

## MATH 2019-2020

	Grade / Unit Title	Time Frame	SOI	<u>Key concepts</u> Pg. 18/19 (Form, Logic, Relationships)	<u>Related Concepts</u> Pg. 52 (Change, Equivalence, Generalization, Justification, Measurement, Model, Pattern, Quantity, Representation, Simplification, Space, System)	<u>Global Context</u> -Identities & Relationships -Orientation in Time & Place -Personal & Cultural Expression -Scientific and Technical Innovation -Globalization & Sustainability -Fairness & Development	ATLs	Criterion Assessed	Content (standards, topics, knowledge, skills)
6	<a href="#">Arithmetic and Area</a>	Sept		Logic	System (Structure) Measurement	Scientific and Technical Innovation	Critical Thinking Collaboration	A	Skills <ul style="list-style-type: none"> <li>• Multiple using rectangles, generic rectangles, and algorithm</li> <li>• Distributive Property</li> <li>• Find the Greatest Common Factor</li> </ul>
6	<a href="#">Portions and Integers</a>	Oct	Exploring the relationships between equivalent representations will help us understand the scale of a number.	Relationships	Equivalence, Representation	Orientation in Time and Space	Communication Transfer	A, B	Skills <ul style="list-style-type: none"> <li>• Use percents, decimals, and fractions to describe a portion of a whole.</li> <li>• Represent portions as percents, decimals, and fractions with pictures, symbols, and words.</li> <li>• Find the decimal form of a number when it is given as a percent or fraction.</li> <li>• Connect ratios to portions as ways to represent comparisons of parts</li> </ul>
6	<a href="#">Variables and Ratios</a>	Nov	Logic can be used to generalize, justify, and solve mathematical puzzles.	Logic	Generalization, Justification	Scientific and Technical Innovation	Critical Thinking Communication	A, C	Skills <ul style="list-style-type: none"> <li>• Write equivalent expressions</li> <li>• Use variables</li> <li>• Enlarge/reduce ratios</li> </ul>
6	<a href="#">Multiplying Fractions and Area</a>	Dec	Form can be expressed as an aesthetic model which communicates our philosophies and ways of life.	Form	Model, Measurement,	Personal and Cultural Expression	Creative Thinking Organization	A, D	Skills <ul style="list-style-type: none"> <li>• Multiply fractions, mixed numbers and decimals</li> <li>• Find the area of shapes (rectangles, triangles, parallelograms, etc.)</li> </ul>

6	<a href="#">Dividing and Building Expressions</a>	Jan	Equivalent and interdependent relationships can be discovered by following a pattern.	Relationships	Pattern, Equivalence	Scientific and Technical Innovation	Reflection Affective	A, B	Skills <ul style="list-style-type: none"> <li>Divide fractions, mixed numbers, and decimals</li> </ul>
6	<a href="#">Rates and Operations</a>	Mar		Logic	Justification, Model	Scientific and Technical Innovation	Transfer Communication	A, B	Skills <ul style="list-style-type: none"> <li>Compare rates using tables and graphs</li> <li>Unit Rates</li> <li>Divide fractions</li> </ul>
6	<a href="#">Statistics and Multiplication Equations</a>	April-May		Relationships	Generalization Representation	Identities and Relationships	Information Literacy Media Literacy	A, C, D	Skills <ul style="list-style-type: none"> <li>Find mean, median, interquartile range, box plots</li> <li>Find distance, rate and time.</li> </ul>
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7	<a href="#">Portions Web</a> - Ch. 1 + 4.3	Aug - Sept.	Equivalent values, expressed as different forms, can be used to represent and calculate the relationship between changing quantities and rates.	Form	Change, equivalence, representation	Scientific and technical innovation <ul style="list-style-type: none"> <li>Mathematical puzzles, principles and discoveries</li> <li>Adaptation, ingenuity and progress</li> </ul>	Collaboration	A - Unit test C - Poster of addition/subtraction fractions	Skills <ul style="list-style-type: none"> <li>Long division to determine if a fraction is repeating or terminating</li> <li>Converting fractions, percents, and decimals in each form</li> <li>Multiplying/dividing to rewrite equivalent fractions</li> <li>Add and subtract fractions with unlike denominators</li> <li>Identify terms in an expression and simplify using order of operations</li> <li>Diamond problem process</li> <li>Calculate area and perimeter of 2-D shapes</li> </ul> Standards <ul style="list-style-type: none"> <li>NS A. 1, 2D, 3</li> <li>NS G.B. 6</li> </ul>

