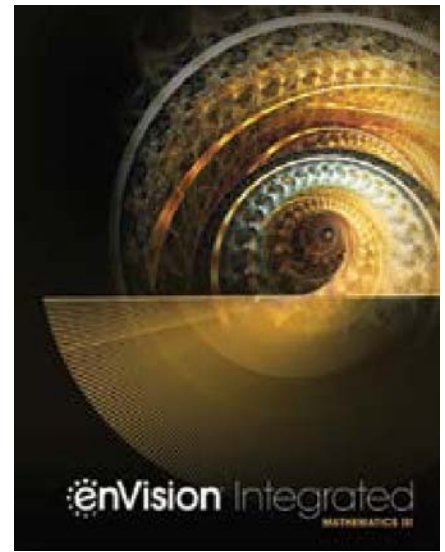


A Correlation of



# Integrated Mathematics

©2019



To the

**North Carolina Standard Course of Study  
North Carolina Math 1-3**

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## **Introduction**

**enVision Integrated Mathematics** ©2019 is a brand-new high school mathematics program.

**enVision Integrated** helps students see how the disciplines of mathematics are intertwined, with engaging and relevant content. The program offers time-saving options and resources. Re-energize students and help them become more self-directed and independent learners.

### **Engage**

Motivate student learning with relevant math and individualized pathways.

- Math concepts come to life through embedded interactives powered by Desmos.
- Mathematical modeling in 3 acts levels the playing field with reality-based instruction.
- Individualized study plans help students master prerequisite skills.

### **Understand**

A firm foundation of conceptual understanding allows students to connect and apply new math ideas in amazing ways. Using this balanced approach, students retain what they have learned, meaning less re-teaching later on.

### **Empower**

Leverage technology to save time and provide better insight into students' mastery of mathematics. enVision Integrated makes this simple and easy to do.

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| <p align="center"><b>North Carolina Standard Course of Study<br/>North Carolina Math 1</b></p> | <p align="center"><b>enVision Integrated Mathematics, ©2019<br/>Integrated Mathematics I</b></p>  |
|--|---|
| <p><b>Standards for Mathematical Practice</b></p>  |   |
| <p>1. Make sense of problems and persevere in solving them.</p>                                | <p>Mathematical practices are referenced throughout the enVision Integrated Mathematics series. The following citations are sample references.</p> <p><b>SE/TE:</b> 8, 31, 47, 57, 68, 72, 76, 88, 111, 152<br/><b>TE:</b> 24A-24B, 32, 37A, 59, 84, 137B, 147, 158B, 191B, 200</p>             |
| <p>2. Reason abstractly and quantitatively.</p>  | <p>Mathematical practices are referenced throughout the enVision Integrated Mathematics series. The following citations are sample references.</p> <p><b>SE/TE:</b> 23, 27, 63, 86, 105, 111, 118, 131-133, 141, 145<br/><b>TE:</b> 12A, 63A, 83A, 104A, 112A, 137A, 144A, 151B, 219A, 236A</p> |
| <p>3. Construct viable arguments and critique the reasoning of others.</p>                     | <p>Mathematical practices are referenced throughout the enVision Integrated Mathematics series. The following citations are sample references.</p> <p><b>SE/TE:</b> 11, 17, 28, 56, 67, 102, 116, 120, 170, 182<br/><b>TE:</b> 12, 18B, 24A, 53, 57A, 63A, 89B, 177A, 184A, 195</p>             |
| <p>4. Model with mathematics.</p>  | <p>Mathematical practices are referenced throughout the enVision Integrated Mathematics series. The following citations are sample references.</p> <p><b>SE/TE:</b> 44, 62, 68, 77, 88, 91, 128, 133, 157, 171-172<br/><b>TE:</b> 30, 51A, 69, 89A, 96A, 103, 164, 165A, 191A, 212</p>          |
| <p>5. Use appropriate tools strategically.</p>   | <p>Mathematical practices are referenced throughout the enVision Integrated Mathematics series. The following citations are sample references.</p> <p><b>SE/TE:</b> 23, 144, 148, 156, 168, 183, 197, 204, 210, 234<br/><b>TE:</b> 85, 98, 112B, 120A, 139, 160, 185, 224, 228A, 236B</p>       |

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|---|---|
| 6. Attend to precision.   | Mathematical practices are referenced throughout the enVision Integrated Mathematics series. The following citations are sample references.<br><br><b>SE/TE:</b> 10-11, 21, 54, 66, 87, 93, 109, 117, 142, 412-413<br><b>TE:</b> 31A, 33, 57A, 89A, 104A, 250A, 319A, 335A, 363A, 396A  |
| 7. Look for and make use of structure.  | Mathematical practices are referenced throughout the enVision Integrated Mathematics series. The following citations are sample references.<br><br><b>SE/TE:</b> 42, 46, 55, 66-67, 75-76, 83, 89, 95, 100, 104<br><b>TE:</b> 19, 26, 51A, 70A, 96A, 187, 207, 265B, 319B, 329          |
| 8. Look for and express regularity in repeated reasoning.   | Mathematical practices are referenced throughout the enVision Integrated Mathematics series. The following citations are sample references.<br><br><b>SE/TE:</b> 16, 35, 60, 62, 127, 156, 162, 172, 197, 202-203<br><b>TE:</b> 31A, 70A, 83A, 120A, 151A, 158A, 177A, 199A, 242A, 285A |
| <b>Number and Quantity</b>  |   |
| <b>The Real Number System</b>   |   |
| <b>Extend the properties of exponents to rational exponents.</b>  |   |
| NC.M1.N-RN.2 Rewrite algebraic expressions with integer exponents using the properties of exponents.  | <b>SE/TE:</b> 177-183<br><b>TE:</b> 177A-183B   |
| <b>Algebra</b>  |   |
| <b>Seeing Structure in Expressions</b>  |   |
| <b>Interpret the structure of expressions.</b>  |   |
| NC.M1.A-SSE.1 Interpret expressions that represent a quantity in terms of its context.  | <b>SE/TE:</b> 6-8, 14, 19, 22-23, 26, 29, 30, 31, 33, 38<br><b>TE:</b> 7, 18B, 20, 24B, 30A-30B, 31, 37B, 69A-69B, 103A-103B  |
| NC.M1.A-SSE.1a Identify and interpret parts of a linear, exponential, or quadratic expression, including terms, factors, coefficients, and exponents. | <b>SE/TE:</b> 9, 13-15, 19, 25, 27, 51, 53-54, 74, 99-102, 130<br><b>TE:</b> 18A, 23B, 31A, 51A-51B, 70, 102B, 157A, 184, 198B, 272B  |

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|--|---|
| NC.M1.A-SSE.1b Interpret a linear, exponential, or quadratic expression made of multiple parts as a combination of entities to give meaning to an expression.  | <b>SE/TE:</b> 191-198<br><b>TE:</b> 191A-198B   |
| <b>Seeing Structure in Expressions</b>   |   |
| <b>Write expressions in equivalent forms to solve problems.</b>  |   |
| 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.                | This standard is addressed in enVision Integrated Mathematics II. Please see:<br><br><b>Mathematics II</b><br><b>SE/TE:</b> 69-74, 75-81, 83-88, 89-94, 151-157<br><b>TE:</b> 69A-74B, 75A-81B, 83A-88B, 89A-94B, 151A-157B   |
| <b>Arithmetic with Polynomial Expressions</b>  |   |
| <b>Perform arithmetic operations on polynomials.</b>   |   |
| 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. | This standard is addressed in enVision Integrated Mathematics II. Please see:<br><br><b>Mathematics II</b><br><b>SE/TE:</b> 47-54, 55-62, 63-68<br><b>TE:</b> 47A-54B, 55A-62B, 63A-68B   |
| <b>Arithmetic with Polynomial Expressions</b>  |   |
| <b>Understand the relationship between zeros and factors of polynomials.</b>   |   |
| NC.M1.A-APR.3 Understand the relationships among the factors of a quadratic expression, the solutions of a quadratic equation, and the zeros of a quadratic function.  | This standard is addressed in enVision Integrated Mathematics II. Please see:<br><br><b>Mathematics II</b><br><b>SE/TE:</b> 69-74, 75-81, 83-88, 89-94, 103-109, 110-116, 117-123, 145-150, 151-157<br><b>TE:</b> 69A-74B, 75A-81B, 83A-88B, 89A-94B, 103A-109B, 110A-116B, 117A-123B, 145A-150B, 151A-157B |
| <b>Creating Equations</b>  |   |
| <b>Create equations that describe numbers or relationships.</b>  |   |
| 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.  | <b>SE/TE:</b> 5-11, 12-17, 24-29, 31-36, 89-95, 184-190, 191-198<br><b>TE:</b> 5A-11B, 12A-17B, 24A-29B, 31A-36B, 89A-95B, 184A-190B, 191A-198B   |

