

GCS Curriculum Map for Math 1 (8th grade)

Year at a Glance

Quarter	1	2	3			4		
Module	Equations and Functions	Linear Equations	Systems of Equations & Inequalities	Exponential Functions	Polynomials	Quadratics	Midpoint & Distance	Statistics
Time Frame	29 days	42 days	27 days	5 days	24 days (run into Q4)	23 days	11 days	9 days
Standards	A-CED.4 F-BF.1a F-IF.1 F-BF.2 F-IF.2 F-LE.1 F-IF.3	F-IF.6 F-BF.1a F-IF.7 A-REI.1 F-LE.1 A-REI.3 F-LE.5 S-ID. 6a A-SSE.1a S-ID.7 A-SSE.1b S-ID.8 A-CED.1 S-ID. 6b A-CED.2 S-ID. 9 F-IF.5 G-GPE.5 F-IF.9	A-CED.3 A-REI.3 A-REI.6 A-REI.5 A-REI.10 A-REI.11 A-REI.12	A-SSE.1a F-LE.1 A-CED.1 F-LE.3 A-CED.2 F-LE.5 F-IF.7 S-ID.6c F-IF.8a F-BF.1a	A-APR.1 A-SSE.3 F-BF.1b N-RN.2 G-GPE.4	A-SSE.3 F-IF.4 A-APR.3 F-IF.5 A-REI.1 F-IF.7 A-REI.4 F-LE.3 A-CED.1 F-IF.9 A-CED.2	G-GPE.4 G-GPE.6	S-ID.1 S-ID.2 S-ID.3

GCS Curriculum Map for Math 1

Module A: Equations and Functions Essential Questions: - How can we use opposite operations to solve for specific variables in a formula? - What is needed to create a formula rule for an arithmetic and geometric sequence? - What is the difference between a Recursive and Explicit equation? When is one better than the other? - What is function notation, and how is it used to evaluate and combine functions?		Timeline: 29 days
Performance Event: Students will create an arithmetic sequence problem and a geometric sequence problem for a classmate to solve.		
Mastery Objectives: SWBAT (without the use of technology): - Solve for specific variable when given an equation/formula - Create Next/Now statements when given a sequence of numbers - Distinguish between an arithmetic and geometric sequence - Create a Recursive Formula and use it to find a requested value in a sequence - Create an Explicit Formula and use it to find a requested value in a sequence - Analyze a given sequence and translate it from recursive/explicit and back - Determine the common difference and common ratio when only given two various locations and values from a sequence - Know and understand the characteristics of functions - Use function notation properly - Evaluate functions using function notation - Evaluate compound functions by adding, subtracting, and multiplying parent functions using function notation		
Vertical Alignment		
Previous Grade Level Standards	Grade Level Standards	Next Grade Level Standards

NC.7.NS.1 NC.7.NS.2 NC.7.EE.1 NC.7.EE.2 NC.7.EE.4	A-CED.4 F-BF.1a F-IF.1 F-BF.2 F-IF.2 F-LE.1 F-IF.3	NC.M2.A-APR.1 NC.M2.A-CED.1 NC.M2.A-CED.2 NC.M2.A-REI.1 NC.M2.F-IF.1 NC.M2-F-IF.4
Instructional Resources		
Tier III Vocabulary: Formula Domain Variable Range Expression Coefficient Exponent Sequence Function Arithmetic Recursive Geometric Explicit Function Notation Parent Function Common Difference Common Ratio	Performance Tasks:	Additional Resources NC Math 1 • Unpacked Contents NC Math I Standards Math I Canvas Tutor Modules NC 7th Grade Math - Unpacked Contents NC Math 2 - Unpacked Contents
Remediation Skills, Extensions and Considerations:		
Subtopics		Days
Literal Equations (A-CED.4)		6
Quiz		1
Sequence: Next/Now (F-IF.3)		2
Sequence: Recursive (F-IF.3, F-BF.2)		3
Quiz		1
Sequence: Explicit (F-IF.3, F-BF.2)		3

Sequence: Recursive vs Explicit (F-IF.3, F-BF.1a, F-BF.2, F-LE.1)	3
Common Difference (F-IF.3)	3
Quiz	1
Evaluating Functions (F-IF.1, F-IF.2)	3
Review	2
Major Test	1
LIS strategies identified	

