Math Department Curriculum Map Template, 2018-19

Subject: Algebra A sheltered/core
Textbook: McGraw Hill (Glencoe) 2018 Edition and Emathinstruction Algebra I

Marking Periods	Unit Title (Big Idea/Major Focus)	Topics/Skills	Evidence of Learning (Assessments)	Resources (texts, online tools, etc.)
Marking Period 1	1 - Building blocks of Algebra Enduring Understanding: ● There is meaning to the structure of an expression. ● Different number sets may be more appropriate than others given the context of a situation. ● The product of two irrational numbers is NOT always irrational. Essential Questions: ● Is a number just a number? ● How do we use the properties of real numbers to manipulate expressions? ● How do we translate english into mathematics - and why would we do it?	*Real Numbers* ● Classifying Real Numbers (Rational vs. Irrational and the Real Number System) ● Properties of Real Numbers (commutative, associative, distributive, zero product, inverses, identities, properties of equality) *Variables and Expressions* (algebraic and verbal representations) ● Evaluating expressions ○ Order of operations ○ Substitution ○ Using the graphing calculator ● Simplifying expressions - combining like terms ● Translating English to Algebraic Expressions and vice versa **Rates* ● Conversions, speed, using rate ***Vocabulary:*** *Commutative, Associative, Distributive, Zero product, additive/multiplicative identity, additive/multiplicative inverse, simplify, evaluate, combine, variable, expression, equation, coefficient, exponent, PEMDAS, reciprocal, substitution, more than, less than, equivalence, structure, rate, proportion,*	❑ Pre-Assessment Check ❑ Performance Tasks ❑ Quizzes ❑ Castle Learning ❑ Exit Tickets ❑ Do Nows ❑ Class Discussion ❑ Daily Handouts ❑ Unit Review and Re-engagement Activities ❑ Unit Exam	EMathinstruction.com Unit #1 McGraw Hill 2018 - Chapter 0, Chapter 1 ● Jmap.org ● Mathbits.com ● Engageny.org ● Bigideasmath.com ● Problem Attic ● Kuta Software ● Castle Learning ● Delta Math
Marking Period 2	2 - One Variable Equations and Inequalities Enduring Understanding: ● A solution set makes an equation or inequality true ● Equations or inequalities can be represented in multiple and equivalent ways Essential Questions: ● Is an equation always true? ● What are the similarities and differences of equations and inequalities? ● Can the solution to an equation be something other than a number? ● How can expressions, equations and inequalities by transformed to find solutions?	*Equations in one variable* (algebraic and verbal representations) ● Solving Equations in one variable ○ Two-step, multi-step (and checking solutions) ○ Fractions/Decimals (and checking solutions) ○ Variables on both sides (and checking solutions) ○ Alternative Solutions (infinite and no solution) ○ Literal Equations ○ Translating English to Algebraic equations and vice versa *Inequalities in one variable* ● Comparing equations to inequalities (one solution vs. infinite) ● Express solution set of inequalities AND compound inequalities ○ Algebraically, Verbally ○ Graphically/number line (open vs. closed circle) ○ set builder/**interval notation* ● Solving inequalities ○ Comparing solving equations to inequalities ○ Solving multi-step inequalities (and checking possible solution) ○ Variables on both sides (and checking possible solutions) ○ Translating English to Algebraic equations and vice versa ***Vocabulary:*** *sum, difference, product, quotient, total, is less than, is greater than, equal to, not equal to, maximum, minimum, at least, at most, included, excluded, solution,*	❑ Pre-Assessment Check ❑ Performance Tasks ❑ Quizzes ❑ Castle Learning ❑ Exit Tickets ❑ Do Nows ❑ Class Discussion ❑ Daily Handouts ❑ Unit Review and Re-engagement Activities ❑ Unit Exam	EMathinstruction.com Unit #2 McGraw Hill 2018 - Chapter 2, Chapter 5 Online Resources: ● Jmap.org ● Mathbits.com ● Engageny.org ● Bigideasmath.com ● Problem Attic ● Kuta Software ● Castle Learning ● Delta Math

