Mathematics 2016

6th grade: Common Core 1: Pre-algebra A	Unit title	Key & Related Concepts	Global context	Statement of Inquiry	MYP objectives	ATL skills	Content (topics, knowledge, skills)
	Measuring shapes, area, perimeter Chapter 2	Key: relationships Related: representation	Orientation in space and time (the relationships between, and the interconnectedness of)	Rectangles **represent** the relationship and the interconnectedness between numbers and space.	Criterion A: Knowing and understanding **select** appropriate mathematics when solving problems in both familiar and unfamiliar situations **apply** the selected mathematics successfully when solving problems **solve** problems correctly in a variety of contexts.	Communication: Communication skills Thinking: Critical Thinking skills Social: Collaboration	Exploring measurement using non-traditional tools. Discovering the conceptual meaning of area. Using rectangles to decompose complex shapes. Comparing the relationship between area and perimeter. Using generic rectangles to justify the concepts of distributive property and greatest common factor.
	Portions and Integers Chapter 3	Key: relationships Related: equivalence, model	Scientific and technical innovation (systems, models, methods; products, processes, and solutions)	Portions are equivalent representations that can be modeled to show relationships.	Criterion C or D: In class experiment with skittles or M&Ms Learning Log 3-72	Communication: Communication skills Thinking: Critical thinking skills Thinking: Transfer skills (?) Social: Collaboration	Representing a portion as a fraction, decimal, and percent. Using equivalent fractions with Giant One. Exploring the relationship between equivalent ratios. Using number lines to understand the addition and subtraction of integers. Plotting coordinates to analyze real-life situations.
Unit 3	Deal or no deal	Key: relationships Related: quantity	Fairness and development: (inequality, civic responsibility,	It is our civic responsibility to build relationships in order	Criterion D: reflection about experience helping others and how	Communication Social skills Research skills Thinking skills	Adding and subtracting decimals, multiplying and dividing decimals

			imagining a hopeful future)	help others have a hopeful future.	they used math to help others	Self-management: goal setting, organizing what group buys	Unit rate so they can make a better buy Percentages, discount
Unit 4	Variables and Ratios: Chapter 4	Key: relationships Related: representation, generalizations, patterns	Orientation in time and space (scale, duration, frequency, and variability)	Variables represent unknown quantities that can generalize patterns and show relationships.	Criterion A: Knowing and Understanding	Communication: Communication skills Thinking: Creative thinking Social: Collaboration	Representation of the unknown quantities Looking at patterns and writing expressions Finding equivalent expressions Using ratios to describe relationships between similar shapes
Unit 5	Dividing and building expressions: chapter 6	Key: form Related: representation, simplification model	Scientific and Technical Innovation Models, methods, processes	We represent relationships through models which can be simplified	Criterion C: Communicating Criterion D: Applying Math in Real Life Context	Communication Thinking Self-management-reflection	Dividing fractions, order of operations, simplifying and combining like terms of algebraic expressions, using variables to represent any number, cookie project
Unit 6	Rates and operations: chapter 7	Key: relationships Related: equivalence, representation, pattern	Globalization and sustainability	Patterns help us generalize relationships	Criterion A: knowing and understanding Criterion B:investigating pattern	Research Thinking	Rates and ratios, dividing with fractions, mixed numbers and decimals, combining like terms and the distributive property
Unit 7	Expressions and Equations: Chapter 9	Key: Logic Related: model, generalization	Globalization and sustainability	Discovering mathematical relationships through models and generalizations leads to an understanding of the impact of decision-making on humankind and the environment.	Criterion B: Investigating Patterns	Thinking Communication Research	In and out tables, x-y tables, coordinate graphing, identifying growth, Human Footprint book, testing different points for validity, evaluating equations/expressions
7th grade: Pre-Algebra B/ MC2	Unit title	Key & Related Concepts	Global context	Statement of Inquiry	MYP objectives	ATL skills	Content (topics, knowledge, skills)
Unit 1	Chap. 1. Probability and Portions	Key: Relationships Related: representations, generalizations	Scientific and Technical Innovation	We explore and represent the relationship between experimental and theoretical probability.	Criterion A: Knowing and Understanding Criterion C: Communicating	Social and Thinking	Problem 1-136 Quiz Chapter Test Students describe the process of adding fractions with unlike denominators