Module B: Linear Equations Essential Questions: - What is slope and how does its value affect the behavior of a linear equation and its graph? - What is needed to create a linear equation when given a table or a graph? - What determines the relationship between parallel and perpendicular lines? - How do we use data to form a regression equation and how do we use it to make predictions about the data? - What do the values of the residuals tell us about the relationship between the data and the regression equation? - What is the difference between Correlation and Causation of data?	Timeline: 42 days
Performance Event: Students will create their own scenario representing a proportional relationship with a constant rate of change using academic vocabulary, and then create two visual representations for it (on a graph and as a table).	
Mastery Objective:	

SWBAT (without the use of technology - except regression equation):

- Determine slope using a graph, points, and equation
- Create and analyze a linear equation in slope-intercept form
- Create and analyze a linear equation in standard form
- Translate a linear equation between slope-intercept and standard forms
- Graph a linear function using an equation in slope-intercept and standard forms
- Understand the characteristics of parallel and perpendicular lines
- Create equations involving parallel and perpendicular lines with given information
- Analyze and solve real world problems showing linear behavior
- Using given data, find a linear regression model using TI-83 and Desmos
- Analyze and use a linear regression model equation to solve problems and make predictions
- Find and analyze residuals values of a linear regression model equation
- Create and interpret residual plots to determine if data exhibits linear behavior
- Determine if given real world situations show correlation or causation between the independent and dependent values
- Analyze and compare characteristics of two or more functions using a graph, table, and equation

Vertical Alignment

Previous Grade Level Standards	Grade Level Standards	Next Grade Level Standards
NC.7.RP.2 NC.7.RP.3 NC.7.NS.1 NC.7.NS.2 NC.7.EE.1 NC.7.EE.2 NC.7.EE.4	F-IF.6 F-IF.7 F-LE.1 F-LE.5 A-SSE.1a A-SSE.1b A-CED.1 A-CED.2 F-IF.5 F-IF.9 F-BF.1a A-REI.1 A-REI.3 S-ID. 6a S-ID.7 S-ID.8 S-ID. 6b S-ID. 9 G-GPE.5	NC.M2.A-CED.1 NC.M2.A-CED.2 NC.M2.A-REI.1 NC.M2. F-IF.9

Instructional Resources

Tier III Vocabulary: Slope X-intercept Y-intercept Standard Form Parallel Perpendicular Linear	Performance Tasks:	Additional Resources NC Math 1 • Unpacked Contents NC Math I Standards
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Slope-Intercept Form Linear Regression Residual Plot Rate of Change Correlation Coefficient Correlation Causation Residuals		Math I Canvas Tutor Modules NC 7th Grade Math - Unpacked Contents NC Math 2 - Unpacked Contents
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Remediation Skills, Extensions and Considerations:

Subtopics	Days
Equations of Lines: Slope (F-IF.6, F-LE.1)	4
Quiz	1
Equations of Lines: Slope-Intercept Form (A-SSE.1a, A-SSE.1b, A-CED.2, F-LE.5)	3
Equations of Lines: Standard Form (A-SSE.1a, A-SSE.1b, A-CED.2, F-LE.5)	2
Equations of Lines: Parallel and Perpendicular Lines (G-GPE.5)	2
Review	1
Quiz	1
Linear Equations: Word Problems (A-CED.1, A-REI.1, A-REI.3, F-LE.5)	4
Quiz	1
Linear Regression (F-IF.6, F-IF.7, F-BF.1a, F-LE.1, F-LE.5, S-ID.6a, S-ID.7, S-ID.8)	5
Quiz	1
Review	2
Major Test	1

Residuals: Finding Residuals ((S-ID.6a, S-ID.8)	2
Residuals: Creating and Interpreting Residual Plots (S-ID.8)	3
Quiz	1
Residuals: Correlation vs Causation (S-ID.9)	2
Analyze and Compare Functions (A-SSE.1a), A-SSE.1b, F-IF.5, F-IF.6, F-IF.9, F-LE.5)	5
Quiz	1
LIS strategies identified	

Module C: Systems of Equations and Inequalities Essential Questions: - What are the different methods we can use to solve a system of equations? - Why is one method better than another depending on how the system is presented? - How do we create a system of equations when given a real world situation? - Why is there possibly more than one point of intersection when graphing systems of inequalities? What makes them different?	Timeline: 27 days
Performance Event: Students will use Desmos to write and solve a system of two linear equations to explore the numerical and graphical meaning of "solution." Systems Desmos Activity	
Mastery Objectives: SWBAT (without the use of technology until the end of the unit): - Solve a system of linear equations by graphing and finding the point of intersection - Solve a system of linear equations by eliminating one of the variable using multiplication and combining of equations - Analyze, create, and solve a system of linear equations given a real world situation - Determine the best method of solving a system of linear equations	

