

Subject-group Overview Vertical/Horizontal Planner

Subject Area: Mathematics MYP Level: MYP1

Unit title	Key concept	Related concepts	Global context	Statement of inquiry	Objectives	Summative assessment task	ATL skills	Content: knowledge
Is fairness always equal?	Form	Equivalence, systems	Fairness and development	Making fair judgments is easier if we understand a variety of systems and forms.	A, C, D	Test about number classification, integers, order of operations. Test about fractions with word problems related to real-life.	Transfer Critical thinking Creative thinking	Numbers classification. Ordering numbers on a number line. Addition with integers. Multiplication and division with integers. Order of operations. Multiples and divisors. Divisibility rules. Lowest common multiple and greatest common factor. Word problems with LCM and GCF. Fractions and mixed numbers. Equivalent fractions, simplifying fractions. Calculate the fraction of a whole.

<p>How can we bring things together?</p>	<p>Relationships</p>	<p>Patterns, simplification, generalization.</p>	<p>Identities and relationships</p>	<p>Identifying patterns and using rules are the keys to simplify and generalize relationships.</p>	<p>B</p>	<p>Mathematical investigation. Find a pattern and generalize it using algebra.</p>	<p>Transfer Affective Communication</p>	<p>Algebraic vocabulary. Definition and identification of like terms. Addition and subtraction of like terms. Algebraic products. Create and simplify simple algebraic expressions.</p>
<p>How can data help us save the world?</p>	<p>Relationships</p>	<p>Representation, justification</p>	<p>Globalization and sustainability</p>	<p>Representing data visually helps to identify relationships that can justify global decisions.</p>	<p>C D</p>	<p>Students will make a conjecture and they will prove it through an experiment. They will collect and analyze data and then present and discuss the results on a document.</p>	<p>Communication Information literacy Critical thinking Transfer</p>	<p>Definition of primary and secondary data. Definition and identification of qualitative and quantitative data. Representation of data through different types of graphs (bar charts, histograms, line graphs, scatter plots, pie charts, hybrid graphs and chart). How to read, interpret and analyze data from various graphs. Calculation of mean, median, mode and range. Recognize trends and outliers.</p>

<p>How can you divide something that is already divided?</p>	<p>Logic</p>	<p>Quantity, simplification</p>	<p>Personal and cultural expression</p>	<p>The use of logic simplifies the understanding of quantities and allows you to use them to express yourself in different fields.</p>	<p>A D</p>	<p>Test about operations and expressions with fractions, word problems. Real-life problem involving the use of fractions.</p>	<p>Transfer Critical thinking</p>	<p>Operations with fractions. Expressions with fractions. Application of mathematical strategies to solve problems involving fractions.</p>
<p>Should we cross the bridge or keep everything in balance?</p>	<p>Logic</p>	<p>Change, models, generalization</p>	<p>Scientific and technical innovation</p>	<p>Using variables and models to generalize natural phenomena we can have a better understanding of the world and make important scientific discoveries.</p>	<p>A C</p>	<p>Test with equations to be solved and word problems.</p>	<p>Self-management Communication Information literacy Transfer</p>	<p>How to build algebraic sentences. Equations and how to solve them. How to use algebra to solve problems.</p>

How do we measure up?	Form	Space, measurement	Orientation in space and time	Measurement is expressed in various forms to communicate the space around or within an object.	A B	Mathematical investigation. Find a pattern and generalize it using algebra. Test to assess abilities in calculating perimeter and areas.	Creative - thinking Communication Organizational	Simple geometrical entities (point, segment, line, angles). Parallel and intersecting lines and the angles they generate. Triangles, quadrilaterals, circle. Calculation of simple perimeters and areas.
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Subject-group Overview Vertical/Horizontal Planner

Subject Area: Mathematics MYP Level: MYP2

Unit title	Key concept	Related concepts	Global context	Statement of inquiry	Objectives	Summative assessment task	ATL skills	Content: knowledge
What really makes the world go round?	Relationships	Change, simplification	Globalization and sustainability	Financial, personal and economic change can be understood and simplified	C (iv, v), D	Students have to solve an authentic real-life problem applying their knowledge of ratios and percentages.	Collaboration Organization, Affective, Reflection, Transfer.	Review of factors, multiples, fractions, decimals. Practical uses of ratios (recipes). How to calculate the percentage of a number. Difference between

