, including compound and double inequalities Irrational numbers	Summative: Prove the Fibonacci sequence **Criterion C:** Communicating. **Criterion D:** Applying mathematics in real-life contexts

						symbols and terminology) in both oral and written explanations ii. use appropriate forms of mathematical representation to present information iii. move between different forms of mathematical representation iv. communicate complete, coherent and concise mathematical lines of reasoning v. organize information using a logical structure. **Objective D: Applying mathematics in real-life contexts** i. identify relevant elements of authentic real-life situations ii. select appropriate mathematical strategies when solving		Number sequences (prediction, description)	

						authentic real-life situations iii. apply the selected mathematical strategies successfully to reach a solution iv. justify the degree of accuracy of a solution v. justify whether a solution makes sense in the context of the authentic real-life situation.			
2	**Discovering Quadratic Mysteries**	Relationships	Representation	**Globalization and sustainability** **Exploration:** Data-driven decision-making	Representing relationships visually and algebraically can allow us to find and optimize 'best case scenarios' and sustainable solutions.	**Year 5 Objectives** **Objective A: Knowing and understanding** i. select appropriate mathematics when solving problems in both familiar and unfamiliar situations ii. apply the selected mathematics successfully when solving problems iii. solve problems correctly in a	**Self-management – Reflection skills**: • Consider the process of learning; choosing and using ATL skills. **Communication skills:** • Give and receive meaningful feedback. **Research – Information Literacy skills:** • Finding, interpreting, judging, and creating information.	Identify the quadratic equation Identify the standard form of a quadratic equation Find the value of the discriminant and find the nature of the roots. Frame the quadratic equation for the given roots Solve the quadratic equation graphically Solve the quadratic equation by factorization.	Summative: Solve by using quadratic formula **Criterion A:** Knowing and understanding. **Criterion D:** Applying mathematics in real-life contexts

						variety of contexts. **Objective B: Investigating patterns** i. select and apply mathematical problem-solving techniques to discover complex patterns ii. describe patterns as general rules consistent with findings **Objective C: Communicating** **i**. use appropriate mathematical language (notation, symbols and terminology) in both oral and written explanations ii. use appropriate forms of mathematical representation to present information iii. move between different forms of mathematical representation iv. communicate	**Learner Profile** Openminded Principled		

						complete, coherent and concise mathematical lines of reasoning **Objective D: Applying mathematics in real-life contexts** i. identify relevant elements of authentic real-life situations ii. select appropriate mathematical strategies when solving authentic real-life situations iii. apply the selected mathematical strategies successfully to reach a solution iv. justify the degree of accuracy of a solution v. justify whether a solution makes sense in the context of the authentic real-life situation.			
3	**Coordinate Geometry**	Form	Validity	**Orientation in space and time**	Statements about the spaces and shapes around	**Year 5 Objectives**	**Communication skills:** • Use and interpret a	Identify the parts of a circle Investigate the angle in a semi-	Summative:

				Exploration: Scale, duration, frequency and variability	us can be validated to show they are invariant through space and time.	**Objective A: Knowing and understanding** i. select appropriate mathematics when solving problems in both familiar and unfamiliar situations ii. apply the selected mathematics successfully when solving problems iii. solve problems correctly in a variety of contexts. **Objective B: Investigating patterns** i. select and apply mathematical problem-solving techniques to discover complex patterns ii. describe patterns as general rules consistent with findings iii. prove, or verify and justify, general rules.	range of discipline specific terms and symbols. **Thinking – Critical thinking skills:** • Gather and organize relevant information to formulate an argument. • Analyse complex concepts and projects into their constituent parts and synthesize them to create new understanding. **Research – Media Literacy skills:** • Locate, organize, analyse, evaluate, synthesize and ethically use information from a variety of sources and media. **Learner Profile** Thinker	circle Investigate the angles in the same segment Investigate cyclic quadrilaterals Identify the angle between tangent and radius and tangent kite Prove and use the alternate segment theorem. Identify the circle wave Similarity and congruence Coordinate geometry, including distance, midpoint and gradient formula Gradients and intercepts (see also functions and models) Gradient of parallel lines Circle geometry Rotation around a given point	Proofs (explain , justify and prove) **Criterion A:** Knowing and understanding. **Objective B:** Investigating patterns **Criterion D:** Applying mathematics in real-life contexts