			Opportunity, Risk, Consequences and Responsibility				
Unit 2	Chap. 2: fraction and integer addition	Key: Logic Related: Model, Change	Scientific and Technical Innovation models	Using logic, models helps us visualize change.	Criterion A: Knowing and Understanding Criterion C: Communication Criterion D: Applying Math in Real Life Context	Thinking: Critical and thinking and transfer	Chapter Test: C: Learning Log: 2-24: add and multiply positive and negative integers. C and D: Chapter 2: Integers in real life activity
Unit 3	Chap. 3: Grouping, subtraction and division	Key: Relationships Related: Representations, Equivalence, Model	Scientific and Technical Innovation models	We represent relationships through models.	Criterion A: Knowing and Understanding Criterion B: pattern investigation Criterion C: Communication	Self-management: organizing Thinking	Chapter test Pattern Learning Log: 3-58 tell us how division and subtraction connect
Unit 4	Chap. 4: Proportions and expressions, unit rate	Key: Relationships Related: Equivalence, Measurement	Identities and relationships: co-orelation	We look for relationships and equivalence to determine the unknown.	Criterion A: Knowing and Understanding Criterion B: pattern investigation Criterion C: Communication Criterion D: Applying Math in Real Life Context	Thinking	Chapter test Learning Log: 4-28 proportions web: How can you tell a relationship is proportional? Pattern Investigation: I can go five miles on a tank of gas etc. Real life: 4-46 or go to the grocery store and compare…
Unit 5	Chap. 5: Probability and 5-D and linear model	Key: Logic Related: Justification	Scientific and Technical Innovation Principles and discoveries	We can solve for the unknown and justify our conclusion using logic.	Criterion A: Knowing and Understanding Criterion D: Applying Math in Real Life Context	Self-management: organizing Thinking	Chapter test Learning Log: 5-70 different methods to organize outcomes in a probability situation 5-D problem
Unit 6	Chap. 6: Solving inequalities and equations	Key: Form Related: Equivalence, Simplification, model	Scientific and Technical Innovation Principles and discoveries	Discovering how algebraic expressions can be simplified using models takes time.	Criterion A: Knowing and Understanding	Communicating	Chapter test

Unit 7	Proportions and percents						
Unit 8 supplem netary	Statistics and Angle Relationship						
8th grade: Linear Algebra	Unit title	Key & Related Concepts	Global context	Statement of Inquiry	MYP objectives	ATL skills	Content (topics, knowledge, skills)
Unit 1	Problem solving	Relationship Pattern and generalization	Identities and Relationships (cooperation, teams, affiliation and leadership)	Patterns help us generalize relationships	Criterion A: Communication C: graphing investigation	Thinking: Transfer Social: collaboration Self-management: reflection	Problem solving Diamond Problems, Problem Solving Strategies
Unit 2	**Simplifying with Variables**	Key Concept: Form Related concepts: model, simplification, justification	Scientific and technical Innovation (systems, models, methods, processes and solutions)	Models are used to simplify and justify forms of equations and expressions.	Criterion A:	Thinking: Critical thinking Communication Self-management: organization	Combining Like Terms, Solving Equations, Proportional Reasoning
Unit 3	Graphs and equations	Key Concept: Logic Related concepts: model, simplification, equivalence	Scientific and technical Innovation (systems, models, methods, processes and solutions)	A variety of models can be used to represent data.	Criterion A: test Criterion: communicating Learning log # 3-83	Thinking: critical Thinking transfer	Graphing on the coordinate plane, using tables and equations and graphs to represent situations, solving equations
Unit 4	Multiple representations	Key Concept: Relationship Related concepts: representation	Scientific and technical Innovation (systems, models, methods, processes and solutions)	Models help us represent relationships.	Criterion A: knowing and understanding: test Criterion B: Pattern task 1 Criterion C: learning log 4-24	Thinking: Critical thinking Communication Self-management: organization	Multiple representations of Linear Situations, Writing equations for word problems, solving equations using the equal values method
Unit 5	Systems of equations	Key Concept: Relationships Related concepts: generalization, pattern, representation	Personal and cultural expression (beauty)	We look at patterns in nature and beyond to make generalizations so we can write an equation.	Criterion B: Pattern Task 2	Thinking: Transfer Social: collaboration Self-management: reflection	Distributive property, solving equations for multiple variables, writing and solving systems.