				using proportional relationships.				percentage of and percentage off. Percentage decrease and increase. Recognizing and simplifying ratios. Proportionality.
How can we travel between dimensions?	Logic	measurement, space, model	Scientific and technical innovation	The space around us can be understood using logic, and technology can help us to measure and model it.	A, B	Test 1: mathematical investigation in which students explore the connections among the number of vertices, faces and edges of a polyhedron.	Creative-thinking, affective, collaboration	Review of calculation of perimeters and areas of simple shapes. Calculation of perimeters and areas of composite shapes. Application of scale and measurement conversions to real-life situations.
Fact or fiction, truth or lies?	Form	System, pattern	Fairness and development	Fair forms of communication help us to reveal patterns and improve our truth-telling systems.	C	In the task students will communicate some findings using the more suitable way of representing the data they have.		
Where do conclusions come from?	Logic	pattern, quantity, justification	Identities and relationships	Relationships between variables can	AC	Students have to analyze a set of data, representing	Critical-thinking communication	Data analysis. How to measure and represent the central tendency.

				form patterns which often justify important logical conclusions.		them in the best way and drawing meaningful conclusions.	on, information literacy	How to decide if it is best to calculate mean, median or mode. Cumulative frequency. Quartiles and interquartile range. Spread representation: box-and-whiskers plots. Bivariate data: correlation and drawing conclusions.
Can mathematics be beautiful? (ID unit-art)	Relationships	measurement, pattern	Personal and cultural expression	Beauty in different cultures can be justified by relationships between shapes in patterns.	D	Students have to realize their own geometrical pattern applying the knowledge they learned during the unit both in arts and maths lessons.	Communication, creative-thinking transfer organization	The Cartesian plane. How to plot points and pass from a table to a graph. Drawing shapes on the Cartesian plane. Geometrical transformations: mirroring, rotating, translating. Similar shapes. Enlargements and reductions.
How does it all tie together?	Form	equivalence, representation	Orientation in space and time	Where we are in space and time can change the form by which what we know	A B	Mathematical investigation in which students have to identify a pattern and represent it with algebraic language.	Communication, media-literacy, creative thinking, transfer	Algebraic expressions. Generalize patterns in numbers. Expanding and factorizing.

				is represented.		Test to assess their abilities in expanding and factorizing.		
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Subject-group Overview Vertical/Horizontal Planner

Subject Area: Mathematics MYP Level: MYP3

Unit title	Key concept	Related concepts	Global context	Statement of inquiry	Objectives	Summative assessment task	ATL skills	Content: knowledge
How did we get where we are?	Form	Measurement, Justification	Identities and relationships	The needs of society for measuring first and then finding justification of general rules lead	B and C (strands iv and v)	Mathematical investigation related to different numerical systems.	Creative-thinking Critical thinking Information literacy	Exploration of mathematical discoveries and inventions such as the equal sign, negative numbers, algebra, zero and others.

				to the development of the knowledge in its actual form.			Communication	Discover new ways of represent numbers that were used in the past (Egyptians, Babylonians, Romans)
How do we make choices?	Form	Equivalence, representation	Fairness and development	Describe, represent and model real-life problems in different forms will help us to make fair choices.	Test1: C (strands i, ii, iii) and D Test 2: A	Real-life task in which students have to apply their knowledge in linear relations to solve an authentic problem.	Organization skills Creative thinking skills Critical-thinking skills Transfer skills	Find out about linear relations and learn how to graph them in different contexts. Solving equations with fractional coefficients. Explore how to model relationships using algebra, tables of values, and graphs in different contexts.
How does a network work?	Logic	Models, change	Globalization and sustainability	Global networks are built on logic and are changing the way we handle data, make decisions and design models	C D	Real-life task in which students have to build networks in different contexts.	Critical-thinking Media literacy Creative-thinking skills Affective skills Transfer skills	Find out how logic can influence or change our decision making. Solving mathematical games, riddles, mazes. Learn what network diagrams and decision trees are and how to use them to solve problems. Explore the connection between invisible

								algorithms and our everyday lives.
What are the chances?	Relationships	Generalization, patterns	Personal and cultural expression	Patterns found in relationships can be generalized to help us make predictions for personal gain.	Find out about Pithagoras`theorem and its consequences. Learn how to use relationships among the different sides of a triangle to solve simple and more complex problems.	Test in which students have to demonstrate their abilities in the calculation of probability of different types of events.	Communication skills Information literacy Creative-thinking skills critical-thinking	Find out how to calculate simple probabilities. Understand what are dependent and independent events and calculate probability in different scenarios. Explore theoretical and experimental probability. Learn how to use diagrams to understand and calculate probability. Explore different ways to visualize outcomes.
Where`s the proof?	Relationships	Simplification, Systems	Scientific and technical innovation.	Using technologies and knowing the relationships among differents components of systems we can solve problems in simpler ways.	B D	Test 1: mathematical investigation involving further exploration of the properties of right triangles. Test 2: real-life task in which	Communication Critical-thinking Creative-thinking Transfer	

						students will have to apply what they learned about right triangles properties to solve an authentic problem.		
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Subject-group Overview Vertical/Horizontal Planner