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|--|---|
| NC.M1.A-CED.2 Create and graph equations in two variables to represent linear, exponential, and quadratic relationships between quantities.          | <b>SE/TE:</b> 18-23, 51-56, 57-62, 63-68, 70-76, 89-95, 96-102, 184-190, 191-198, 206-211<br><b>TE:</b> 18A-23B, 51A-56B, 57A-62B, 63A-68B, 70A-76B, 89A-95B, 96A-102B, 184A-190B, 191A-198B, 206A-211B     |
| NC.M1.A-CED.3 Create systems of linear equations and inequalities to model situations in context.  | <b>SE/TE:</b> 5-11, 12-17, 24-29, 31-36, 37-43, 137-143, 144-150, 151-157, 158-163, 165-170<br><b>TE:</b> 5A-11B, 12A-17B, 24A-29B, 31A-36B, 37A-43B, 137A-143B, 144A-150B, 151A-157B, 158A-163B, 165A-170B |
| NC.M1.A-CED.4 Solve for a quantity of interest in formulas used in science and mathematics using the same reasoning as in solving equations.         | <b>SE/TE:</b> 18-23<br><b>TE:</b> 18A-23B   |
| <b>Reasoning with Equations and Inequalities</b>   |   |
| <b>Understand solving equations as a process of reasoning and explain the reasoning.</b>   |   |
| NC.M1.A-REI.1 Justify a chosen solution method and each step of the solving process for linear and quadratic equations using mathematical reasoning. | <b>SE/TE:</b> 5-11, 12-17, 37-39, 41-42, 178-183<br><b>TE:</b> 5A-11B, 12A-17B, 37A-39, 43A-43B, 178-183B   |
| <b>Reasoning with Equations and Inequalities</b>   |   |
| <b>Solve equations and inequalities in one variable.</b>   |   |
| NC.M1.A-REI.3 Solve linear equations and inequalities in one variable.   | <b>SE/TE:</b> 5-11, 12-17, 18-23, 24-29, 31-36<br><b>TE:</b> 5A-11B, 12A-17B, 18A-23B, 24A-29B, 31A-36B   |
| NC.M1.A-REI.4 Solve for the real solutions of quadratic equations in one variable by taking square roots and factoring.                              | <b>SE/TE:</b> 145-150, 151-157, 164-169, 191-197, 198-204<br><b>TE:</b> 145A-150B, 151A-157B, 164A-169B, 191A-197B, 198A-204B   |

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|---|---|
| <b>Reasoning with Equations and Inequalities</b>  |   |
| <b>Solve systems of equations.</b>  |   |
| NC.M1.A-REI.5 Explain why replacing one equation in a system of linear equations by the sum of that equation and a multiple of the other produces a system with the same solutions.   | <b>SE/TE:</b> 144-150, 151-157<br><b>TE:</b> 144A-150B, 151A-157B   |
| NC.M1.A-REI.6 Use tables, graphs, or algebraic methods (substitution and elimination) to find approximate or exact solutions to systems of linear equations and interpret solutions in terms of a context.  | <b>SE/TE:</b> 137-143, 144-150, 151-157<br><b>TE:</b> 137A-143B, 144A-150B, 151A-157B                         |
| <b>Reasoning with Equations and Inequalities</b>  |   |
| <b>Represent and solve equations and inequalities graphically</b>   |   |
| NC.M1.A-REI.10 Understand that the graph of a two variable equation represents the set of all solutions to the equation.  | <b>SE/TE:</b> 51-56, 57-62, 63-68, 70-76, 137-143<br><b>TE:</b> 51A-56B, 57A-62B, 63A-68B, 70A-76B, 137A-143B |
| NC.M1.A-REI.11 Build an understanding of why the x-coordinates of the points where the graphs of two linear, exponential, and/or quadratic equations $y=f(x)$ and $y=g(x)$ intersect are the solutions of the equation $f(x)=g(x)$ and approximate solutions using graphing technology or successive approximations with a table of values. | <b>SE/TE:</b> 137-143<br><b>TE:</b> 137A-143B   |
| NC.M1.A-REI.12 Represent the solutions of a linear inequality or a system of linear inequalities graphically as a region of the plane.  | <b>SE/TE:</b> 158-163, 165-170<br><b>TE:</b> 158A-163B, 165A-170B   |



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|--|---|
| <b>Functions</b>   |   |
| <b>Interpreting Functions</b>  |   |
| <b>Understand the concept of a function and use function notation.</b>   |   |
| 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> denotes the output of <math>f</math> corresponding to the input <math>x</math>.</li> <li>• the graph of <math>f</math> is the graph of the equation <math>y = f(x)</math>.</li> </ul> | <b>SE/TE:</b> 83-88, 89-95, 184-190<br><b>TE:</b> 83A-88B, 89A-95B, 184A-190B                                       |
| 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.  | <b>SE/TE:</b> 83-88, 89-95, 96-102, 184-190, 206-211<br><b>TE:</b> 83A-88B, 89A-95B, 96A-102B, 184A-190B, 206A-211B |
| NC.M1.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.   | <b>SE/TE:</b> 104-111, 199-205<br><b>TE:</b> 104A-111B, 199A-205B   |
| <b>Interpreting Functions</b>  |   |
| <b>Interpret functions that arise in applications in terms of the context.</b>   |   |
| 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; intervals where the function is increasing, decreasing, positive, or negative; and maximums and minimums.   | <b>SE/TE:</b> 83-88, 89-95, 96-102, 184-190, 206-211<br><b>TE:</b> 83A-88B, 89A-95B, 96A-102B, 184A-190B, 206A-211B |
| NC.M1.F-IF.5 Interpret a function in terms of the context by relating its domain and range to its graph and, where applicable, to the quantitative relationship it describes.  | <b>SE/TE:</b> 83-88, 89-95, 96-102, 184-190, 206-211<br><b>TE:</b> 83A-88B, 89A-95B, 96A-102B, 184A-190B, 206A-211B |

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|--|---|
| 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.  | <b>SE/TE:</b> 83-88, 89-95, 96-102, 184-190, 206-211<br><b>TE:</b> 83A-88B, 89A-95B, 96A-102B, 184A-190B, 206A-211B   |
| <b>Interpreting Functions</b>  |   |
| <b>Analyze functions using different representations.</b>  |   |
| 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. | <b>SE/TE:</b> 83-88, 89-95, 96-102, 184-190, 206-211<br><b>TE:</b> 83A-88B, 89A-95B, 96A-102B, 184A-190B, 206A-211B   |
| NC.M1.F-IF.8 Use equivalent expressions to reveal and explain different properties of a function.  | <b>SE/TE:</b> 51-56, 57-62, 63-68, 70-76<br><b>TE:</b> 51A-56B, 57A-62B, 63A-68B, 70A-76B   |
| NC.M1.F-IF.8a Rewrite a quadratic function to reveal and explain different key features of the function  | This standard is addressed in enVision Integrated Mathematics II. Please see:<br><br><b>Mathematics II</b><br><b>SE/TE:</b> 69-74, 75-81, 83-88, 89-94, 151-157, 191-197<br><b>TE:</b> 69A-74B, 75A-81B, 83A-88B, 89A-94B, 151A-157B, 191A-197B |
| NC.M1.F-IF.8b Interpret and explain growth and decay rates for an exponential function.  | <b>SE/TE:</b> 184-190, 191-198, 199-205, 206-211<br><b>TE:</b> 184A-190B, 191A-198B, 199A-205B, 206A-211B   |
| 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).   | <b>SE/TE:</b> 186, 209, 211<br><b>TE:</b> 174F, 206A  |

