

Teacher(s)		Subject group and discipline	Math		
Unit title	Algebraic expressions and equations	MYP year	1	Unit duration (hrs)	

Inquiry: Establishing the purpose of the unit

Key concept	Related concept(s)	Global context
Logic	Generalization, models, patterns	Scientific and technical innovation: Patterns in nature
Statement of inquiry		
A logical process helps to model and generalize patterns in the natural world.		
Inquiry questions		
<p>Factual: What is a pattern? What are the different types of patterns?</p> <p>Conceptual: How do we model patterns? How is it possible to model a pattern and make predictions?</p> <p>Debatable: Is there a mathematical order to our natural world?</p>		

Objectives	Summative assessment	
<p>A: Knowing and understanding</p> <ul style="list-style-type: none"> 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. <p>B: Investigating patterns</p> <ul style="list-style-type: none"> 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. <p>C: Communicating</p> <ul style="list-style-type: none"> i. use appropriate mathematical language (notation, symbols and terminology) in both oral and written explanations 	<p>Outline of summative assessment task(s) including assessment criteria:</p> <p>Unit Test: (criterion A)</p> <p>In this task, students will answer a wide range of questions, from simple to complex to challenging (in both familiar and unfamiliar situations), all related to algebraic expressions and equations. The test will be done individually in class during one period.</p> <p>Patterns in Nature: (criteria B, C, D)</p> <p>In this task, students will be exploring patterns that are found in nature, and in particular, the Fibonacci sequence. Students will first determine the Fibonacci number pattern. They will then look at a variety of circumstances of where this pattern occurs in nature; for example, how rabbits breed and in different objects such as flowers and pinecones. They will then study the relationship between the Fibonacci sequence and the Golden Ratio.</p>	<p>Relationship between summative assessment task(s) and statement of inquiry:</p> <p>The Unit Test will allow students to demonstrate that they can use a logical process to model and generalize patterns and then apply them to a wide range of situation. Application questions center around patterns found in nature.</p> <p>In the Patterns in Nature task, students will begin by using logic to generalize a famous mathematical pattern, the Fibonacci sequence. They will then discover how this pattern occurs in nature through a variety of examples. With each example, students will model and/or generalize the part of the sequence that they see. The task ends with students exploring and generalizing the Golden Ratio before searching for examples in the natural world. In the end, students will realize that the natural world is replete</p>

<ul style="list-style-type: none"> ii. use different forms of mathematical representation to present information iii. move between different forms of mathematical representation iv. communicate coherent mathematical lines of reasoning v. organize information using a logical structure. <p>D: Applying mathematics in real-life contexts</p> <ul style="list-style-type: none"> 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. 	<p>They will then look for instances when this ratio is found in the natural world.</p>	<p>with patterns and is, potentially, not random.</p>
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Approaches to learning (ATL)

In order for students to be able to develop an understanding of the principles and nature of mathematics, students will consider content:

- What did I learn about today?
- What don't I yet understand?
- What questions do I have now?

(Self-management: Reflection skills) The strategy students will learn and practice is “reflect and discuss”, where students will reflect on the above aspects of their learning and then discuss their insights with a peer.

In order for students to be able to apply mathematical problem-solving techniques to recognize and generalize patterns, students will practice visible thinking strategies and techniques (Thinking: Creative thinking skills). Students, typically working in pairs, will create tables to organize information so they can determine patterns and generalize relationships.

Action: Teaching and learning through inquiry

Content	Learning process
	Learning experiences and teaching strategies

	Formative assessment
	Differentiation
Resources	

Reflection: Considering the planning, process and impact of the inquiry

Prior to teaching the unit	During teaching	After teaching the unit
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Teacher(s)		Subject group and discipline	Math		
Unit title	Data management	MYP year	1	Unit duration (hrs)	

Inquiry: Establishing the purpose of the unit

Key concept	Related concept(s)	Global context
Relationships	Representation, justification	Identities and relationships: Trends in communities
Statement of inquiry		
Being able to represent relationships effectively can help justify characteristics and trends uncovered in communities.		
Inquiry questions		
<p>Factual: How do we represent information? How do we collect information?</p> <p>Conceptual: How does the way in which information is represented impact our ability to interpret it? What makes one representation more effective than another?</p> <p>Debatable: Whose responsibility is it to identify and help fix problems within a community?</p>		