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		infinite solutions, set builder notation,interval, interval notation, manipulation, isolate		
Marking Period 3	3 - Functions Enduring Understanding: ● Functions can be represented in multiple, equivalent ways ● Function rules describe the quantitative relationship between variables Essential Questions: ● How do we measure change? ● Are all equations functions? Can you solve a function? ● Can an input have multiple outputs?	<u>*Relations*</u> ● Define a relation ● Identify and state Domain and Range from a graph, set, table, or mapping using set-builder notation (**interval notation*) ● Rate of Change ○ Calculate the rate of change given a rule, graph, table ○ Comparing rates given table, rule, or graph <u>*Functions*</u> ● Define a function ● Determine if a relation is a function from a table, rule (emphasize y= in graphing calculator), graph (vertical line test), set, mapping diagrams ● Matching and comparing between different representations. ● Function Notation and Evaluate a function algebraically, graphically and from a table or set (linear/absolute value/exponential/quadratic/square root). ● Interpreting a graph in context of a real world situation ○ Increasing, decreasing, rate of change ● Determine most appropriate domain from real number system given real word context. ***Vocabulary**: relation, functions, input, output, domain, range, vertical line test, coordinate plane, linear, absolute value, exponential, quadratic, square root, function notation, mapping diagram,*	❏ Pre-Assessment Check ❏ Performance Tasks ❏ Quizzes ❏ Castle Learning ❏ Exit Tickets ❏ Do Nows ❏ Class Discussion ❏ Daily Handouts ❏ Unit Review and Re-engagement Activities ❏ Unit Exam	EMathinstruction.com Unit #3 McGraw Hill 2018 - Chapter 1, Chapter 3 ● Jmap.org ● Mathbits.com ● Engageny.org ● Bigideasmath.com ● Problem Attic ● Kuta Software ● Castle Learning ● Delta Math
	4 - Linear Functions and Inequalities Enduring Understanding: ● A constant rate of change distinguishes a linear function from other functions. ● Linear functions can be used to make predictions in real world situations. Essential Questions: ● Why are lines straight? ● Where do lines begin? ● What real world situations can be modeled by linear functions?	<u>*Linear Functions*</u> ● Define linear function and identify the features of the function for standard and slope- intercept forms. ● Graph a linear function (emphasize y= in graphing calculator) ○ Given rule (slope-intercept form and standard form - converting to slope-intercept), table of values ○ Horizontal and Vertical Lines ● Determine the equation of a line in slope-intercept form ○ Given m and b, m and a point, two points, a graph, a table, equation in standard form, basic verbal representation ● Matching and comparing between different representations of linear functions. ● Create a linear function rule given a word problem. ○ interpret the meaning of the components in the context of the problem. ○ Solve for indicated inputs or outputs algebraically, graphically, or using a table. ● Linear Regression ○ Create and Interpret Scatter plots ■ Discuss causation vs. correlation ○ Use the graphing calculator to determine equation of the line of best fit using linear regression. Identify and interpret correlation coefficient(Stat-Diagnostics). ○ **Residual plots* ○ Use regression to determine equation of a line given two points or a table. ● ** Introduction to Sequences* ○ *Domain of sequences* ○ *Sequence notation (include a_n and f(n))* ○ *Recursive Sequences* ○ *Arithmetic Sequences*	❏ Pre-Assessment Check ❏ Performance Tasks ❏ Quizzes ❏ Castle Learning ❏ Exit Tickets ❏ Do Nows ❏ Class Discussion ❏ Daily Handouts ❏ Unit Review and Re-engagement Activities ❏ Unit Exam	EMathinstruction.com Unit #4 & Unit #10 McGraw Hill 2018 - Chapter 4, Chapter 5 ● Jmap.org ● Mathbits.com ● Engageny.org ● Bigideasmath.com ● Problem Attic ● Kuta Software ● Castle Learning ● Delta Math

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		■ *Comparing the equivalent linear function rule to an arithmetic sequence in explicit form.* ■ *Determine the indicated term using the arithmetic sequence.* *<u>Linear Inequalities</u>* ● Graph a linear inequality on the coordinate plane. ● Determine if a point is a solution to the inequality graphically and algebraically. ● Create a linear inequality from a word problem and state a possible solution. ***Vocabulary**: Line, Point, Slope, constant rate of change, initial value, y-intercept, x-intercept, dashed line, solid line, solution region, scatter plots, linear regression, correlation, correlation coefficient, strong, causal, Sequence, Recursive, Arithmetic, common difference, term,*		
Marking Period 4	5 - Systems of Linear Equations and Inequalities Enduring Understanding: ● Systems of linear equations can be used to model problems when there are multiple variables. ● Systems of equations can be solved by graphing, substitution, or eliminating a variable. Essential Questions: ● What does the number of solutions (none, one or infinite) of a system of linear equations represent? ● What are the advantages and disadvantages of solving a system of linear equations graphically versus algebraically?	*<u>Systems of Linear Equations</u>* ● Define a system of equations and when we use them (solving for more than one unknown value) and interpreting the meaning of the solution. ● Identify types of linear systems: consistent (dependent -infinite solution vs. independent -unique solution) and inconsistent (no solution) ● Solve the system graphically and state the solution (intersection point) ● Solve the system from a table ● Solve the system algebraically (and checking) ○ Substitution ○ Elimination by addition ● Use the structure of the system to determine the best method for solving. ● Create a system of equations given a real world situation and solve. ○ Interpret the solution in the context of the problem. *<u>Systems of Linear Inequalities</u>* ● Solve a system of linear inequalities by graphing. Identify and indicate the solution region with an “S” or provided variable. ● Create a system of linear inequalities given a verbal situation and state a possible solution. ***Vocabulary**: System of equations, consistent, inconsistent, dependent, independent, Elimination, simultaneous, coincide, parallel lines, intersecting, at least, at most, the same as, viable*	❑ Pre-Assessment Check ❑ Performance Tasks ❑ Quizzes ❑ Castle Learning ❑ Exit Tickets ❑ Do Nows ❑ Class Discussion ❑ Daily Handouts ❑ Unit Review and Re-engagement Activities ❑ Unit Exam	EMathinstruction.com Unit #5 McGraw Hill 2018 - Chapter 6 ● Jmap.org ● Mathbits.com ● Engageny.org ● Bigideasmath.com ● Problem Attic ● Kuta Software ● Castle Learning ● Delta Math
Summer	**Summer Assignment: Algebra I Summer Assignment**			