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|--|---|
| <b>Building Functions</b>  |   |
| <b>Build a function that models a relationship between two quantities.</b>   |   |
| NC.M1.F-BF.1 Write a function that describes a relationship between two quantities.  | <b>SE/TE:</b> 89-95, 96-102, 103, 104-111, 112-119, 120-128, 184-190, 191-198, 206-211, 212<br><b>TE:</b> 89A-95B, 96A-102B, 103A-103B, 104A-111B, 112A-119B, 120A-128B, 184A-190B, 191A-198B, 206A-211B, 212A-212B                           |
| NC.M1.F-BF.1a Build linear and exponential functions, including arithmetic and geometric sequences, given a graph, a description of a relationship, or two ordered pairs (include reading these from a table).                     | <b>SE/TE:</b> 89-95, 96-102, 103, 104-111, 112-119, 120-128, 184-190, 191-198, 199-205, 206-211, 212<br><b>TE:</b> 89A-95B, 96A-102B, 103A-103B, 104A-111B, 112A-119B, 120A-128B, 184A-190B, 191A-198B, 199A-205B, 206A-211B, 212A-212B, 248B |
| NC.M1.F-BF.1b Build a function that models a relationship between two quantities by combining linear, exponential, or quadratic functions with addition and subtraction or two linear functions with multiplication.               | <b>SE/TE:</b> 96-102, 206-211<br><b>TE:</b> 96A-102B, 206A-211B   |
| NC.M1.F-BF.2 Translate between explicit and recursive forms of arithmetic and geometric sequences and use both to model situations.  | <b>SE/TE:</b> 104-111, 199-205<br><b>TE:</b> 104A-111B, 199A-205B, 248B   |
| <b>Linear, Quadratic, and Exponential Models</b>   |   |
| <b>Construct and compare linear and exponential models and solve problems.</b>   |   |
| NC.M1.F-LE.1 Identify situations that can be modeled with linear and exponential functions, and justify the most appropriate model for a situation based on the rate of change over equal intervals.                               | <b>SE/TE:</b> 89-95, 96-102, 103, 184-190, 191-198, 206-211, 212<br><b>TE:</b> 89A-95B, 96A-102B, 103-103B, 104A-111B, 184A-190B, 191A-198B, 206A-211B, 212-212B  |
| NC.M1.F-LE.3 Compare the end behavior of linear, exponential, and quadratic functions using graphs and tables to show that a quantity increasing exponentially eventually exceeds a quantity increasing linearly or quadratically. | <b>SE/TE:</b> 187, 189-190, 192<br><b>TE:</b> 184A-184B   |

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|--|--|
| <b>Linear, Quadratic, and Exponential Models</b>   |  |
| <b>Interpret expressions for functions in terms of the situation they model.</b>   |  |
| NC.M1.F-LE.5 Interpret the parameters $a$ and $b$ in a linear function $(x)=ax+b$ or an exponential function $g(x)=ab^x$ in terms of a context.  | <b>SE/TE:</b> 89-95, 96-102, 103, 120-128, 184-190, 191-198, 206-211, 212<br><b>TE:</b> 89A-95B, 96A-102B, 103-103B, 104A-111B, 120A-128B, 184A-190B, 191A-198B, 206A-211B, 212-212B |
| <b>Geometry</b>  |  |
| <b>Expressing Geometric Properties with Equations</b>  |  |
| <b>Use coordinates to prove simple geometric theorems algebraically.</b>   |  |
| 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 points produces a particular type of triangle or quadrilateral.</li> </ul> | <b>SE/TE:</b> 408-414<br><b>TE:</b> 408A-414B  |
| NC.M1.G-GPE.5 Use coordinates to prove the slope criteria for parallel and perpendicular lines and use them to solve problems. <ul style="list-style-type: none"> <li>• Determine if two lines are parallel, perpendicular, or neither.</li> <li>• Find the equation of a line parallel or perpendicular to a given line that passes through a given point.</li> </ul>         | <b>SE/TE:</b> 306-312<br><b>TE:</b> 306A-312B  |
| NC.M1.G-GPE.6 Use coordinates to find the midpoint or endpoint of a line segment.  | This standard is addressed in enVision Integrated Mathematics III. Please see:<br><br><b>Mathematics III</b><br><b>SE/TE:</b> 488-490  |

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|---|---|
| <b>Statistics and Probability</b>   |   |
| <b>Interpreting Categorical and Quantitative Data</b>   |   |
| <b>Summarize, represent, and interpret data on a single count or measurement variable.</b>  |   |
| NC.M1.S-ID.1 Use technology to represent data with plots on the real number line (histograms, and box plots).   | <b>SE/TE:</b> 431-437, 438-445, 446-452<br><b>TE:</b> 431A-437B, 438A-445B, 446A-452B       |
| 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. | <b>SE/TE:</b> 438-445, 446-452, 453-460<br><b>TE:</b> 438A-445B, 446A-452B, 453A-460B       |
| NC.M1.S-ID.3 Examine the effects of extreme data points (outliers) on shape, center, and/or spread.   | <b>SE/TE:</b> 438-445, 446-452, 453-460<br><b>TE:</b> 438A-445B, 446A-452B, 453A-460B, 467B |
| <b>Interpreting Categorical and Quantitative Data</b>   |   |
| <b>Summarize, represent, and interpret data on two categorical and quantitative variables.</b>  |   |
| NC.M1.S-ID.6 Represent data on two quantitative variables on a scatter plot, and describe how the variables are related.  | <b>SE/TE:</b> 112-119, 120-128<br><b>TE:</b> 112A-119B, 120A-128B                           |
| NC.M1.S-ID.6a Fit a least squares regression line to linear data using technology. Use the fitted function to solve problems.   | <b>SE/TE:</b> 112-119, 120-128<br><b>TE:</b> 112A-119B, 120A-128B                           |
| NC.M1.S-ID.6b Assess the fit of a linear function by analyzing residuals.   | <b>SE/TE:</b> 120-128<br><b>TE:</b> 120A-128B   |
| NC.M1.S-ID.6c Fit a function to exponential data using technology. Use the fitted function to solve problems.   | <b>SE/TE:</b> 112A-119B, 120A-128B<br><b>TE:</b> 112A-119B, 120A-128B                       |

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| North Carolina Standard Course of Study<br>North Carolina Math 1   | enVision Integrated Mathematics, ©2019<br>Integrated Mathematics I |
|--|--|
| <b>Interpreting Categorical and Quantitative Data</b>  |  |
| <b>Interpret linear models.</b>  |  |
| NC.M1.S-ID.7 Interpret in context the rate of change and the intercept of a linear model. Use the linear model to interpolate and extrapolate predicted values. Assess the validity of a predicted value.  | <b>SE/TE:</b> 112-119, 120-128<br><b>TE:</b> 112A-119B, 120A-128B  |
| NC.M1.S-ID.8 Analyze patterns and describe relationships between two variables in context. Using technology, determine the correlation coefficient of bivariate data and interpret it as a measure of the strength and direction of a linear relationship. Use a scatter plot, correlation coefficient, and a residual plot to determine the appropriateness of using a linear function to model a relationship between two variables. | <b>SE/TE:</b> 112-119, 120-128<br><b>TE:</b> 112A-119B, 120A-128B  |
| NC.M1.S-ID.9 Distinguish between association and causation.  | <b>SE/TE:</b> 112-119, 120-128<br><b>TE:</b> 112A-119B, 120A-128B  |