7	<a href="#">Picture me This</a> - Integer operations (Ch. 2 - 3)	Sept. - Oct.	Mathematicians use an <b>artistry and craft</b> between the <b>relationships</b> of numbers and <b>equivalent</b> values to <b>simplify</b> real life problems.	Relationships	Simplification, Equivalence	Personal and Cultural Expression <ul style="list-style-type: none"> <li>• Artistry, craft, creation, and beauty</li> </ul>	Organization, Critical Thinking	A - Unit test B/C - Rules of Integer Operations A/C/D - Picture Me This	<b>Skills</b> <ul style="list-style-type: none"> <li>• Compute operations (add, subtract, multiply, divide, exponents) with rational numbers</li> <li>• Write and solve word problems with rational numbers</li> <li>• Identify terms to simplify an expression</li> </ul> <b>Standards</b> <ul style="list-style-type: none"> <li>• EE A. 1</li> <li>• NS A. 1, 1A, 1B, 1C, 1D, 2, 2A, 2B, 2C, 3</li> </ul>
7	<a href="#">Probability</a> - Ch. 1 + 5 CPM	Oct. - Dec.	People can <b>change</b> the <b>risks of opportunities</b> by looking at different <b>representations</b> of probabilities to <b>justify</b> if a <b>logical</b> decision is made.	Logic	Change, Quantity, Representation	Scientific and technical innovation <ul style="list-style-type: none"> <li>• Opportunity, risk, consequences and responsibility</li> </ul>	Critical thinking	A +D - Unit test	<b>Skills</b> <ul style="list-style-type: none"> <li>• Add and subtract fractions with unlike denominators</li> <li>• Theoretical and experimental probability</li> <li>• Dependent vs. independent events</li> <li>•</li> </ul> <b>Standards</b> <ul style="list-style-type: none"> <li>• SP C 5, 6, 7, 8</li> <li>• EE A 2</li> </ul>
7	<a href="#">Solving Equations</a> - Ch. 6	Jan - Feb.	<b>Forming patterns</b> of <b>equivalent</b> values <b>models</b> the <b>processes</b> in <b>simplifying</b> equations to <b>produce solutions</b> .	Form	Equivalence, Pattern, Simplification	Scientific and technical Innovation <ul style="list-style-type: none"> <li>• systems, models, methods; products, processes and solutions</li> <li>• mathematical puzzles, principles and discoveries</li> </ul>	Affective Skills	A - test	<b>Skills</b> <ul style="list-style-type: none"> <li>• Identify and combine like terms in algebraic expressions</li> <li>• Calculate area and perimeter</li> <li>• Define a variable when setting up an equation for a word problem</li> <li>• Identify relationships between amounts in a word problem</li> <li>• Simplify and compare two algebraic expressions</li> <li>• Write and solve algebraic inequalities</li> <li>• Determine what a solution is and what it does for a situation/equation</li> <li>• Solve for a variable when two expressions are equal <ul style="list-style-type: none"> <li>○ One solution - check solution</li> <li>○ No solution</li> <li>○ All real numbers = infinite solutions</li> </ul> </li> <li>• Write and solve an equation to solve a word problem</li> </ul> <b>Standards</b> <ul style="list-style-type: none"> <li>• EE B1, B3, B4</li> <li>• NS A1, A2, A3</li> </ul>