Unit 6/9	Transformations and similarity	Key Concept: form Related concepts: equivalence, change	Scientific and technical Innovation (systems, models, methods, processes and solutions)	Transformation of shapes using models determines similarity and equivalence.	Criterion C: 6-61 Criterion D:	Thinking: critical thinking, creative thinking Self-management: affective skills	Transformations of objects to show congruence.
Unit 7	Slope and associations	Key Concept: relationship Related concepts: pattern	Scientific and technical Innovation (systems, models, methods, processes and solutions)	Models are used to show the relationships between two sets of data.	Criterion A: Criterion D: sample survey task	Thinking: critical thinking, creative thinking Self-management: affective skills, perseverance	Scatter plots, associations, line of best fit, slope
Unit 8	Exponents and functions	Key Concept: logic Related concepts: simplification equivalence,	Scientific and technical Innovation (systems, models, methods, processes and solutions)	Logic is used to simplify expressions to show equivalence.	Criterion A: knowing and understanding	Thinking: critical thinking, transfer Self-management: organization Communication	Exponents, simple/compound interest, scientific notation
Unit 9	Angles and the Pythagorean theorem	Key Concept: logic Related concepts: space, justify	Orientation in Space and Time: place	Logic can be used to identify and justify relationships in a space.	Criterion A: Criterion D: real world task: looking for lines in the real world	Social skills: collaboration Self-management: perseverance	Parallel lines, angle and triangle relationships Pythagorean theorem,
Unit 10	Surface area and volume	Key Concept: logic Related concepts: justification, measurement	Scientific and technical: ingenuity and progess	Logic is a tool for justifying what we discover through measurement and observation.	Criterion C: Communication Criterion D: difference between two gym bags. What would be the best use of space.	Communication Thinking: critical and creative	How much will it hold?
9th grade: geometry	Unit title	Key & Related Concepts	Global context	Statement of Inquiry	MYP objectives	ATL skills	Content (topics, knowledge, skills)
Unit 1	Shapes and Transformations	Key: **Form** Related: **Pattern, Space**	Personal and cultural expression (Forms of expression)	Creativity is enhanced through an understanding of form and shape.	B, C, D	Communication, Social, Thinking	Rigid Transformations, Symmetry, Properties of Polygons
Unit 2	Angles and Measurements	Key: **Logic** Related: **Measurement, Justification**	Orientation in space and time (Discoveries)	Logic can be used to justify what we discover through measurement.	B, D	Thinking, Self-Management	Angle Pair Relationships including angles with parallel lines and transversals, Area and Perimeter of Triangles, Parallelograms, and Trapezoids, Pythagorean Theorem, Triangle Inequality Theorem
Unit 3	Justification and Similarity	Key: **Logic**	Orientation in time	The mathematical discoveries of yesterday	A, B, C	Thinking, Self-Management	Proving Triangles are similar, Using similar triangles to find missing sides

		Related: **Change, Equivalence**	and space (An inquiry into discoveries)	continue to help us solve problems today.			of similar figures, Drawing similar figures using a series of transformations, Determining if Triangles are similar or not
Unit 4	Trigonometry and Probability	Key: **Relationships** Related: **Space, Measurement, Systems**	Orientation in time and space (Discoveries)	Using relationships we can discover how to calculate what we cannot measure.	B, C, D	Self-Management	The trigonometric ratio of tangent (slope ratio) and how to apply tangent to find missing measurements in right triangles. Application of trigonometric ratios to solve problems. Model probability situations using tree diagrams and area models. Computing probabilities of unions, intersections, and complements of events. Finding expected value in games of chance.
Unit 5	Completing the Triangle Toolkit	Key: **Relationships** Related: **Models, Measurement**	Orientation in time and space (Discoveries)	We discover the measure objects by using models that help show relationships.	B, C, D	Self-Management	Right Triangle Trigonometry including Sine, Cosine and Tangent, Special Right Triangle Relationships, Inverse Sine, Cosine and Tangent, Law of Sines, Law of Cosines
Unit 6	Congruent Triangles	Key: **Form** Related: **Equivalence, Justification**	Orientation in space and time (an inquiry into discoveries)	Justification is used to discover the equivalence of form.	A, B, C	Thinking, Self-Management	Prove two triangles are congruent using flowcharts. Conditional statements and their converses.
Unit 7	Proof and Quadrilaterals	Key: **Logic** Related: **Justification, Measurement**	Orientation in space and time (Discoveries)	Logic can be used to justify what we discover through measurement.	B, C, D	Communication, Thinking, Self-Management	Use congruent triangles to prove properties of quadrilaterals. Find the midpoint of a line segment. Use coordinate geometry to explore properties of quadrilaterals.
Unit 8	Polygons and Circles	Key: **Logic** Related: **Measurement, Patterns**	Fairness and Development (The responsibilities of sharing finite resources)	We use logic to measure and study patterns in the real world.	A, B, C	Communication, Social, Thinking	Regular and Non-Convex polygons. Relate sides and angles of a polygon. Relate the areas of similar figures. Area and circumference of circles.
Unit 9	Solids and Circles	Key: **Form** Related: **Space, Quantity**	Globalization and Sustainability (Developing a sustainable world)	Using finite resources responsibly must be taken into consideration when designing structures	B, D	Communication, Social, Thinking, Self-management	Surface area and volume of three-dimensional solids. Multiple representations of three-dimensional solid (nets, mats, isometric drawings).