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| <p align="center"><b>North Carolina Standard Course of Study<br/>North Carolina Math 2</b></p> | <p align="center"><b>enVision Integrated Mathematics, ©2019<br/>Integrated Mathematics II</b></p>  |
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| <p><b>Standards for Mathematical Practice</b></p>  |  |
| <p>1. Make sense of problems and persevere in solving them.</p>                                | <p>Mathematical practices are referenced throughout the enVision Integrated Mathematics series. The following citations are sample references.</p> <p><b>SE/TE:</b> 5, 10, 17, 25, 33, 54, 62, 68, 73-74, 81<br/><b>TE:</b> 18A, 34B, 55A, 75B, 83B, 111, 120, 151B, 164B, 191B</p>  |
| <p>2. Reason abstractly and quantitatively.</p>  | <p>Mathematical practices are referenced throughout the enVision Integrated Mathematics series. The following citations are sample references.</p> <p><b>SE/TE:</b> 10, 31, 54, 62, 86, 88, 99, 109, 301, 352<br/><b>TE:</b> 47A, 83A, 89A, 205B, 212A, 229A-229B, 297A, 311A-311B, 319B, 328</p>  |
| <p>3. Construct viable arguments and critique the reasoning of others.</p>                     | <p>Mathematical practices are referenced throughout the enVision Integrated Mathematics series. The following citations are sample references.</p> <p><b>SE/TE:</b> 9, 15-16, 23-24, 31, 38, 52-53, 60, 66, 341, 482<br/><b>TE:</b> 5B, 11A, 47A, 69B, 117A, 145A, 191B, 205A, 374A, 391A</p>  |
| <p>4. Model with mathematics.</p>  | <p>Mathematical practices are referenced throughout the enVision Integrated Mathematics series. The following citations are sample references.</p> <p><b>SE/TE:</b> 26, 82, 131, 176, 190, 236, 327, 364, 444, 498<br/><b>TE:</b> 26A-26B, 82A-82B, 131A-131B, 176A-176B, 190A-190B, 236A-236B, 327A-327B, 364A-364B, 444A-444B, 498A-498B</p> |
| <p>5. Use appropriate tools strategically.</p>   | <p>Mathematical practices are referenced throughout the enVision Integrated Mathematics series. The following citations are sample references.</p> <p><b>SE/TE:</b> 17, 30, 32, 39, 60-61, 65, 76, 80, 147, 168<br/><b>TE:</b> 27A, 37, 64, 70, 75A, 84, 118, 170B, 237B, 283</p>  |

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| 6. Attend to precision.  | Mathematical practices are referenced throughout the enVision Integrated Mathematics series. The following citations are sample references.<br><br><b>SE/TE:</b> 8, 15, 23-24, 33, 40, 43, 52, 79, 107, 121<br><b>TE:</b> 13, 27A, 28, 51, 55B, 65, 89B, 126, 132B, 146           |
| 7. Look for and make use of structure.   | Mathematical practices are referenced throughout the enVision Integrated Mathematics series. The following citations are sample references.<br><br><b>SE/TE:</b> 17, 51, 123, 125, 135, 174, 218, 267, 352, 363<br><b>TE:</b> 47B, 69A, 83A, 89A, 103A, 120, 216, 330, 383, 521B  |
| 8. Look for and express regularity in repeated reasoning.  | Mathematical practices are referenced throughout the enVision Integrated Mathematics series. The following citations are sample references.<br><br><b>SE/TE:</b> 11, 35, 57, 63, 67, 108, 137, 149, 155, 188<br><b>TE:</b> 18B-18, 20, 22, 34A, 63A, 103A, 132A, 183A, 304A, 422A |
| <b>Number and Quantity</b>   |   |
| <b>The Real Number System</b>  |   |
| <b>Extend the properties of exponents to rational exponents.</b>   |   |
| NC.M2.N-RN.1 Explain how expressions with rational exponents can be rewritten as radical expressions.  | <b>SE/TE:</b> 11-17<br><b>TE:</b> 11A-17B   |
| NC.M2.N-RN.2 Rewrite expressions with radicals and rational exponents into equivalent expressions using the properties of exponents.   | <b>SE/TE:</b> 11-17<br><b>TE:</b> 11A-17B   |
| <b>The Real Number System</b>  |   |
| <b>Use properties of rational and irrational numbers.</b>  |   |
| NC.M2.N-RN.3 Use the properties of rational and irrational numbers to explain why: <ul style="list-style-type: none"> <li>• the sum or product of two rational numbers is rational;</li> <li>• the sum of a rational number and an irrational number is irrational;</li> <li>• the product of a nonzero rational number and an irrational number is irrational.</li> </ul> | <b>SE:</b> 5-10<br><b>TE:</b> 5A-10B  |



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| <b>The Complex Number System</b>   |   |
| <b>Defining complex numbers.</b>   |   |
| NC.M2.N-CN.1 Know there is a complex number $i$ such that $i^2 = -1$ , and every complex number has the form $a + bi$ where $a$ and $b$ are real numbers.  | <b>SE:</b> 183-189, 192, 200, 221-222<br><b>TE:</b> 183A-189B, 192, 198A-198B, 204B   |
| <b>Algebra</b>   |   |
| <b>Seeing Structure in Expressions</b>   |   |
| <b>Interpret the structure of expressions.</b>   |   |
| NC.M2.A-SSE.1 Interpret expressions that represent a quantity in terms of its context.   | <b>SE/TE:</b> 51, 54, 59, 61, 74, 81, 88, 105, 109, 113<br><b>TE:</b> 83B, 88B, 130A, 132B, 170B, 175B, 197B, 204A, 255A, 262A  |
| NC.M2.A-SSE.1a Identify and interpret parts of a quadratic, square root, inverse variation, or right triangle trigonometric expression, including terms, factors, coefficients, radicands, and exponents.                                  | <b>SE/TE:</b> 30, 47, 49, 52, 71, 75, 195, 199, 203, 215<br><b>TE:</b> 47B, 54B, 55B, 69A, 83B, 89A-89B, 151B, 158A, 170A-170B, 249A  |
| NC.M2.A-SSE.1b Interpret quadratic and square root expressions made of multiple parts as a combination of single entities to give meaning in terms of a context.   | <b>SE/TE:</b> 18-25, 27-33, 47-54, 55-62, 63-68, 110-116, 117-123, 229-235, 237-242, 275-280<br><b>TE:</b> 18A-25B, 27A-33B, 47A-54B, 55A-62B, 63A-68B, 110A-116B, 117A-123B, 229A-235B, 237A-242B, 275A-280B |
| NC.M2.A-SSE.3 Write an equivalent form of a quadratic expression by completing the square, where $a$ is an integer of a quadratic expression, $ax^2+bx+c$ , to reveal the maximum or minimum value of the function the expression defines. | <b>SE/TE:</b> 69-74, 75-81, 83-88, 89-94, 151-157, 191-197<br><b>TE:</b> 69A-74B, 75A-81B, 83A-88B, 89A-94B, 151A-157B, 191A-191B   |
| <b>Arithmetic with Polynomial and Rational Expressions</b>   |   |
| <b>Perform arithmetic operations on polynomials</b>  |   |
| NC.M2.A-APR.1 Extend the understanding that operations with polynomials are comparable to operations with integers by adding, subtracting, and multiplying polynomials.  | <b>SE/TE:</b> 47-54, 55-62, 63-68<br><b>TE:</b> 47A-54B, 55A-62B, 63A-68B   |

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|--|---|
| <b>Creating Equations</b>  |   |
| <b>Create equations that describe numbers or relationships.</b>  |   |
| NC.M2.A-CED.1 Create equations and inequalities in one variable that represent quadratic, square root, inverse variation, and right triangle trigonometric relationships and use them to solve problems. | <b>SE/TE:</b> 145-150, 151-157, 164-169, 191-197, 198-204<br><b>TE:</b> 145A-150B, 151A-157B, 164A-169B, 191A-197B, 198A-204B   |
| NC.M2.A-CED.2 Create and graph equations in two variables to represent quadratic, square root and inverse variation relationships between quantities.  | <b>SE/TE:</b> 18-25, 27-33, 34-40, 103-109, 110-116, 117-123, 124-130, 229-235, 237-242, 243-248<br><b>TE:</b> 18A-25B, 27A-33B, 34A-40B, 103A-109B, 110A-116B, 117A-123B, 124A-130B, 229A-235B, 237A-242B, 243A-248B |
| NC.M2.A-CED.3 Create systems of linear, quadratic, square root, and inverse variation equations to model situations in context.  | <b>SE/TE:</b> 145-150, 151-157, 164-169, 170-175, 191-197, 198-204, 205-211<br><b>TE:</b> 145A-150B, 151A-157B, 164A-169B, 170A-175B, 191A-197B, 198A-204B, 205A-211B   |
| <b>Reasoning with Equations and Inequalities</b>   |   |
| <b>Understand solving equations as a process of reasoning and explain the reasoning.</b>   |   |
| NC.M2.A-REI.1 Justify a chosen solution method and each step of the solving process for quadratic, square root and inverse variation equations using mathematical reasoning.                             | <b>SE/TE:</b> 145-150, 151-157, 164-169, 183, 186-189, 191-197, 198-204<br><b>TE:</b> 145A-150B, 151A-157B, 164A-169B, 183A-189B, 191A-197B, 198A-204B  |
| NC.M2.A-REI.2 Solve and interpret one variable inverse variation and square root equations arising from a context, and explain how extraneous solutions may be produced.                                 | <b>SE/TE:</b> 164-169, 183, 186-189, 191-197<br><b>TE:</b> 164A-169B, 183A-189B   |
| <b>Reasoning with Equations and Inequalities</b>   |   |
| <b>Solve equations and inequalities in one variable.</b>   |   |
| NC.M2.A-REI.4 Solve for all solutions of quadratic equations in one variable.  | <b>SE/TE:</b> 145-150, 151-157, 164-169, 191-197, 198-204<br><b>TE:</b> 145A-150B, 151A-157B, 164A-169B, 191A-197B, 198A-204B   |
| NC.M2.A-REI.4a Understand that the quadratic formula is the generalization of solving $ax^2+bx+c$ by using the process of completing the square.   | <b>SE/TE:</b> 191-197, 198-204<br><b>TE:</b> 191A-197B, 198A-204B   |