7	<a href="#">Honey, I Shrunk my Room: Ratios, Rates, and Proportions</a> - Ch. 1, 4 + 7	Feb. - April	In <b>artistry and craft</b> it is important to consider how <b>patterns</b> can be used to show the <b>relationships</b> of <b>equivalent measurements</b> .	Relationships	Measurement, Equivalence, Patterns	Personal and Cultural Expression		Scale Drawing Bedroom (B/D), Ratio poster (B/C/D),	<p><b>Skills</b></p> <ul style="list-style-type: none"> <li>Solve equations that have fractional or decimal coefficients.</li> <li>Set up and find solutions to problems involving proportional relationships.</li> <li>Identify proportional relationships in tables, graphs, and equations.</li> <li>Use multiple strategies to solve a proportional relationship.</li> <li>Calculate unit rates</li> <li>Solve problems involving distance, rate, and time.</li> <li>Find the whole amount if you only know a percentage of it, and visa-versa</li> </ul> <p><b>Standards</b></p> <ul style="list-style-type: none"> <li>G A1</li> <li>EE A2, B3,</li> <li>RP A1, A2A, A2B, A2C, A2D, A3</li> </ul>
7	<a href="#">Monster Mash</a> - Ch. 9	May	Artists and developers use tools to <b>measure</b> and <b>create</b> shapes to <b>logically</b> form <b>patterns</b> .	Logic	Pattern, measurement, quantity	Personal and Cultural Expression		A, C, D	<p><b>Skills</b></p> <ul style="list-style-type: none"> <li>Calculate the area and perimeter of basic 2-D shapes (rectangle, rhombus, parallelogram, triangle, and circle)</li> <li>Determine the area of composite shapes and shapes missing chunks/pieces</li> <li>Construct different triangles</li> <li>Classify and name types of triangles</li> <li>Classify angles relationships (supplementary, adjacent, complimentary, obtuse, right, acute, vertical)</li> <li>Calculate surface area and volume of 3-D shapes (spheres, cones, cubes, prisms)</li> </ul> <p><b>Standards</b></p> <ul style="list-style-type: none"> <li>G A2, A4, A5, A6</li> </ul>
	<b>Grade / Unit Title</b>	<b>Time Frame</b>	<b>SOI</b>	<b>Key concepts</b> <b>Pg. 18/19</b> (Form, Logic, Relationships )	<b>Related Concepts</b> <b>Pg. 52</b> (Change, Equivalence, Generalization, Justification, Measurement, Model, Pattern, Quantity, Representation,	<b>Global Context</b> -Identities & Relationships -Orientation in Time & Place -Personal & Cultural Expression -Scientific and Technical Innovation	<b>ATLs</b>	<b>Criterion Assessed</b>	<b>Content (standards, topics, knowledge, skills)</b>

					Simplification, Space, System)	-Globalization & Sustainability -Fairness & Development			
8	<a href="#">Simplifying Expressions</a> Ch. 2	Aug - Sept.	Humans <b>form</b> solutions by <b>adapting</b> to <b>changing quantities</b> and learning from <b>equivalent</b> situations.	Form	Change, Equivalence, Quantity	Scientific and Technical Innovations		A - Unit test	<p><b>Skills</b></p> <ul style="list-style-type: none"> <li>• What a variable is and how to use it when writing algebraic expressions</li> <li>• Write and simplify algebraic expressions</li> <li>• Compare two algebraic expressions to determine which is greater, if possible</li> <li>• Solve for a variable if you know that two expressions are equal</li> <li>• Evaluate algebraic expressions for given values of a variable</li> <li>• Solve a word problem using the 5-D Process or by writing and solving an equation</li> </ul> <p><b>Standards</b></p> <ul style="list-style-type: none"> <li>• EE C7A, C7B</li> </ul>
8	<a href="#">Graph, tables, rules, multiple representations</a> Ch. 3.1 + 4	Sept. - Oct.	Using multiple <b>representations</b> to <b>model</b> equivalent <b>relationships</b> creates a <b>system</b> that analyzes data using various measures to be competitive in a growing <b>market</b> .	Relationships	Model, System, Representation	Globalization and Sustainability	Reflection: Develop new skills, techniques, and strategies for effective learning.	B/C - Team Poster of Quadratic function B/C -Individual Poster of multiple representations	<p><b>Skills</b></p> <ul style="list-style-type: none"> <li>• How to find a rule from a table.</li> <li>• How to represent a situation using a table, a rule, and a graph.</li> <li>• How to graph linear and parabolic rules using an appropriate scale.</li> <li>• What it means for something to be the solution to an equation, and what it means for an equation to have no solution.</li> <li>• How to determine the number of solutions to an equation.</li> <li>• How to change any representation of data (such as a pattern, table, graph or rule) to any of the other representations.</li> <li>• How to use the connections between patterns, tables, graphs, and rules to solve problems.</li> </ul> <p><b>Standards</b></p> <ul style="list-style-type: none"> <li>• EE B5, B6, C7A, C7B</li> </ul>