Objectives	Summative assessment	
<p>A: Knowing and understanding</p> <ul style="list-style-type: none"> 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. <p>C: Communicating</p> <ul style="list-style-type: none"> i. use appropriate mathematical language (notation, symbols and terminology) in both oral and written explanations ii. use different forms of mathematical representation to present information iii. move between different forms of mathematical representation iv. communicate coherent mathematical lines of reasoning v. organize information using a logical structure. 	<p>Outline of summative assessment task(s) including assessment criteria:</p> <p>Unit Test: (criterion A)</p> <p>In this task, students will answer a wide range of questions, from simple to complex to challenging (in both familiar and unfamiliar situations), relating to generating and interpreting bar and line graphs, extrapolating from graphs and identifying possible misleading features on certain graphs. Students will also use technology to create graphs. The test will be done individually in class during one period.</p> <p>Should Your Community Be Concerned? (criterion C)</p> <p>In this task, students will be investigating an issue in their community. They will collect information and create a poster that includes a bar, circle and line graph. The</p>	<p>Relationship between summative assessment task(s) and statement of inquiry:</p> <p>The Unit Test will allow students to demonstrate that they can represent relationships effectively using a wide range of methods. Students will also have to apply the content to questions that address topics such as gender inequality, social issues and demographics, education trends, discrimination, and other community concerns.</p> <p>The Should Your Community Be Concerned summative assessment is designed for students to use principles of data management to analyse and collect data about an issue in their community.</p>

	<p>poster will also include an analysis of the data and indicate any trends that the students see as well as predictions related to the issue. The poster will be created by hand or using graphing technology.</p>	<p>By collecting data and representing any relationships effectively, students will be able to uncover characteristics and/or trends in their community and justify what they have found. Students will experience the statement of inquiry as they draw conclusions about the seriousness of a social issue in their community, and create a poster to effect change.</p>
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Approaches to learning (ATL)

In order for students to be successful in the Should Your Community Be Concerned task, they will communicate information and ideas effectively to multiple audiences using a variety of media and formats (Research: Media literacy skills). Throughout the unit, students will learn how to create a wide range of graphs using Excel or Google sheets and programs such as Piktochart or Canva. They will also learn how data can be represented and misrepresented and encouraged to justify their selection of representation(s).

In order for students to be successful in analysing issues, students will identify trends and forecast possibilities (Thinking: Critical thinking skills). The strategy that students will learn and practice is “what do you see?” where they will be given data in a variety of forms and asked to identify trends. Students will also be asked to suggest reasons for each trend and its implications.

Action: Teaching and learning through inquiry

Content	Learning process
	Learning experiences and teaching strategies

	Formative assessment
	Differentiation
Resources	

Reflection: Considering the planning, process and impact of the inquiry

Prior to teaching the unit	During teaching	After teaching the unit

Teacher(s)		Subject group and discipline	Math		
Unit title	Fractions	MYP year	1	Unit duration (hrs)	

Inquiry: Establishing the purpose of the unit

Key concept	Related concept(s)	Global context
Logic	Quantity, simplification	Identities and relationships: Human connections
Statement of inquiry		
Using logic to simplify and manipulate quantities can help us explore human connections within families, communities and cultures.		
Inquiry questions		
<p>Factual: What does it mean to simplify? What is the process for adding, subtracting, multiplying, and dividing fractions?</p> <p>Conceptual: How is logic used to manipulate quantities?</p> <p>Debatable: What promotes human connections? What hinders human connections?</p>		

Objectives	Summative assessment	
<p>A: Knowing and understanding</p> <ul style="list-style-type: none"> 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. <p>B: Investigating patterns</p> <ul style="list-style-type: none"> 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. <p>C: Communicating</p> <ul style="list-style-type: none"> i. use appropriate mathematical language (notation, symbols and terminology) in both oral and written explanations 	<p>Outline of summative assessment task(s) including assessment criteria:</p> <p>Unit Test: (criterion A)</p> <p>In this task, students will answer a wide range of questions, from simple to complex to challenging (in both familiar and unfamiliar situations), all related to representing, simplifying and using the 4 operations with fractions. The test will be done individually in class during one period.</p> <p>Investigation: Adding Fractions (criteria B, C)</p> <p>In this task, students will develop the algorithm for adding fractions. Students will use an area model to represent fractions and then manipulate that model in order to find a common unit (denominator). From their examples, they</p>	<p>Relationship between summative assessment task(s) and statement of inquiry:</p> <p>The Unit Test will allow students to apply the content they have learned to a wide range of questions and verify that they can use logic to represent, simplify and perform operations with quantities (fractions). Application questions explore events, such as the Olympics, that draw humans together as well as traditional celebrations that are found in different communities and cultures.</p> <p>The Adding Fractions task will help students develop and understand the operation of addition with fractions. They will use logic to manipulate quantities represented in a variety of forms which will allow them to discover and develop the skills necessary to explore human</p>