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|---|---|
| NC.M2.A-REI.4b Explain when quadratic equations will have non-real solutions and express complex solutions as $a \pm bi$ for real numbers $a$ and $b$ .   | <b>SE/TE:</b> 145-150, 151-157, 164-169, 191-197, 198-204<br><b>TE:</b> 145A-150B, 151A-157B, 164A-169B, 191A-197B, 198A-204B   |
| <b>Reasoning with Equations and Inequalities</b>  |   |
| <b>Solve systems of equations.</b>  |   |
| NC.M2.A-REI.7 Use tables, graphs, and algebraic methods to approximate or find exact solutions of systems of linear and quadratic equations, and interpret the solutions in terms of a context.   | <b>SE/TE:</b> 170-175, 205-211<br><b>TE:</b> 170A-175B, 205A-211B   |
| <b>Reasoning with Equations and Inequalities</b>  |   |
| <b>Represent and solve equations and inequalities graphically.</b>  |   |
| NC.M2.A-REI.11 Extend the understanding that the $x$ -coordinates of the points where the graphs of two square root and/or inverse variation equations $y=(x)$ and $y=g(x)$ intersect are the solutions of the equation $f(x)=g(x)$ and approximate solutions using graphing technology or successive approximations with a table of values.        | <b>SE/TE:</b> 170-175<br><b>TE:</b> 170A-175B   |
| <b>Functions</b>  |   |
| <b>Interpreting Functions</b>   |   |
| <b>Understand the concept of a function and use function notation.</b>  |   |
| NC.M2.F-IF.1 Extend the concept of a function to include geometric transformations in the plane by recognizing that: <ul style="list-style-type: none"> <li>• the domain and range of a transformation function <math>f</math> are sets of points in the plane;</li> <li>• the image of a transformation is a function of its pre-image.</li> </ul> | <b>SE/TE:</b> 18-25, 27-33, 34-40, 103-109, 110-116, 117-123, 124-130, 229-235, 237-242, 243-248, 249-255, 263-268<br><b>TE:</b> 18A-25B, 27A-33B, 34A-40B, 103A-109B, 110A-116B, 117A-123B, 124A-130B, 229A-235B, 237A-242B, 243A-248B, 249A-255B, 263A-268B |
| NC.M2.F-IF.2 Extend the use of function notation to express the image of a geometric figure in the plane resulting from a translation, rotation by multiples of 90 degrees about the origin, reflection across an axis, or dilation as a function of its pre-image.   | <b>SE/TE:</b> 249-255, 263-268, 422-428<br><b>TE:</b> 249A-255B, 263A-268B, 422A-428B   |

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| <b>Interpreting Functions</b>   |   |
| <b>Interpret functions that arise in applications in terms of the context.</b>  |   |
| NC.M2.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: domain and range, rate of change, symmetries, and end behavior.  | <b>SE/TE:</b> 18-25, 27-33, 34-40, 103-109, 110-116, 117-123, 124-130, 229-235, 237-242, 243-248<br><b>TE:</b> 18A-25B, 27A-33B, 34A-40B, 103A-109B, 110A-116B, 117A-123B, 124A-130B, 229A-235B, 237A-242B, 243A-248B |
| <b>Interpreting Functions</b>   |   |
| <b>Analyze functions using different representations.</b>   |   |
| NC.M2.F-IF.7 Analyze quadratic, square root, and inverse variation 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; intercepts; intervals where the function is increasing, decreasing, positive, or negative; rate of change; maximums and minimums; symmetries; and end behavior. | <b>SE/TE:</b> 18-25, 27-33, 34-40, 103-109, 110-116, 117-123, 124-130, 229-235, 237-242, 243-248<br><b>TE:</b> 18A-25B, 27A-33B, 34A-40B, 103A-109B, 110A-116B, 117A-123B, 124A-130B, 229A-235B, 237A-242B, 243A-248B |
| NC.M2.F-IF.8 Use equivalent expressions to reveal and explain different properties of a function by developing and using the process of completing the square to identify the zeros, extreme values, and symmetry in graphs and tables representing quadratic functions, and interpret these in terms of a context.   | <b>SE/TE:</b> 18-25, 76-83, 92-99, 103-109, 110-116, 117-123<br><b>TE:</b> 18A-25B, 76A-83B, 92A-99B, 103A-109B, 110A-116B, 117A-123B   |
| NC.M2.F-IF.9 Compare key features of two functions (linear, quadratic, square root, or inverse variation functions) each with a different representation (symbolically, graphically, numerically in tables, or by verbal descriptions).   | <b>SE/TE:</b> 30<br><b>TE:</b> 124B, 131  |
| <b>Building Functions</b>   |   |
| <b>Build a function that models a relationship between two quantities.</b>  |   |
| NC.M2.F-BF.1 Write a function that describes a relationship between two quantities by building quadratic functions with real solution(s) and inverse variation functions given a graph, a description of a relationship, or ordered pairs (include reading these from a table).   | <b>SE/TE:</b> 18-25, 27-33, 34-40, 103-109, 110-116, 117-123, 124-130, 229-235, 237-242, 243-248<br><b>TE:</b> 18A-25B, 27A-33B, 34A-40B, 103A-109B, 110A-116B, 117A-123B, 124A-130B, 229A-235B, 237A-242B, 243A-248B |

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| <b>Building Functions</b>   |   |
| <b>Build new functions from existing functions.</b>   |   |
| NC.M2.F-BF.3 Understand the effects of the graphical and tabular representations of a linear, quadratic, square root, and inverse variation function $f$ with $k \cdot f(x)$ , $f(x)+k$ , $f(x+k)$ for specific values of $k$ (both positive and negative).   | <b>SE/TE:</b> 256-262, 263-268, 269-274<br><b>TE:</b> 256A-262B, 263A-268B, 269A-274B   |
| <b>Geometry</b>   |   |
| <b>Congruence</b>   |   |
| <b>Experiment with transformations in the plane.</b>  |   |
| NC.M2.G-CO.2 Experiment with transformations in the plane.<br><ul style="list-style-type: none"> <li>• Represent transformations in the plane.</li> <li>• Compare rigid motions that preserve distance and angle measure (translations, reflections, rotations) to transformations that do not preserve both distance and angle measure (e.g. stretches, dilations).</li> <li>• Understand that rigid motions produce congruent figures while dilations produce similar figures.</li> </ul> | <b>SE/TE:</b> 413-421, 422-428<br><b>TE:</b> 413A-421B, 422A-428B   |
| NC.M2.G-CO.3 Given a triangle, quadrilateral, or regular polygon, describe any reflection or rotation symmetry i.e., actions that carry the figure onto itself. Identify center and angle(s) of rotation symmetry. Identify line(s) of reflection symmetry.   | This standard is addressed in enVision Integrated Mathematics I. Please see:<br><br><b>Mathematics I</b><br><b>SE/TE:</b> 350-355, 356<br><b>TE:</b> 350A-355B, 356A-356B   |
| NC.M2.G-CO.4 Verify experimentally properties of rotations, reflections, and translations in terms of angles, circles, perpendicular lines, parallel lines, and line segments.  | This standard is addressed in enVision Integrated Mathematics I. Please see:<br><br><b>Mathematics I</b><br><b>SE/TE:</b> 319-326, 327-334, 335-342, 343-349, 350-355<br><b>TE:</b> 319A-326B, 327A-334B, 335A-342B, 343A-349B, 350A-355B |