Unit 10	Conditional Probability	Key: **Logic** Related: **Justification**	Globalization and Sustainability (How we make decisions)	Logic is a powerful tool for justifying our decisions.	A, C, D	Communication, Social, Thinking	Relationships between angles, arcs, and line segments in circles. Calculating conditional probability. Fundamental Principle of Counting.
Unit 11	Constructions	Key: **Form** Related: **Space, Measurement**	Personal and Cultural Expression (An inquiry into our creativity)	Creativity is enhanced through an understanding of form and unique use of space.	B, D	Communication, Thinking	Constructing familiar geometric shapes using construction tools (trace paper, compass and straightedge, or dynamic geometric tool).
10th grade: Algebra 2	Unit title	Key & Related Concepts	Global context	Statement of Inquiry	MYP objectives	ATL skills	Content (topics, knowledge, skills)
Unit 1	**Investigations and Functions**	Key: **Relationship** Related: **Pattern** **Connections**	**Identities and relationships** (cooperation)	**Creativity is enhanced by understanding multiple representations and patterns.**	A,B	**Communication Skills** **Research**	**Use of technology** **Functional Notation** **Domain and Range**
Unit 2	**Sequences**	Key: **Form** Related: **Generalization** **Model**	**Scientific and technical innovation** (mathematical processes)	**We use models and general forms to build equations and solve problems.**	A,B,C	**Thinking Skills**	**Arithmetic and Geometric Sequences** **Recursion and patterns**
Unit 3	**Exponential Functions**	Key: **Form** Related: **Equivalence** **Patterns**	**Orientation in time and space** (natural landscapes)	**Through patterns, we will find equations that fit given exact data.**	A,B,C,D	**Thinking Skills**	**Continuous graphs** **Growth and decay** **Monetary equations**
Unit 4	**Transformations of parent graphs.**	Key: **Form** Related: **Patterns** **Generalization**	**Scientific and technical innovation** (systems and methods)	**We can generalize patterns when we extend ideas and examine form.**	A,B	**Thinking Skills**	**Translations, rotations, reflections and dilations of the primary equations.**
Unit 5	**Equivalence**	Key: **Equivalence** Related: **Simplification** **System**	**Scientific and technical innovation** (adaptation)	**Using simplification and equivalence, we can solve complex problems and systems.**	A,B	**Thinking Skills**	**Rewriting expressions** **Rational functions** **Arithmetic operations on rational functions.**
Unit 6	**Solving and Intersections**	Key: **Logic** Related: **Patterns** **Models**	**Orientation in time and space** (boundaries)	**Using models we can represent an infinite solution set.**	A,B,C	**Communication Skills**	**Solving systems of equations and inequalities** **Linear programming**

Unit 7	**Inverses and Logarithms**	Key: **Relationships** Related: **Patterns** **Generalization**	**Scientific and technical innovation** (Systems and processes)	**We use relationships to reverse the solution process and build new equations.**	A,B	**Thinking Skills**	**Finding Inverses Using and transforming logarithmic equations.**
Unit 8	**Trigonometric Functions**	Key: **Form** Related: **Measurement** **Patterns**	**Orientation in time and space** (duration & frequency)	**Measurement in trigonometry is enhanced by recurring patterns.**	A,B,D	**Thinking Skills**	**Cyclic functions** **Unit Circle and Trigonometry** **Radian Measure**
Unit 9	**Polynomials**	Key: **Logic** Related: **Equivalence** **Patterns**	**Personal and cultural expression** (abstract thinking)	**Using logic, we can expand the parameters of our number system.**	A,B	**Thinking Skills**	**Graphing polynomials complex roots and imaginary numbers**