<ul style="list-style-type: none"> ii. use different forms of mathematical representation to present information iii. move between different forms of mathematical representation iv. communicate coherent mathematical lines of reasoning v. organize information using a logical structure. <p>D: Applying mathematics in real-life contexts</p> <ul style="list-style-type: none"> 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. 	<p>will generalize the process for adding fractions. They will be done individually during one class period under test conditions.</p> <p>Fractions in Cooking and Cultures: (criteria C, D)</p> <p>In this task, students will discover how fractions are instrumental in activities that are a part of cultural celebrations. In pairs, students will calculate the amount of each ingredient needed in a traditional cookie recipe for a large group of people. Students will then select a recipe of their own and calculate the quantities of each ingredient needed to make enough for their class.</p>	<p>connections among families, communities and cultures.</p> <p>In the Fractions in Cooking and Cultures task, students use logic to manipulate and simplify quantities in order to calculate the amount of each ingredient needed to make food for a large group. They will start with an Eid cookie recipe, popular in Middle Eastern countries and served during special festive occasions. Students will then select a recipe that has significance to them and reflects their culture, heritage or family tradition. These recipes will be put on one Google slide, along with an explanation of why the recipe is significant to the student and how it reflects their culture/heritage. All slides can be put into a PDF to create a cookbook of cultures.</p>
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Approaches to learning (ATL)

In order for students to describe patterns as relationships or general rules consistent with findings, students will draw reasonable conclusions and generalizations (Thinking: Critical thinking skills). In this unit, students will practice and develop their powers of generalization through a number of scaffolded investigations where they will determine the algorithm for multiplying, dividing and adding (subtracting) fractions.

In order for students to improve their ability to critique the reasoning of others, students will give and receive meaningful feedback (Communication: Communication skills). The strategy that student will learn and practice is “ladder of feedback” where students will first ask questions to clarify anything that is not clear. Then, they will give at least one positive comment, followed by a suggestion for improvement.

Action: Teaching and learning through inquiry

Content	Learning process
	Learning experiences and teaching strategies

	Formative assessment
	Differentiation
Resources	

Reflection: Considering the planning, process and impact of the inquiry

Prior to teaching the unit	During teaching	After teaching the unit

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Teacher(s)		Subject group and discipline	Math		
Unit title	Geometric constructions	MYP year	1	Unit duration (hrs)	

Inquiry: Establishing the purpose of the unit

Key concept	Related concept(s)	Global context
Form	Measurement	Personal and cultural expression: Artistry and creativity
Statement of inquiry		
Artistry and creativity are enhanced through an understanding of how measurement helps to define forms.		
Inquiry questions		
<p>Factual: What is a line? What can be measured?</p> <p>Conceptual: How do measurements help define different forms?</p> <p>Debatable: Is art more inspiration or calculation?</p>		

Objectives	Summative assessment	
<p>A: Knowing and understanding</p> <ul style="list-style-type: none"> 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. <p>B: Investigating patterns</p> <ul style="list-style-type: none"> 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. <p>C: Communicating</p> <ul style="list-style-type: none"> i. use appropriate mathematical language (notation, symbols and terminology) in both oral and written explanations 	<p>Outline of summative assessment task(s) including assessment criteria:</p> <p>Unit Test: (criterion A)</p> <p>In this task, students will answer a wide range of questions, from simple to complex to challenging (in both familiar and unfamiliar situations), all related to geometric elements (point, ray, line, segment), constructing angles, angle properties and naming/classifying triangles</p> <p>Investigation: Interior Angles of a Triangle (criteria B and C)</p> <p>In this task, students will generalize the relationship between the measures of the interior angles of a triangle. Using either paper and pencil or dynamic geometry software, students will investigate/measure the interior angles of a wide range of triangles and then generalize the relationship between these measurements. The investigation will be done individually in class under test</p>	<p>Relationship between summative assessment task(s) and statement of inquiry:</p> <p>The Unit Test will allow students to apply the content they have learned to a wide range of questions and verify that they can name, measure and classify geometric elements, angles and triangles, and solve problems using angle properties and relationships.</p> <p>Students will discover how the measures of the angles of a triangle help to define this important shape. The discovery of the relationship between the measures of the interior angles of a triangle will help students analyze famous works of art and subsequently create their own piece of art.</p>