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| NC.M2.G-CO.5 Given a geometric figure and a rigid motion, find the image of the figure. Given a geometric figure and its image, specify a rigid motion or sequence of rigid motions that will transform the pre-image to its image. | This standard is addressed in enVision Integrated Mathematics I. Please see:<br><br><b>Mathematics I</b><br><b>SE/TE:</b> 319-326, 327-334, 335-342, 343-349, 350-355<br><b>TE:</b> 319A-326B, 327A-334B, 335A-342B, 343A-349B, 350A-355B |
| <b>Congruence</b>   |   |
| <b>Understand congruence in terms of rigid motions.</b>   |   |
| NC.M2.G-CO.6 Determine whether two figures are congruent by specifying a rigid motion or sequence of rigid motions that will transform one figure onto the other.   | This standard is addressed in enVision Integrated Mathematics I. Please see:<br><br><b>Mathematics I</b><br><b>SE/TE:</b> 343-349, 363-370<br><b>TE:</b> 343A-349B, 363A-370B   |
| NC.M2.G-CO.7 Use the properties of rigid motions to show that two triangles are congruent if and only if corresponding pairs of sides and corresponding pairs of angles are congruent.  | This standard is addressed in enVision Integrated Mathematics I. Please see:<br><br><b>Mathematics I</b><br><b>SE/TE:</b> 363-370, 381-387, 388-395, 396-401, 402-407<br><b>TE:</b> 363A-370B, 381A-387B, 388A-395B, 396A-401B, 402A-407B |
| NC.M2.G-CO.8 Use congruence in terms of rigid motion.   | This standard is addressed in enVision Integrated Mathematics I. Please see:<br><br><b>Mathematics I</b><br><b>SE/TE:</b> 363-370, 381-387, 388-395, 396-401, 402-407<br><b>TE:</b> 363A-370B, 381A-387B, 388A-395B, 396A-401B, 402A-407B |
| Justify the ASA, SAS, and SSS criteria for triangle congruence. Use criteria for triangle congruence (ASA, SAS, SSS, HL) to determine whether two triangles are congruent.  | This standard is addressed in enVision Integrated Mathematics I. Please see:<br><br><b>Mathematics I</b><br><b>SE/TE:</b> 363-370, 381-387, 388-395, 396-401, 402-407<br><b>TE:</b> 363A-370B, 381A-387B, 388A-395B, 396A-401B, 402A-407B |

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| <b>Congruence</b>  |   |
| <b>Prove geometric theorems.</b>   |   |
| NC.M2.G-CO.9 Prove theorems about lines and angles and use them to prove relationships in geometric figures including: <ul style="list-style-type: none"> <li>• Vertical angles are congruent.</li> <li>• When a transversal crosses parallel lines, alternate interior angles are congruent.</li> <li>• When a transversal crosses parallel lines, corresponding angles are congruent.</li> <li>• Points are on a perpendicular bisector of a line segment if and only if they are equidistant from the endpoints of the segment.</li> <li>• Use congruent triangles to justify why the bisector of an angle is equidistant from the sides of the angle.</li> </ul> | <b>SE/TE:</b> 304-310, 311-318<br><b>TE:</b> 304A-310B, 311A-318B   |
| NC.M2.G-CO.10 Prove theorems about triangles and use them to prove relationships in geometric figures including:   | <b>SE/TE:</b> 319-326, 328-335, 336-342, 343-348, 445-451<br><b>TE:</b> 319A-326B, 328A-335B, 336A-342B, 343A-348B, 445A-451B |
| <ul style="list-style-type: none"> <li>• The sum of the measures of the interior angles of a triangle is <math>180^\circ</math>.</li> </ul>  | <b>SE/TE:</b> 357   |
| <ul style="list-style-type: none"> <li>• An exterior angle of a triangle is equal to the sum of its remote interior angles.</li> </ul>   | For related content please see:<br><b>SE/TE:</b> 359  |
| <ul style="list-style-type: none"> <li>• The base angles of an isosceles triangle are congruent.</li> </ul>  | For related content please see:<br><b>SE/TE:</b> 367  |
| <ul style="list-style-type: none"> <li>• The segment joining the midpoints of two sides of a triangle is parallel to the third side and half the length.</li> </ul>  | <b>SE/TE:</b> 445-446<br><b>TE:</b> 445B  |
| <b>Similarity, Right Triangles, and Trigonometry</b>   |   |
| <b>Understand similarity in terms of similarity transformations.</b>   |   |
| NC.M2.G-SRT.1 Verify experimentally the properties of dilations with given center and scale factor:  | <b>SE/TE:</b> 413-421, 422-428<br><b>TE:</b> 413A-421B, 422A-428B   |

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| <p align="center"><b>North Carolina Standard Course of Study<br/>North Carolina Math 2</b></p>   | <p align="center"><b>enVision Integrated Mathematics, ©2019<br/>Integrated Mathematics II</b></p> |
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| <p>NC.M2.G-SRT.1a When a line segment passes through the center of dilation, the line segment and its image lie on the same line. When a line segment does not pass through the center of dilation, the line segment and its image are parallel.</p> | <p><b>SE/TE:</b> 413-421<br/><b>TE:</b> 413A-421B</p>   |
| <p>NC.M2.G-SRT.1b The length of the image of a line segment is equal to the length of the line segment multiplied by the scale factor.</p>   | <p><b>SE/TE:</b> 413-421<br/><b>TE:</b> 413A-421B</p>   |
| <p>NC.M2.G-SRT.1c The distance between the center of a dilation and any point on the image is equal to the scale factor multiplied by the distance between the dilation center and the corresponding point on the pre-image.</p>                     | <p><b>SE/TE:</b> 413-421<br/><b>TE:</b> 413A-421B</p>   |
| <p>NC.M2.G-SRT.1d Dilations preserve angle measure.</p>  | <p><b>SE/TE:</b> 413-421<br/><b>TE:</b> 413A-421B</p>   |
| <p>NC.M2.G-SRT.2 Understand similarity in terms of transformations.</p>  | <p><b>SE/TE:</b> 422-428<br/><b>TE:</b> 422A-428B</p>   |
| <p>NC.M2.G-SRT.2a Determine whether two figures are similar by specifying a sequence of transformations that will transform one figure into the other.</p>   | <p><b>SE/TE:</b> 422-428<br/><b>TE:</b> 422A-428B</p>   |
| <p>NC.M2.G-SRT.2b Use the properties of dilations to show that two triangles are similar when all corresponding pairs of sides are proportional and all corresponding pairs of angles are congruent.</p>   | <p><b>SE/TE:</b> 422-428<br/><b>TE:</b> 422A-428B</p>   |
| <p>NC.M2.G-SRT.3 Use transformations (rigid motions and dilations) to justify the AA criterion for triangle similarity.</p>  | <p><b>SE/TE:</b> 422-428, 429-435<br/><b>TE:</b> 422A-428B, 429A-435B</p>                         |



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| <b>Similarity, Right Triangles, and Trigonometry</b>   |  |
| <b>Prove theorems involving similarity.</b>  |  |
| NC.M2.G-SRT.4 Use similarity to solve problems and to prove theorems about triangles. Use theorems about triangles to prove relationships in geometric figures.<br>• A line parallel to one side of a triangle divides the other two sides proportionally and its converse.<br>• The Pythagorean Theorem | <b>SE/TE:</b> 436-443, 445-451, 452-460, 461-470<br><b>TE:</b> 436A-443B, 445A-451B, 452A-460B, 461A-467B, 468-470 |
| <b>Similarity, Right Triangles, and Trigonometry</b>   |  |
| <b>Define trigonometric ratios and solve problems involving right triangles.</b>   |  |
| NC.M2.G-SRT.6 Verify experimentally that the side ratios in similar right triangles are properties of the angle measures in the triangle, due to the preservation of angle measure in similarity. Use this discovery to develop definitions of the trigonometric ratios for acute angles.                | <b>SE/TE:</b> 436-443, 452-460, 461-470<br><b>TE:</b> 436A-443B, 452A-460B, 461A-467B, 468-470                     |
| NC.M2.G-SRT.8 Use trigonometric ratios and the Pythagorean Theorem to solve problems involving right triangles in terms of a context   | <b>SE/TE:</b> 452-460, 461-470<br><b>TE:</b> 452A-460B, 461A-467B, 468-470   |
| NC.M2.G-SRT.12 Develop properties of special right triangles (45-45-90 and 30-60-90) and use them to solve problems.   | <b>SE/TE:</b> 455-460<br><b>TE:</b> 452A-460B  |
| <b>Statistics and Probability</b>  |  |
| <b>Making Inference and Justifying Conclusions</b>   |  |
| <b>Understand and evaluate random processes underlying statistical experiments.</b>  |  |
| NC.M2.S-IC.2 Use simulation to determine whether the experimental probability generated by sample data is consistent with the theoretical probability based on known information about the population.   | <b>SE/TE:</b> 476<br><b>TE:</b> 483A   |
| <b>Conditional Probability and the Rules for Probability</b>   |  |
| <b>Understand independence and conditional probability and use them to interpret data.</b>   |  |
| NC.M2.S-CP.1 Describe events as subsets of the outcomes in a sample space using characteristics of the outcomes or as unions, intersections and complements of other events.   | <b>SE/TE:</b> 483-490<br><b>TE:</b> 483A-490B  |