									<ul style="list-style-type: none"> <li>F A2, A3, B4, B5</li> </ul>
8	<a href="#">Math Land</a> Ch. 4, 3.2, 7.2, + 5	Oct. - Dec.	Using multiple <b>representations</b> to <b>model</b> equivalent <b>relationships</b> creates a <b>system</b> that analyzes data using various measures to be competitive in a growing <b>market</b> .	Relationships	Model, System, Representation	Globalization and Sustainability		A - Unit test, C (written response for questions), D (Graphs and equations)	<b>Skills</b> <ul style="list-style-type: none"> <li>How to change any representation of data (such as a pattern, table, graph or rule) to any of the other representations.</li> <li>How to use the connections between patterns, tables, graphs, and rules to solve problems.</li> <li>How to solve multi-variable equations for one of the variables.</li> <li>How to solve equations with fractional coefficients.</li> <li>How to find the point where two lines intersect.</li> <li>How to solve a system of equations.</li> <li>Measure the steepness of a line by using slope.</li> <li>Find the slope of a line given its equation, its graph, or any two points on the line.</li> <li>How to write an equation of a line in slope-intercept form</li> <li>How to graph an equation using intercepts</li> </ul> <b>Standards</b> <ul style="list-style-type: none"> <li>EE A2, B5, B6, C8A, C8B, C8C</li> <li>F A2, A3, B4, B5</li> <li>SP A3</li> </ul>
8	<a href="#">You Can't Sustain us</a>  - Taught as an interdisciplinary unit with Science (waste/sus)	Dec. - Jan.	Modeling with data can be used to justify and interpret <b>relationships</b> between human choice/population of resources and their impact on Earth's systems.	Relationships	Model, Pattern, justification	Globalization and sustainability		A, B, C, D	<b>Skills</b> <ul style="list-style-type: none"> <li>Create a scatter plot given a set of bivariate data.</li> <li>Create a line of best fit given a set of bivariate data.</li> <li>Calculate the average from a set of data and use this to create a line of best fit.</li> <li>Determine the equation of a line of best fit.</li> <li>Determine the correlation and trend of a set of bivariate data.</li> </ul>

