

# North Carolina Math 1A & B Extended Content Standards

## Standards for Mathematical Practice

1. Make sense of problems and persevere in solving them.
2. Reason abstractly and quantitatively
3. Construct viable arguments and critique the reasoning of others
4. Model with mathematics
5. Use appropriate tools strategically.
6. Attend to precision
7. Look for and make use of structure.
8. Look for and express regularity in repeated reasoning.

The ***Alternate Achievement Standards for Students With the Most Significant Cognitive Disabilities Non-Regulatory Guidance*** states, "...materials should show a clear link to the content standards for the grade in which the student is enrolled, although the grade-level content may be reduced in complexity or modified to reflect pre-requisite skills. Throughout the Standards descriptors such as, describe, count, identify, etc, should be interpreted to mean that the students will be taught and tested according to their mode of communication.

NC <u>Math 1</u>		<u>North Carolina Extended Content</u>	
<u>Standards</u>			
Number and Quantity			
The Real Number System			
Obj. #	<i>Extend the properties of exponents to rational exponents.</i>	<i>Objective #</i>	<i>Extend the properties of exponents to rational exponents.</i>
NC.M1.N-RN.2	Rewrite algebraic expressions with integer exponents using the properties of exponents.	NC.ECS.M1.N-RN.2	Determine the value of a quantity that is squared(up to 20) or cubed, (up to 10).
<b>Algebra</b>			

	Seeing Structure in Expressions <i>Interpret the structure of expressions.</i>		Seeing Structure in Expressions <i>Interpret the structure of expressions.</i>
NC.M1.A-SSE.1	Interpret expressions that represent a quantity in terms of its context.	NC.ECS.M1.A-SSE.1	Identify the different parts of the linear expression $(Ax + B)$ and explain their meaning within the context of a problem.
Seeing Structure in Expressions			
#	<i>Write expressions in equivalent forms to solve problems.</i>		<i>Write expressions in equivalent forms to solve problems.</i>
NC.M1.A-SSE 3	Write an equivalent form of a quadratic expression $ax^2 + bx + c$ , where $a$ is an integer, by factoring to reveal the solutions of the equation or the zeros of the function the expression defines.	NC.ECS.M1.A-SSE 3	Use the properties of operations to rewrite expressions. (distributive, commutative, associative).
Arithmetic with Polynomial Expressions			
#	<i>Perform arithmetic operations on polynomials.</i>		<i>Perform arithmetic operations on polynomials.</i>

NC.M1.A-APR.1	Build an understanding that operations with polynomials are comparable to operations with integers by adding and subtracting quadratic expressions and by adding, subtracting, and multiplying linear expressions.	NC.ECS.M1.A-APR.1	Add and subtract quadratic expressions $(2x^2 + 3x - 1) - (x^2 + 4x - 2)$ .
<b>Creating Equations</b>			
	<i>Create equations that describe numbers or relationships.</i>		<i>Create equations that describe numbers or relationships.</i>
NC.M1.A-CED.1	Create equations and inequalities in one variable that represent linear, exponential, and quadratic relationships and use them to solve problems.	NC.ECS.M1.A-CED.1	Use equations to solve problems using addition and subtraction with decimals when a part is unknown (e.g., a can of soda cost \$0.75 and John has \$0.50 how much more money does he need?).

<b>Reasoning with Equations and Inequalities</b>			
	<i>Understand solving equations as a process of reasoning and explain the reasoning.</i>		<i>Understand solving equations as a process of reasoning and explain the reasoning.</i>
NC.M1.A-REI.1	Justify a chosen solution method and each step of the solving process for linear and quadratic	NC.ECS.M1.A-REI.1	Explain each step in solving an equation.

	equations using mathematical reasoning.		
<b>Reasoning with Equations and Inequalities</b>			
	<i>Solve equations and inequalities in one variable</i>		<i>Solve equations and inequalities in one variable</i>
NC.M1.A-REI.3	Solve linear equations and inequalities in one variable.	NC.ECS.M1.A-REI.3	Solve a three step linear equation.
<b>Reasoning with Equations and Inequalities</b>			
	<i>Solve systems of equations.</i>		<i>Solve systems of equations.</i>
NC.M1.A-REI.10	Understand that the graph of a two variable equation represents the set of all solutions to the equation.	NC.ECS.M1.A-REI.10	Understand that a graph represents the solutions to an equation. Interpret a point on a graph in context.
<b>Functions</b>			
<b>Interpreting Functions</b>			
	<i>Understand the concept of a function and use function notation.</i>		<i>Understand the concept of a function and use function notation.</i>
NC.M1.F-IF.1	Build an understanding that a function from one set (called the domain) to another set (called the range) assigns to each element of the domain exactly one element of the range by recognizing that: <ul style="list-style-type: none"> <li>• if <math>f</math> is a function and <math>x</math> is an element of its domain, then <math>f(x)</math></li> </ul>	NC.ECS.M1.F-IF.1	Build an understanding that a function occurs when each input ( $x$ ) has only one output ( $y$ ).  Students recognize $f(x)$ function notation.