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| NC.M2.S-CP.3 Develop and understand independence and conditional probability.  | <b>SE/TE:</b> 491-497<br><b>TE:</b> 491A-497B   |
| NC.M2.S-CP.3a Use a 2-way table to develop understanding of the conditional probability of A given B (written $P(A B)$ ) as the likelihood that A will occur given that B has occurred. That is, $P(A B)$ is the fraction of event B's outcomes that also belong to event A. | <b>SE/TE:</b> 491-497<br><b>TE:</b> 491A-497B   |
| NC.M2.S-CP.3b Understand that event A is independent from event B if the probability of event A does not change in response to the occurrence of event B. That is $P(A B)=P(A)$ .  | <b>SE/TE:</b> 491-497<br><b>TE:</b> 491A-497B   |
| NC.M2.S-CP.4 Represent data on two categorical variables by constructing a two-way frequency table of data. Interpret the two-way table as a sample space to calculate conditional, joint and marginal probabilities. Use the table to decide if events are independent.     | <b>SE/TE:</b> 477-482, 483-490, 491-497<br><b>TE:</b> 477A-482B, 483A-490B, 491A-497B |
| NC.M2.S-CP.5 Recognize and explain the concepts of conditional probability and independence in everyday language and everyday situations.  | <b>SE/TE:</b> 483-490, 491-497<br><b>TE:</b> 483A-490B, 491A-497B                     |
| <b>Conditional Probability and the Rules for Probability</b>   |   |
| <b>Use the rules of probability to compute probabilities of compound events in a uniform probability model.</b>  |   |
| NC.M2.S-CP.6 Find the conditional probability of A given B as the fraction of B's outcomes that also belong to A, and interpret the answer in context.   | <b>SE/TE:</b> 491-497<br><b>TE:</b> 491A-497B   |
| NC.M2.S-CP.7 Apply the Addition Rule, $P(A \text{ or } B) = P(A) + P(B) - P(A \text{ and } B)$ , and interpret the answer in context.  | <b>SE/TE:</b> 483-490<br><b>TE:</b> 483A-490B   |
| NC.M2.S-CP.8 Apply the general Multiplication Rule $P(A \text{ and } B) = P(A)P(B A) = P(B)P(A B)$ , and interpret the answer in context. Include the case where A and B are independent: $P(A \text{ and } B) = P(A)P(B)$ .   | <b>SE/TE:</b> 483-490<br><b>TE:</b> 483A-490B   |

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| <p><b>Standards for Mathematical Practice</b></p>  |   |
| <p>1. Make sense of problems and persevere in solving them.</p>                                | <p>Mathematical practices are referenced throughout the enVision Integrated Mathematics series. The following citations are sample references.</p> <p><b>SE/TE:</b> 39, 50, 52, 56, 67-68, 97, 99, 108, 119, 139<br/><b>TE:</b> 27, 36, 40A-40B, 47A-47B, 48, 88, 95, 111, 123A, 135</p>  |
| <p>2. Reason abstractly and quantitatively.</p>  | <p>Mathematical practices are referenced throughout the enVision Integrated Mathematics series. The following citations are sample references.</p> <p><b>SE/TE:</b> 52, 108, 153, 164, 219, 245, 251, 260, 304, 313<br/><b>TE:</b> 47A, 69A, 84A, 131A, 136, 140B, 155, 177A, 181, 185A</p>   |
| <p>3. Construct viable arguments and critique the reasoning of others.</p>                     | <p>Mathematical practices are referenced throughout the enVision Integrated Mathematics series. The following citations are sample references.</p> <p><b>SE/TE:</b> 10-11, 21, 28, 37, 44, 51, 66, 73, 82, 245<br/><b>TE:</b> 5A, 102, 109A, 113, 141, 154, 180, 355, 379A, 456</p>   |
| <p>4. Model with mathematics.</p>  | <p>Mathematical practices are referenced throughout the enVision Integrated Mathematics series. The following citations are sample references.</p> <p><b>SE/TE:</b> 53, 100, 162, 202, 246, 332, 363, 439, 480, 527<br/><b>TE:</b> 53A-53B, 100A-100B, 162A-162B, 202A-202B, 246A-246B, 332A-332B, 363A-363B, 439A-439B, 480A-480B, 527A-527B</p> |
| <p>5. Use appropriate tools strategically.</p>   | <p>Mathematical practices are referenced throughout the enVision Integrated Mathematics series. The following citations are sample references.</p> <p><b>SE/TE:</b> 18, 43, 63, 111, 126, 145, 149, 171, 200, 276<br/><b>TE:</b> 13A, 34, 61A, 65, 101A, 147A, 169A, 270, 283, 369</p>  |

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| 6. Attend to precision.   | Mathematical practices are referenced throughout the enVision Integrated Mathematics series. The following citations are sample references.<br><br><b>SE/TE:</b> 12, 28-29, 37, 44, 50-51, 54, 73, 136, 138, 144<br><b>TE:</b> 23A-23B, 47B, 62, 85, 127, 129, 136, 157, 173, 185B |
| 7. Look for and make use of structure.  | Mathematical practices are referenced throughout the enVision Integrated Mathematics series. The following citations are sample references.<br><br><b>SE/TE:</b> 33, 55, 82, 86, 147, 184, 189, 201, 250, 254<br><b>TE:</b> 42, 80, 96, 143, 230, 336, 367, 409, 417, 443          |
| 8. Look for and express regularity in repeated reasoning.   | Mathematical practices are referenced throughout the enVision Integrated Mathematics series. The following citations are sample references.<br><br><b>SE/TE:</b> 56, 74, 85, 98, 116, 129, 145, 152, 160, 287<br><b>TE:</b> 49, 92A, 101A, 142, 161, 247A, 297A, 340A, 393A, 423A  |
| <b>Number and Quantity</b>  |  |
| <b>The Complex Number System</b>  |  |
| <b>Use complex numbers in polynomial identities and equations.</b>  |  |
| NC.M3.N-CN.9 Use the Fundamental Theorem of Algebra to determine the number and potential types of solutions for polynomial functions.  | <b>SE/TE:</b> 103, 105-107<br><b>TE:</b> 100B, 101A, 108B  |
| <b>Algebra</b>  |  |
| <b>Seeing Structure in Expressions</b>  |  |
| <b>Interpret the structure of expressions.</b>  |  |
| NC.M3.A-SSE.1 Interpret expressions that represent a quantity in terms of its context.  | <b>SE/TE:</b> 19, 30, 65, 67, 71, 73, 95, 99, 115, 125<br><b>TE:</b> 91B, 92B, 139B, 146B, 153B, 161B, 201B, 210A, 219B, 234A  |
| NC.M3.A-SSE.1a Identify and interpret parts of a piecewise, absolute value, polynomial, exponential and rational expressions including terms, factors, coefficients, and exponents. | <b>SE/TE:</b> 17, 20, 71, 74, 81, 83, 85, 102, 149, 230<br><b>TE:</b> 61A-61B, 68B, 69A-69B, 75A, 84A-84B, 91B, 92B, 100A-100B, 131A, 140A   |