						Objective D: Applying mathematics in real-life contexts i. identify relevant elements of authentic real-life situations ii. select appropriate mathematical strategies when solving authentic real-life situations iii. apply the selected mathematical strategies successfully to reach a solution iv. justify the degree of accuracy of a solution v. justify whether a solution makes sense in the context of the authentic real-life situation.			
4	**Function Fusion**	Form	Generalization	**Identities and relationships** **Exploration:** Competition and cooperation; teams,	Relationships can be identified by generalizing data into various models and forms, which allows us to solve and predict these	**Year 5 Objectives** **Objective A: Knowing and understanding** i. selects appropriate mathematics when solving problems in	**Self-management – Reflection skills:** • Considering the process of learning; choosing and using ATL skills: • Identify	Identify function from relations Evaluate a function Represent real-life situations using functions, including piece wise functions	Summative: Finding the functional relations **Criterion B:** Investigating Patterns.

				affiliation and leadership	real-world relationships.	both familiar and unfamiliar situations **Objective B: Investigating patterns** i. select and apply mathematical problem-solving techniques to discover complex patterns ii. describe patterns as general rules consistent with findings iii. prove, or verify and justify, general rules. **Objective C: Communicating** **i**. use appropriate mathematical language (notation, symbols and terminology) in both oral and written explanations ii. use appropriate forms of mathematical representation to present information iii. move between different forms	strengths and weaknesses of personal learning strategies (self–assessment) **Communication skills:** • Make effective summary notes for studying. **Self-management – Organization skills:** • Use appropriate strategies for organizing complex information. **Learner Profile** Inquirer	Investigate the power of 5 Solve the exponential equations Identify different forms of function Evaluate Moore's law Mappings Function notation Linear functions y = mx + c (see also spatial reasoning) Parallel and perpendicular lines (see also spatial reasoning) Systems of equations/ simultaneous equations Quadratic functions Algorithms	**Criterion C:** Communicating.

						of mathematical representation iv. communicate complete, coherent and concise mathematical lines of reasoning v. organize information using a logical structure. **Objective D: Applying mathematics in real-life contexts** i. identify relevant elements of authentic real-life situations ii. select appropriate mathematical strategies when solving authentic real-life situations iii. apply the selected mathematical strategies successfully to reach a solution			
5	**Am I ready?**	Relationships	Systems	**Scientific and technical innovation**	Your future relationship with mathematics will be	**Year 5 Objectives** **Objective A: Knowing and understanding**	**Communication skills:** • Organize and depict information	Getting ready for DP Solve Linear and simultaneous equations,	Summative: Create a beginner's

				Exploration: Opportunity, risk, consequences and responsibility	determined by your understanding of both traditional and innovative systems.	i. select appropriate mathematics when solving problems in both familiar and unfamiliar situations ii. apply the selected mathematics successfully when solving problems iii. solve problems correctly in a variety of contexts. **Objective B: Investigating patterns** i. select and apply mathematical problem-solving techniques to discover complex patterns ii. describe patterns as general rules consistent with findings iii. prove, or verify and justify, general rules. **Objective C: Communicating** **i**. use appropriate mathematical	logically. **Thinking – Critical thinking skills:** • Evaluate evidence and arguments. **Learner Profile** Knowledgeable	Calculate the trigonometric values Solve quadratic equations Investigate the sieve of Eratosthenes, Represent the parabolas, Calculate the angles of polygons, Prove the Pythagorean theorem Constructions	guide to careful construction. **Criterion A:** Knowing and understanding. **Criterion B:** Investigating Patterns

						language (notation, symbols and terminology) in both oral and written explanations **Objective D: Applying mathematics in real-life contexts** i. identify relevant elements of authentic real-life situations ii. select appropriate mathematical strategies when solving authentic real-life situations			