- Solve a systems of linear inequalities by graphing and finding the region of solutions - Use the TI-83 or Desmos to solve a systems of linear equations and inequalities (especially with word problems on the calculator active part of EOC)		
Vertical Alignment		
Previous Grade Level Standards	Grade Level Standards	Next Grade Level Standards
NC.7.NS.1 NC.7.NS.2 NC.7.EE.1 NC.7.EE.4	A-CED.3 A-REI.3 A-REI.6 A-REI.5 A-REI.10 A-REI.11 A-REI.12	NC.M2.A-CED.1 NC.M2.A-CED.2 NC.M2.A-REI.1 NC.M2.A-REI.7
Instructional Resources		
Tier III Vocabulary: System of Equations Point of Intersection Elimination Inequality Systems of Inequalities	Performance Tasks:	Additional Resources NC Math 1 • Unpacked Contents NC Math I Standards Math I Canvas Tutor Modules NC 7th Grade Math - Unpacked Contents NC Math 2 - Unpacked Contents
Remediation Skills, Extensions and Considerations:		
Subtopics		Days
Solve Systems by Graphing (solved for y) (A-CED.3)		2
Solve Systems by Graphing (NOT solved for y) (A-CED.3, A-REI.6)		3

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Quiz	1
Solve Systems by Elimination (A-CED.3, A-REI.5, A-REI.6)	3
Systems of Equation Word Problems (A-CED.3, A-REI.5, A-REI.6)	4
Quiz	1
Review	2
Major Test (without Technology)	1
Systems of Inequalities (without Technology) (A-CED.3, A-REI.3, A-REI.10, A-REI.12)	4
Quiz	1
Systems of Equations and Inequalities (with Technology) (A-CED.3, A-REI.11)	4
Quiz	1
LIS strategies identified	

Module D: Exponential Functions Essential Questions: - What makes an exponential function different from a linear function? - What pieces of information do we need when creating an exponential function? - How does a growth rate when compared to a decay rate affect the equation? What is different? - How can we use exponential data to create an equation using technology, and how do we use it to make predictions about the data? - How do we know if a linear or exponential regression equation is best?	Timeline: 5 days
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Performance Event:

Students will use the app/game “Plague” to create a virus and track its spread, then create a graph to represent their data.

<https://www.ndemiccreations.com/en/22-plague-inc>

Mastery Objectives:**SWBAT:**

- Create an exponential function given specific information in a real world word problem
- Analyze and identify the parts of an exponential function
- Identify the graph of an exponential function
- Find the rate of growth or decay when given an equation or table
- Given data, create an exponential regression equation, and use it to solve problems and make predictions
- Using the correlation coefficient, determine if the best fit for the data is a linear or exponential equation

Vertical Alignment

Previous Grade Level Standards	Grade Level Standards	Next Grade Level Standards
NC.7.RP.2 NC.7.RP.3 NC.7.EE.2 NC.7.EE.4	A-SSE.1a F-LE.1 A-CED.1 F-LE.3 A-CED.2 F-LE.5 F-IF.7 S-ID.6c F-IF.8a F-BF.1a	NC.M2.A-SSE.1a NC.M2.A-SSE.1b NC.M2.A-CED.1 NC.M2.A-CED.2 NC.M2.A-REI.1 NC.M2. F-IF.9

Instructional Resources

Tier III Vocabulary: Exponential Growth Decay Depreciate Appreciate Correlation Coefficient	Performance Tasks:	Additional Resources NC Math 1 • Unpacked Contents NC Math I Standards Math I Canvas Tutor Modules NC 7th Grade Math - Unpacked Contents
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		NC Math 2 - Unpacked Contents
Remediation Skills, Extensions and Considerations:		
Subtopics		Days
Growth and Decay (A-SSE.1a, A-CED.1, A-CED.2, F-IF.7, F-IF.8b, F-BF.1a, F-LE.1, F-LE.3, F-LE.5, S-ID.6c)		4
Quiz		1
LIS strategies identified		

Module E: Polynomials Essential Questions: - What determines if two terms are considered to be “like” terms? - Why do we add exponents for multiplying, but not for adding two terms? - What are ways we can organize our terms when adding or multiplying polynomials? - How can polynomials be useful in real world word problems?	Timeline: 24 days
Performance Event: Students will complete an error analysis assignment where they are given a set of problems dealing with operations of polynomials that have been worked out incorrectly and they have to work with their group to identify the mistake(s) and correct them.	
Mastery Objectives: SWBAT (without the use of technology): - Identify parts of a polynomial: name, degree, standard form, coefficient, constant, like terms - Combine polynomials by adding and subtracting like terms - Combine polynomials by multiplying (all types) - Use addition and multiplication in real world word problems, to include perimeter and area of various shapes - Factor polynomials completely using GCF, Difference of Squares, Multiply/Add tables, Slide and Divide method, etc	