<ul style="list-style-type: none"> ii. use different forms of mathematical representation to present information iii. move between different forms of mathematical representation iv. communicate coherent mathematical lines of reasoning v. organize information using a logical structure. 	<p>conditions.</p> <p>Creating an Art Piece: (criteria C)</p> <p>In this task, students will be creating a piece of art (e.g. painting, drawing, mosaic) that will consist of a draft that will demonstrate the required mathematics, as well as a final product. Students will be required to include mathematical forms such as rays, line segments, acute and obtuse angles, triangles and all other content they explored in the unit.</p>	<p>In the Creating an Art Piece task, students will create a piece of art and understand how mathematical geometric concepts are found in art, and perhaps enhance it. By understanding measurement and geometry, students will gain a greater appreciation of artwork, and how they can be used to create their own artistic forms of expression. In the end, they will decide how their understanding of how measurements help to define various forms affects their creativity.</p>
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Approaches to learning (ATL)

In order for students to be successful in the Unit Test, students will use memory techniques to develop long-term memory (Research: Information literacy skills). Students will learn and practice visual summary techniques (such as movement or visual aids) to summarize content into a form that is easier to remember.

In order for students to apply and transfer skills to a wide range of real-life situations, other areas of knowledge and future developments, students will make connections between subject groups and disciplines (Thinking: Transfer skills). Throughout the

unit, students will be asked to apply content to various other disciplines, such as photography, painting, architecture and physics.

Action: Teaching and learning through inquiry

Content	Learning process
	Learning experiences and teaching strategies
	Formative assessment
	Differentiation

Resources	

Reflection: Considering the planning, process and impact of the inquiry

Prior to teaching the unit	During teaching	After teaching the unit

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Teacher(s)		Subject group and discipline	Math		
Unit title	Numbers & Number Systems	MYP year	1	Unit duration (hrs)	

Inquiry: Establishing the purpose of the unit

Key concept	Related concept(s)	Global context
Form	Representation, systems	Orientation in space and time: Civilizations and human interactions
Statement of inquiry		
Different systems and forms of representation develop as civilizations evolve and humans interact.		
Inquiry questions		
<p>Factual: What is a number? What is a number system?</p> <p>Conceptual: How are the ways we represent quantities related? How does the way we represent something affect its usefulness?</p> <p>Debatable: How much are we influenced by the events of the past??</p>		

Objectives	Summative assessment	
<p>A: Knowing and understanding</p> <ul style="list-style-type: none"> 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. <p>C: Communicating</p> <ul style="list-style-type: none"> i. use appropriate mathematical language (notation, symbols and terminology) in both oral and written explanations ii. use different forms of mathematical representation to present information iii. move between different forms of mathematical representation iv. communicate coherent mathematical lines of reasoning v. organize information using a logical structure. 	<p>Outline of summative assessment task(s) including assessment criteria:</p> <p>Unit Test: (criterion A)</p> <p>In this task, students will answer a wide range of questions, from simple to complex to challenging (in both familiar and unfamiliar situations), all related to different number systems as well as the form and representation of numbers. The test will be done individually in class during one period.</p> <p>Number Systems: (criterion C)</p> <p>In this task, students will be exploring number systems of different ancient civilizations, with each group will be given one particular ancient system to study. They will research the history of a particular number system and the basics of how it works (including mathematical</p>	<p>Relationship between summative assessment task(s) and statement of inquiry:</p> <p>The Unit Test will allow students to apply the content they have learned to a wide range of questions and verify that they can represent, simplify and perform operations with numbers written in different forms. Many of the questions will include applications of different number systems, past and present, from around the world, with a focus on civilizations and human interactions.</p> <p>In the Number Systems task, students will research number systems in different forms and analyse the numbers, their properties and how to perform operations between them. Students will realize how important numbers have been throughout history and how number systems and ways to represent numbers have</p>

	<p>operations and converting to the decimal system), analyze the positive aspects and limitations of the system and determine if any elements of this system are in our current number system. The information will be condensed and summarized, then presented in video and written visual form.</p>	<p>developed over time.</p>
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Approaches to learning (ATL)

In order for students to work effectively with others, they will listen actively to other perspectives and ideas (Social: Collaboration skills). The strategies students will learn and practice are “pay attention, pause and paraphrase (3P)” where they will focus on one of the three stages (one of the three P’s) during Discuss and Reflect activities. Eventually, they will have practiced enough that they will use all 3 P’s at once as they work with one another.