	tainable resources)							<ul style="list-style-type: none"> <li>Interpret the relationship between the independent and dependent variables in a set of bivariate data.</li> <li>Construct an "If-then" statement using independent and dependent variables correctly</li> <li>Identify any outliers in a set of bivariate data when graphed as a scatter plot.</li> <li>Use an equation or line of best fit to estimate a predicted value from a set of data.</li> </ul> <p><b>Standards</b></p> <ul style="list-style-type: none"> <li>EE A4, B5, B6,</li> <li>F A3, B4, B5</li> <li>SP A1, A2, A3, A4</li> </ul>	
8	<a href="#">Transformations</a> - Ch. 6	Jan.. - Feb.	Changing space can allow an opportunity for discovering new patterns between the relationships of mathematical puzzles.	Relationships	Pattern, Space, Change	Scientific and Technical Innovation	Thinking: Creative and Transfer	B (what shapes will tessellate), C, D	<p><b>Skills</b></p> <ul style="list-style-type: none"> <li>Transform shapes by reflecting (flipping), rotating (turning), and translating (sliding) them on a coordinate graph.</li> <li>Describe movement of a shape or points on a graph using coordinate notation and expressions.</li> <li>Compare shapes and use similarity to find missing side lengths of polygons, especially triangles.</li> <li>Transform shapes by dilating shapes</li> <li>The difference between similar and congruent shapes and their relationship to transformations</li> </ul> <p><b>Standards</b></p> <ul style="list-style-type: none"> <li>F A3</li> <li>G A1, A2, A3, A4</li> </ul>
8	<a href="#">Exponents</a> - Ch. 8	Mar. - April	Simplification requires an understanding and logical	Logic	Simplification, system, equivalence	Scientific and Technical Innovation		A/C - presentation	<p><b>Skills</b></p> <ol style="list-style-type: none"> <li>Calculate simple and compound interest.</li> <li>Be able to interpret a simple interest and compound interest expression.</li> </ol>

			application of rules within a system.					<ol style="list-style-type: none"> <li>3. Determine whether a relationship grows linearly or exponentially.</li> <li>4. Write a number in Scientific notation and standard form</li> <li>5. Perform operations with numbers in scientific notation</li> <li>6. Simplify expressions using exponent rules <ol style="list-style-type: none"> <li>a. Product of Powers</li> <li>b. Power of Powers</li> <li>c. Quotient of powers</li> <li>d. Negative Exponents</li> </ol> </li> <li>7. Determine if a relationship is a function by looking at a table or graph</li> <li>8. Evaluate a function to determine the input given an output and determine the output given the input.</li> </ol> <p><b>Standards</b></p> <ul style="list-style-type: none"> <li>• EE A1, A2, A3, A4</li> <li>• F A1, B3</li> </ul>
8	<a href="#">As the Crow flies</a> - Ch. 9	April - May	Logic is a powerful tool for justifying what we discover through measurement and observation.	Logic	Measurement, Pattern, Justification	Orientation in Time and Space	C/D - Poster of "crow flies"	<p><b>Skills</b></p> <ul style="list-style-type: none"> <li>• Find the measurement of missing angles made by a line that intersects parallel lines <ul style="list-style-type: none"> <li>◦ Angle relationships: same side interior, corresponding, complimentary, alternate interior, vertical, supplementary, right, acute, obtuse</li> </ul> </li> <li>• Find unknown angles inside and outside of triangles</li> <li>• Determine if three sides make a triangle and classify the triangle they make, if possible</li> <li>• Determine if two triangles are similar by looking at their angles</li> <li>• Find missing side lengths of right triangles using the Pythagorean Theorem</li> <li>• Convert terminating and repeating decimals to fractions</li> <li>• Approximate square roots</li> </ul>



									<b>Standards</b> <ul style="list-style-type: none"> <li>• NS A1, A2</li> <li>• EE A2</li> <li>• G A5, B6, B7, B8</li> </ul>
8	<a href="#">Finding Malaysia Airlines - Ch.10</a>	May - June	Understanding the searchable <b>space</b> and time assists rescuers in <b>logically</b> <b>justifying</b> the <b>risks</b> .	Logic	Space, measurement, Justification	Scientific and technical innovation		A, C, D (poster)	<b>Skills</b> <ul style="list-style-type: none"> <li>• Find the cube root of a number</li> <li>• Calculate the area of basic 2-D shapes (circle, rectangle, rhombus, triangle, etc)</li> <li>• Find equivalent ratios and apply ratios to predict other amounts</li> <li>• Correctly convert between different units</li> <li>• Find the surface area of cylinders and pyramids.</li> <li>• Calculate the volume of prisms, cylinders, cones, and spheres.</li> </ul> <b>Standards</b> <ul style="list-style-type: none"> <li>• EE A4</li> <li>• G C9</li> </ul>