Vertical Alignment		
Previous Grade Level Standards	Grade Level Standards	Next Grade Level Standards
NC.7.NS.1 NC.7.NS.2 NC.7.EE.1 NC.7.G.1 NC.7.G.4 NC.7.G.6	A-APR.1 F-BF.1b G-GPE.4 A-SSE.3 N-RN.2	NC.M2.N-RN.1 NC.M2.A-SSE.1a NC.M2.A-SSE.1b NC.M2.A-SSE.3 NC.M2.A-APR.1 NC.M2.A-REI.4a NC.M2.A-REI.4b
Instructional Resources		
Tier III Vocabulary: Polynomial Monomial Binomial Trinomial Degree Coefficient Leading Coefficient Like Terms Perimeter Area FOIL Box Method Factor GCF Slide & Divide	Performance Tasks:	Additional Resources NC Math 1 • Unpacked Contents NC Math I Standards Math I Canvas Tutor Modules NC 7th Grade Math - Unpacked Contents NC Math 2 - Unpacked Contents
Remediation Skills, Extensions and Considerations:		
Subtopics		Days
Adding and Subtracting Polynomials (A-APR.1, F-BF.1b)		3
Adding and Subtracting Polynomials with Shapes (G-GPE.4)		2
Quiz		1
Multiplying Polynomials (Monomial with a Polynomial) (R-RN.2, F-BF.1b, A-APR.1)		2

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Multiplying Polynomials (FOIL and BOX Method) (A-SSE.3, A-APR.1)	3
Quiz	1
Factor Polynomials: (Factor out GCF only) (A-SSE.3, F-BF.1b)	2
Factor Trinomials ($a=1$) (A-SSE.3, F-BF.1b)	3
Factor Trinomials ($a>1$) (A-SSE.3, F-BF.1b)	4
Review	2
Major Test	1
LIS strategies identified	

Module F: Quadratics Essential Questions: - What are the different forms of a quadratic function, and how is each one useful? - What information is needed to graph a parabola? - When using a quadratic function in a real world setting, what is each value from the graph telling us? - What are the benefits of using technology to graph a quadratic function over graphing by hand?	Timeline: 23 days
Performance Event: Students will construct various quadratics in Desmos to collect coins and stars in a series of Super Mario levels. Super Mario Quadratics	
Mastery Objectives: SWBAT (without the use of technology until end of unit): - Transform quadratic equations into standard form - Use factoring methods to find solutions to a quadratic	

- Understand the terminology of quadratics, and identify parts from an equation and a graph; axis of symmetry, vertex, y-intercept, x-intercepts, interval of increase, interval of decrease - Graph a quadratic equation - Use factorization methods to simplify and solve real world word problems, discussing possible and impossible solutions - Use technology (TI-83 or Desmos) to graph and find possible solutions to real world word problems		
Vertical Alignment		
Previous Grade Level Standards	Grade Level Standards	Next Grade Level Standards
NC.7.EE.1 NC.7.EE.2 NC.7.EE.4 NC.7.G.4 NC.7.G.6	A-SSE.3 A-APR.3 A-REI.1 A-REI.4 A-CED.1 A-CED.2 A-SSE.1a F-IF.8a F-IF.4 F-IF.5 F-IF.7 F-LE.3 F-IF.9	NC.M2.A-SSE.1a NC.M2.A-SSE-1b NC.M2.A-SSE.3 NC.M2.A-CED.1 NC.M2.A-CED.2 NC.M2.A-REI.1 NC.M2.A-REI.4a NC.M2.A-REI.4b NC.M2.A-REI.7 NC.M2.F-IF.8 NC.M2.F-IF.9 NC.M2.F-BF.1
Instructional Resources		
Tier III Vocabulary: Quadratic Parabola Vertex Axis of Symmetry Maximum/Minimum y-Intercept Solutions X-Intercepts Roots Zeros Factor	Performance Tasks:	Additional Resources NC Math 1 • Unpacked Contents NC Math I Standards Math I Canvas Tutor Modules NC 7th Grade Math - Unpacked Contents NC Math 2 - Unpacked Contents

Remediation Skills, Extensions and Considerations:

Subtopics	Days
Solve by Factoring (A-SSE.3, A-APR.3, A-REI.1, A-REI.4)	3
Solve Word Problems by Factoring (A-CED.1, A-REI.1, A-REI.4, F-IF.8a)	3
Review	1
Quiz	1
Understanding Quadratic Graphs (F-IF.4)	2
Finding Parts of a Parabola (F-IF.4, F-IF.5 F-IF.7)	2
Graphing Quadratics (A-SSE.1a, A-CED.2, F-IF.5, F-LE.3)	3
Quiz	1
Quadratic Word Problems (with Technology) (A-CED.1, F-IF.5, F-IF.7, F-IF.9)	4
Review	2
Major Test (2 parts, without Tech and with Tech)	1

[LIS strategies identified](#)**Module G: Midpoint and Distance****Essential Questions:**

- What are ways we can find the midpoint of a segment?
- How can we use the characteristics of a midpoint to solve real world problems?
- Why is a midpoint important when classifying polygons? How can it be used to prove the type

Timeline: 11 days

of polygon?		
Performance Event: Students will be given a midpoint and an endpoint on a graph and then work in pairs to find the other endpoint. Once they have the other endpoint, they will use the coordinates to draw conclusions to arrive at the midpoint formula.		
Mastery Objectives: SWBAT (without the use of technology): - Find the midpoint of a segment given the endpoints - Find the endpoint of a segment given the endpoint and midpoint - Find the length of a segment using the Distance Formula - Find the length of a segment using the Pythagorean Theorem - Use characteristics of a midpoint and the length of segments to solve real world word problems (identifying/proving shapes, finding perimeter/area, mapping on coordinate plane, etc)		
Vertical Alignment		
Previous Grade Level Standards	Grade Level Standards	Next Grade Level Standards
NC.7.NS.1 NC.7.NS.2 NC.7.EE.1 NC.7.EE.4 NC.7.G.1	G-GPE.4 G-GPE.6	NC.M2.G-SRT.4
Instructional Resources		
Tier III Vocabulary: Midpoint Segment Endpoint Distance Formula Pythagorean Theorem	Performance Tasks:	Additional Resources NC Math 1 • Unpacked Contents NC Math I Standards Math I Canvas Tutor Modules NC 7th Grade Math - Unpacked Contents

		NC Math 2 - Unpacked Contents
Remediation Skills, Extensions and Considerations:		
Subtopics		Days
Midpoint (G-GPE.4, G-GPE.6)		3
Distance: Pythagorean Theorem (G-GPE.4, G-GPE.6)		3
Distance: Distance Formula (G-GPE.4, G-GPE.6)		2
Practice day on Midpoint and Distance		2
Quiz		1
LIS strategies identified		

Module H: Statistics Essential Questions: - How can we organize data and provide probabilities for surveys, etc? - What is the 5 number summary and how does it describe a set of data? - What does the shape of a box and whisker plot tell us about the data? How can we use it in real world situations?	Timeline: 9 days
Performance Event: Students will find the measures of center from a real life sports example of statistics. Sport Stat Project Example	

Mastery Objectives: SWBAT: - Use two-way frequency tables to find percentages and probabilities - Find the mean, median, mode, range, quartiles, min/max - Use the 5 number summary to construct a box-and-whiskers plot - Use a box-and-whiskers plot to answer questions about real world word problems		
Vertical Alignment		
Previous Grade Level Standards	Grade Level Standards	Next Grade Level Standards
NC.7.SP.3 NC.7.SP.4 NC.7.SP.5 NC.7.SP.6 NC.7.SP.7	S-ID.1 S-ID.2 S-ID.3	NC.M2.S-IC.2 NC.M2.S-CP.1 NC.M2.S-CP.3a NC.M2.S-CP.4 NC.M2.S-CP.5
Instructional Resources		
Tier III Vocabulary: Frequency Table Range Probability Mean Box & Whisker Plot Median Maximum/Minimum Mode Standard Deviation Quartiles	Performance Tasks:	Additional Resources NC Math 1 • Unpacked Contents NC Math I Standards Math I Canvas Tutor Modules NC 7th Grade Math. - Unpacked Contents NC Math 2 - Unpacked Contents
Remediation Skills, Extensions and Considerations:		
Subtopics		Days
Two-Way Frequency Tables (S-ID.1, S-ID.2, S-ID.3)		3

Box and Whiskers (S-ID.1, S-ID.2, S-ID.3)	3
Review Midpoint/Distance and Statistics	2
Major Test	1
LIS strategies identified	