In order for students to be successful in the Number Systems task, they will present information in a variety of formats and platforms (Research: Information literacy skills). Throughout the unit, students will learn and use different techniques to condense and present information to make it easier for their peers to understand, recognizing multiple intelligences (e.g. mind maps, reference chart, Prezi).

Action: Teaching and learning through inquiry

Content	Learning process
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	Learning experiences and teaching strategies
	Formative assessment
	Differentiation
Resources	

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Reflection: Considering the planning, process and impact of the inquiry

Prior to teaching the unit	During teaching	After teaching the unit

Teacher(s)		Subject group and discipline	Math		
Unit title	Percentages	MYP year	1	Unit duration (hrs)	

Inquiry: Establishing the purpose of the unit

Key concept	Related concept(s)	Global context
Form	Equivalence, quantity	Fairness and development: Inequality and difference
Statement of inquiry		
Inequality and difference become clearer through the use of equivalent forms of quantities.		
Inquiry questions		
<p>Factual: What is a percentage? When are two things equal?</p> <p>Conceptual: How can different forms be equivalent? When is it beneficial to use different forms?</p> <p>Debatable: Can fairness be calculated?</p>		

Objectives	Summative assessment	
<p>A: Knowing and understanding</p> <ul style="list-style-type: none"> 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. <p>B: Investigating patterns</p> <ul style="list-style-type: none"> 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. <p>C: Communicating</p> <ul style="list-style-type: none"> i. use appropriate mathematical language (notation, symbols and terminology) in both oral and written explanations 	<p>Outline of summative assessment task(s) including assessment criteria:</p> <p>Unit Test: (criterion A)</p> <p>In this task, students will answer a wide range of questions, from simple to complex to challenging (in both familiar and unfamiliar situations), all related to equivalent forms of quantities (percentages, decimals and fractions). The test will be done individually in class during one period.</p> <p>Investigation: Repeating Decimals (criterion B)</p> <p>In this task, students will develop the procedure for converting a repeating decimal to its fractional equivalent. After looking at several examples, students will</p>	<p>Relationship between summative assessment task(s) and statement of inquiry:</p> <p>The Unit Test will allow students to apply the content they have learned to a wide range of questions and verify that they can represent, simplify and perform operations involving equivalent forms of quantities (percentages, decimals and fractions), including converting between them. Application questions address topics related to inequality and difference, such as gender inequality, the world refugee crisis and inequalities in education and health systems around the world.</p> <p>In the Repeating Decimals task, students are developing a basic skill that involves representing equivalent quantities in different forms (decimal and fraction). This skill will then prove useful later on in the unit as a tool to determine whether or not</p>

<ul style="list-style-type: none"> ii. use different forms of mathematical representation to present information iii. move between different forms of mathematical representation iv. communicate coherent mathematical lines of reasoning v. organize information using a logical structure. <p>D: Applying mathematics in real-life contexts</p> <ul style="list-style-type: none"> 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. 	<p>discover a pattern that will help them generalize the process. The investigation will be done individually in class under test conditions.</p> <p>You Are a Refugee: (criteria C, D)</p> <p>In this task, students will be exploring the world refugee crisis and what it might be like to be a refugee in a foreign country. In pairs, students will develop a monthly budget for rent, food, transportation, living expenses, clothing etc. based on real life social assistance funding. There are many different tasks to complete so organization skills are developed with a focus on short & long term planning and meeting deadlines.</p>	<p>inequality and difference exist.</p> <p>In the You Are a Refugee task, students will imagine they are refugees in a new city and research the different elements in daily life, from finding a place to live to purchasing food and other expenses. Students will use equivalent forms of numbers to analyze both their daily budget and the composition of their new diet. Students will realize the importance of staying on budget and begin to empathize what it might be like to be a refugee in a foreign country. They will look at what sacrifices need to be made to stay on budget and how different the life of a refugee would be compared to their life in their home country.</p>
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Approaches to learning (ATL)

In order for students to work effectively with others, they will practice empathy (Social: Collaboration skills). The strategy they students will learn and practice is “What would it be like...?” where, In Reflect and Discuss activities, students will be asked how they would react and feel in situations they would not typically find themselves. These situations will include being a refugee, experiencing inequitable distribution of resources, gender inequality and economic extremes.