Subject Area: Mathematics MYP Level: MYP4-5

Unit title	Key concept	Related concepts	Global context	Statement of inquiry	Objectives	Summative assessment task	ATL skills	Content: knowledge
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In how many different ways can we express the same thing?	Form	Patterns	Globalization and sustainability	Numbers in different Forms give us a variety of ways to predict patterns and think about problems of global significance	A	Test with different exercises to assess students' abilities.	Communication; Creative-thinking	Forms of numbers; Number systems; Sets; Fractional exponents (radicals and exponents) Extended: Fractional exponents; Logarithms; Number bases
Why does algebra look so clever?	Relationships	Simplification	Identities and relationships	Finding and expressing things in common helps us to simplify and improve relationships	B	Mathematical investigation about perfect square trinomials.	Communication Organization Affective Critical thinking Creative thinking	Algebra revision; algebraic expressions; solving equations; Factorizing
Can you walk the line?	Logic	Equivalence	Orientation in space and time	Knowledge is built through logical structures, developed over time and transferred to	C D	Word problems related to authentic real-life situations that to be	Communication Transfer Critical thinking	Equations: linear and simultaneous

				equivalent situations.		solve need the use of equations and linear relations.		
How is technical innovation changing our ideas of public and private space?	Relationships	Models	Scientific and technical innovations	Modelling allows us to solve new spatial relationship problems arising from technical innovation	B D	Real-life problem that can be solve through the use of trigonometry (ex. Calculating distances and heights of objects that cannot be directly measured)	Information literacy skills Critical-thinking skills Collaboration skills Creative-thinking skills Transfer skills Communication skills	Trigonometry ratios revision, problems Sine and cosine rules, radians
How can we move in space?	Logic	Space	Personal and cultural expression	Applying logic to spatial dimensions can open personal, cultural and Social	AC	Test with exercises to be solved.	Collaboration Communication Transfer Information literacy	Plane geometry; Distance (mid-point, equation of a line)

				entrepreneurship opportunities				
How well does data reflect reality?	Relationships	Change	Fairness and development	We must take care to ask the right questions and to measure the correct data to understand Relationships so we can use information to make the world a better and fairer place.	CD	Task about graphical representation, analysis and interpretation of data.	Critical-thinking Communication Affective Information literacy	Data handling and processing; Measures of central tendency/location (percentiles, deciles, IQR, correlation) Standard deviation (standard and mean deviation)
Making the world a fairer and more equal place?	Logic	Quantity	Fairness and development	To make the world a fairer and more equal place we need to use logic to understand and distribute quantities.	B	Mathematical investigation about number sequences.	Critical thinking Information-literacy Creative-thinking	Number lines (Inequalities); Number Sequences Inequalities

How many forms has a quadratic?	Relationships	Representation	Globalization and sustainability	To understand global issues it is important to be able to represent many kinds of relationships.	A	Test with exercises to solve and graph quadratic equations.	Communication Organization Reflection	Quadratic equations
How do functions function?	Form	Generalization	Identities and relationships	Relationships among quantities can be generalized in different forms.	D C	Application of logarithmic and exponential functions to real life problems.	Collaboration Transfer Critical thinking	Functions. Logarithmic and exponential functions
What do I get by learning these things?	Form	Justification	Orientation in space and time	Form is a powerful tool for justifying how we use space.	B	Mathematical exploration of the relationships between circle geometry and angles.	Creative thinking Affective	Circle geometry; angles revision (similarity and congruence)

The only sure thing?	Logic	Measurement	Personal and cultural expression	The logic that has been used for centuries to entertain people can be a powerful measurement tool.	D	Probability applications to real-life problems.	Critical thinking Media literacy Collaboration	Probability Extended: Conditional probability (permutations and combinations)
Am I ready?	Relationships	Systems	Scientific and technical innovations	Studying relationships in systems can give us a better understanding of the natural world.	A	Test with different exercises.	Reflection Critical-thinking Information literacy	Transformations of functions; Vector and vector spaces (dot product)