	denotes the output of $f$ corresponding to the input $x$ .  • the graph of $f$ is the graph of the equation $y = f(x)$ .		
NC.M1.F-IF.2	Use function notation to evaluate linear, quadratic, and exponential functions for inputs in their domains, and interpret statements that use function notation in terms of a context.	NC.ECS.M1.F-IF.2	Evaluate linear functions.
NC.MI.F-IF.3	Recognize that recursively and explicitly defined sequences are functions whose domain is a subset of the integers, the terms of an arithmetic sequence are a subset of the range of a linear function, and the terms of a geometric sequence are a subset of the range of an exponential function.	NC.ECS.MI.F-IF.3	Use patterns to solve problems (adding and multiplying).
<b>Interpreting Functions</b>			
	<i>Interpret functions that arise in applications in terms of the context.</i>		<i>Interpret functions that arise in applications in terms of the context.</i>
NC.M1.F-IF.4	Interpret key features of graphs, tables, and verbal descriptions in context to describe functions that arise in applications relating two quantities, including: intercepts;	NC.ECS.M1.F-IF.4	Given a graph of a linear function, identify the rate of change (slope) and intercepts. Identify whether the line is increasing or decreasing, and whether it has a

	intervals where the function is increasing, decreasing, positive, or negative; and maximums and minimums.		positive or negative slope.
NC.M1.F-IF.6	Calculate and interpret the average rate of change over a specified interval for a function presented numerically, graphically, and/or symbolically.	NC.ECS.M1.F-IF.6	Given two points on a line, identify the slope.
<b>Interpreting Functions</b>			
	<i>Analyze functions using different representations.</i>		<i>Analyze functions using different representations.</i>
NC.M1.F-IF.7	Analyze linear, exponential, and quadratic functions by generating different representations, by hand in simple cases and using technology for more complicated cases, to show key features, including: domain and range; rate of change; intercepts; intervals where the function is increasing, decreasing, positive, or negative; maximums and minimums; and end behavior.	NC.ECS.M1.F-IF.7	Given a linear function, identify the slope and y intercept and graph the line.

NC.M1.F-IF.9	Compare key features of two functions (linear, quadratic, or exponential) each with a different representation (symbolically, graphically, numerically in tables, or by verbal descriptions).	NC.ECS.M1.F-IF.9	Given two graphs of linear functions compare the rates of change and initial values.
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<b>Geometry</b>			
<b>Expressing Geometric Properties with Equations</b>			
	<i>Use coordinates to prove simple geometric theorems algebraically.</i>		<i>Use coordinates to prove simple geometric theorems algebraically.</i>
NC.M1.G-GPE.4	Use coordinates to solve geometric problems involving polygons algebraically <ul style="list-style-type: none"> <li>• Use coordinates to compute perimeters of polygons and areas of triangles and rectangles.</li> <li>• Use coordinates to verify algebraically that a given set of</li> </ul>	NC.ECS.M1.G-GPE.4	On a coordinate plane find the perimeter and area of geometric figures, in which all needed measurements can be counted on the grid.  Identify geometric figures on the coordinate plane, using estimation and counting.

	points produces a particular type of triangle or quadrilateral.		
NC.M1.G-GPE.5	Use coordinates to prove the slope criteria for parallel and perpendicular lines and use them to solve problems. • Determine if two lines are parallel, perpendicular, or neither.  • Find the equation of a line parallel or perpendicular to a given line that passes through a given point.	NC.ECS.M1.G-GPE.5	Know the attributes of perpendicular lines, parallel lines, and line segments  Compare lines on the coordinate plane, to identify parallel lines and recognize that parallel lines have the same slope (rate of change).
NC.M1.G-GPE.6	Use coordinates to find the midpoint or endpoint of a line segment.	NC.ECS.M1.G-GPE.6	Use coordinates to find the midpoints or endpoints of a line segment, in the first quadrant.
<b>Statistics and Probability</b>			
<b>Interpreting Categorical and Quantitative Data</b>			
	<i>Summarize, represent, and interpret data on a single count or measurement variable.</i>		<i>Summarize, represent, and interpret data on a single count or measurement variable.</i>



NC.M1.S-ID.1	Use technology to represent data with plots on the real number line (histograms, and box plots).	NC.ECS.M1.S-ID.1	Given data, use technology to construct a simple graph (line, pie, bar, or picture) or table, and interpret the data.
NC.M1.S-ID.2	Use statistics appropriate to the shape of the data distribution to compare center (median, mean) and spread (interquartile range, standard deviation) of two or more different data sets. Interpret differences in shape, center, and spread in the context of the data sets.	NC.ECS.M1.S-ID.2	Interpret general trends on a graph or chart. (more, less, increasing ,decreasing) Given a graph, table, or word problem, calculate the mean of a given data sets (when the number of data points is fewer than five) and compare the mean.
NC.M1.S-ID.3	Examine the effects of extreme data points (outliers) on shape, center, and/or spread.	NC.ECS.M1.S-ID.3	Identify in general outliers in a data set and explain why they are important to identify.