In order for students to be successful in the “You Are a Refugee” task, they will have to manage their time effectively by planning short- and long-term assignments and meeting deadlines (Self-Management: Organization skills). Students will provided a checklist to help them organize their work and then reflect on how well they were able to manage their organizational and affective skills and rank them as emergent, capable or exemplary.

Action: Teaching and learning through inquiry

Content	Learning process
	Learning experiences and teaching strategies
	Formative assessment

	Differentiation
Resources	

Reflection: Considering the planning, process and impact of the inquiry

Prior to teaching the unit	During teaching	After teaching the unit

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Teacher(s)		Subject group and discipline	Math		
Unit title	Perimeter, area and volume	MYP year	1	Unit duration (hrs)	

Inquiry: Establishing the purpose of the unit

Key concept	Related concept(s)	Global context
Relationships	Generalization, measurement	Globalization and sustainability: Environmental impacts
Statement of inquiry		
Generalizing the relationship between measurements can influence decisions that impact the environment.		
Inquiry questions		
<p>Factual: What can be measured? What is the relationship between area and volume?</p> <p>Conceptual: How are relationships between measurements generalized?</p> <p>Debatable: What is the cost of being environmentally friendly? What is really influencing decision making?</p>		

Objectives	Summative assessment	
<p>A: Knowing and understanding</p> <ul style="list-style-type: none"> 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. <p>B: Investigating patterns</p> <ul style="list-style-type: none"> 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. <p>C: Communicating</p> <ul style="list-style-type: none"> i. use appropriate mathematical language (notation, symbols and terminology) in both oral and written explanations 	<p>Outline of summative assessment task(s) including assessment criteria:</p> <p>Unit Test: (criterion A)</p> <p>In this task, students will answer a wide range of questions, from simple to complex to challenging (in both familiar and unfamiliar situations), all related to the relationship between perimeter, area and volume and calculating the perimeter, area, surface area and volume of 2D & 3D shapes. The test will be done individually in class during one period.</p> <p>Investigation: Volume of a Rectangular Prism (criterion B)</p> <p>In this task, students will explore the relationship between the volume of a rectangular prism and the lengths of its sides. They will be given a wide range of rectangular prisms divided into cubes and</p>	<p>Relationship between summative assessment task(s) and statement of inquiry:</p> <p>The Unit Test will allow students to apply the content they have learned to a wide range of questions relating to perimeter, area, surface area and volume. Application questions address topics such as renewable energy sources, ecologically friendly housing designs and global environmental concerns.</p> <p>In the Volume task, students will generalize the relationship between the measurements of any rectangular prism and its volume. This is a foundational skill which will then allow them to analyze the environmental impacts of decisions like</p>

<ul style="list-style-type: none"> ii. use different forms of mathematical representation to present information iii. move between different forms of mathematical representation iv. communicate coherent mathematical lines of reasoning v. organize information using a logical structure. <p>D: Applying mathematics in real-life contexts</p> <ul style="list-style-type: none"> 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. 	<p>asked to calculate the volume of each. While they will likely start by counting, they will ultimately generalize the formula for the volume of these 3D figures.</p> <p>Box Design: (criteria C, D)</p> <p>In this task, students will explore how a box with a given volume can be created in ways that change its surface area. Students will set up a systematic chart to help them determine the best possible shape for a cereal box to minimize packaging. They will critically analyze existing packaging or products and suggest possible improvements to the packaging.</p>	<p>those involved in packaging.</p> <p>In the Box Design task, students will use the relationships that they have generalized between measurements, surface area and volume in order to analyze the impact of design decisions on the environment. Students analyze current product designs and try to determine what factors are influencing decision-making. The focus will be on the environmental implications of the existing packaging of products used in daily life.</p>
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Approaches to learning (ATL)

In order for students to be successful in the Box Design task, students will design improvements to existing machines, media and technologies (Thinking: Creative thinking skills). Throughout the unit, students will analyze existing product designs and determine how they can be improved in order to minimize their impact on the environment.

In order for students to improve their reflection skills, students will consider ethical, cultural and environmental implications (Self-management: Reflection skills). The strategy students will learn and practice is “reflect and discuss”, where students will reflect on how their decisions and those made by others impact the environment. They will do this individually and will discuss their insights with a peer or as a class.

Action: Teaching and learning through inquiry

Content	Learning process
	<p>Learning experiences and teaching strategies</p>

	Formative assessment
	Differentiation
Resources	

Reflection: Considering the planning, process and impact of the inquiry

Prior to teaching the unit	During teaching	After teaching the unit
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