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| NC.M3.A-SSE.1b Interpret expressions composed of multiple parts by viewing one or more of their parts as a single entity to give meaning in terms of a context.   | <b>SE/TE:</b> 13-22, 23-30, 69-75, 109-116, 131-139, 140-146, 147-153, 185-192, 203-210, 227-234<br><b>TE:</b> 13A-22B, 23A-30B, 69A-75B, 109A-116B, 131A-139B, 140A-146B, 147A-153B, 185A-192B, 203A-210B, 227A-234B |
| NC.M3.A-SSE.2 Use the structure of an expression to identify ways to write equivalent expressions   | <b>SE/TE:</b> 76-83, 84-91, 92-99, 169-176, 177-184, 267-272, 379-386<br><b>TE:</b> 76A-83B, 84A-91B, 92A-99B, 169A-176B, 177A-184B, 267A-272B, 379A-386B   |
| <b>Seeing Structure in Expressions</b>  |   |
| <b>Write expressions in equivalent forms to solve problems.</b>   |   |
| NC.M3.A-SSE.3 Write an equivalent form of an exponential expression by using the properties of exponents to transform expressions to reveal rates based on different intervals of the domain.   | <b>SE/TE:</b> 76-83, 84-91, 92-99, 169-176, 177-184, 267-272, 379-386<br><b>TE:</b> 76A-83B, 84A-91B, 92A-99B, 169A-176B, 177A-184B, 267A-272B, 379A-386B   |
| <b>Arithmetic with Polynomial and Rational Expressions</b>  |   |
| <b>Understand the relationship between zeros and factors of polynomials.</b>  |   |
| NC.M3.A-APR.2 Understand and apply the Remainder Theorem.   | <b>SE/TE:</b> 84-91<br><b>TE:</b> 84A-91B   |
| NC.M3.A-APR.3 Understand the relationship among factors of a polynomial expression, the solutions of a polynomial equation and the zeros of a polynomial function.  | <b>SE/TE:</b> 92-99<br><b>TE:</b> 92A-99B   |
| <b>Arithmetic with Polynomial and Rational Expressions</b>  |   |
| <b>Rewrite rational expressions.</b>  |   |
| NC.M3.A-APR.6 Rewrite simple rational expressions in different forms; write $a(x)/b(x)$ in the form $q(x)+r(x)/b(x)$ , where $a(x), b(x), q(x)$ , and $r(x)$ are polynomials with the degree of $r(x)$ less than the degree of $b(x)$ . | <b>SE/TE:</b> 131-139, 140-146, 147-153<br><b>TE:</b> 131A-139B, 140A-146B, 147A-153B   |
| NC.M3.A-APR.7 Understand the similarities between arithmetic with rational expressions and arithmetic with rational numbers.  | <b>SE/TE:</b> 140-146, 147-153<br><b>TE:</b> 140A-146B, 147A-153B   |
| NC.M3.A-APR.7a Add and subtract two rational expressions, $(x)$ and $(x)$ , where the denominators of both $(x)$ and $b(x)$ are linear expressions.   | <b>SE/TE:</b> 147-153<br><b>TE:</b> 147A-153B   |

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| NC.M3.A-APR.7b Multiply and divide two rational expressions.  | <b>SE/TE:</b> 140-146<br><b>TE:</b> 140A-146B   |
| <b>Creating Equations</b>   |   |
| <b>Create equations that describe numbers or relationships.</b>   |   |
| NC.M3.A-CED.1 Create equations and inequalities in one variable that represent absolute value, polynomial, exponential, and rational relationships and use them to solve problems algebraically and graphically.  | <b>SE/TE:</b> 40-46, 101-108, 154-161, 193-201, 273-279<br><b>TE:</b> 40A-46B, 101A-108B, 154A-161B, 193A-201B, 273A-279B   |
| NC.M3.A-CED.2 Create and graph equations in two variables to represent absolute value, polynomial, exponential and rational relationships between quantities.   | <b>SE/TE:</b> 23-30, 61-68, 131-139, 185-192, 227-234, 235-245, 247-253, 261-266, 323-331, 333-339<br><b>TE:</b> 23A-30B, 61A-68B, 131A-139B, 185A-192B, 227A-234B, 235A-245B, 247A-253B, 261A-266B, 323A-331B, 333A-339B |
| NC.M3.A-CED.3 Create systems of equations and/or inequalities to model situations in context.   | <b>SE/TE:</b> 40-46, 47-52, 101-108, 154-161, 193-201, 273-279, 355-362<br><b>TE:</b> 40A-46B, 47A-52B, 101A-108B, 154A-161B, 193A-201B, 273A-279B, 355A-362B   |
| <b>Reasoning with Equations and Inequalities</b>  |   |
| <b>Understand solving equations as a process of reasoning and explain the reasoning.</b>  |   |
| NC.M3.A-REI.1 Justify a solution method for equations and explain each step of the solving process using mathematical reasoning.  | <b>SE/TE:</b> 40-46, 101-108, 154-161, 193-201, 273-279, 355-362<br><b>TE:</b> 40A-46B, 101A-108B, 154A-161B, 193A-201B, 273A-279B, 355A-362B   |
| NC.M3.A-REI.2 Solve and interpret one variable rational equations arising from a context, and explain how extraneous solutions may be produced.   | <b>SE/TE:</b> 154-161, 193-201<br><b>TE:</b> 154A-161B, 193A-201B   |
| <b>Reasoning with Equations and Inequalities</b>  |   |
| <b>Represent and solve equations and inequalities graphically.</b>  |   |
| NC.M3.A-REI.11 Extend an understanding that the $x$ -coordinates of the points where the graphs of two equations $y=f(x)$ and $y=g(x)$ intersect are the solutions of the equation $f(x)=g(x)$ and approximate solutions using a graphing technology or successive approximations with a table of values. | <b>SE/TE:</b> 40-46<br><b>TE:</b> 40A-46B   |

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| <b>Functions</b>   |   |
| <b>Interpreting Functions</b>  |   |
| <b>Understand the concept of a function and use function notation.</b>   |   |
| NC.M3.F-IF.1 Extend the concept of a function by recognizing that trigonometric ratios are functions of angle measure.   | <b>SE/TE:</b> 297-304<br><b>TE:</b> 297A-304B   |
| NC.M3.F-IF.2 Use function notation to evaluate piecewise defined functions for inputs in their domains, and interpret statements that use function notation in terms of a context.   | <b>SE/TE:</b> 23-30<br><b>TE:</b> 23A-30B   |
| <b>Interpreting Functions</b>  |   |
| <b>Interpret functions that arise in applications in terms of the context.</b>   |   |
| NC.M3.F-IF.4 Interpret key features of graphs, tables, and verbal descriptions in context to describe functions that arise in applications relating two quantities to include periodicity and discontinuities.   | <b>SE/TE:</b> 5-12, 13-22, 23-30, 61-68, 109-116, 123-130, 131-139, 185-192, 227-234, 261-266<br><b>TE:</b> 5A-12B, 13A-22B, 23A-30B, 61A-68B, 109A-116B, 123A-130B, 131A-139B, 185A-192B, 227A-234B, 261A-266B |
| <b>Interpreting Functions</b>  |   |
| <b>Analyze functions using different representations.</b>  |   |
| NC.M3.F-IF.7 Analyze piecewise, absolute value, polynomials, exponential, rational, and trigonometric functions (sine and cosine) using different representations to show key features of the graph, by hand in simple cases and using technology for more complicated cases, including: domain and range; intercepts; intervals where the function is increasing, decreasing, positive, or negative; rate of change; relative maximums and minimums; symmetries; end behavior; period; and discontinuities. | <b>SE/TE:</b> 5-12, 13-22, 23-30, 61-68, 109-116, 123-130, 131-139, 185-192, 227-234, 261-266<br><b>TE:</b> 5A-12B, 13A-22B, 23A-30B, 61A-68B, 109A-116B, 123A-130B, 131A-139B, 185A-192B, 227A-234B, 261A-266B |
| NC.M3.F-IF.9 Compare key features of two functions using different representations by comparing properties of two different functions, each with a different representation (symbolically, graphically, numerically in tables, or by verbal descriptions).   | <b>SE/TE:</b> 72<br><b>TE:</b> 69A  |

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|---|---|
| <b>Building Functions</b>   |   |
| <b>Build a function that models a relationship between two quantities.</b>  |   |
| NC.M3.F-BF.1 Write a function that describes a relationship between two quantities.   | <b>SE/TE:</b> 5-12, 13-22, 23-30, 61-68, 109-116, 123-130, 131-139, 185-192, 227-234, 261-266<br><b>TE:</b> 5A-12B, 13A-22B, 23A-30B, 61A-68B, 109A-116B, 123A-130B, 131A-139B, 185A-192B, 227A-234B, 261A-266B |
| NC.M3.F-BF.1a Build polynomial and exponential functions with real solution(s) given a graph, a description of a relationship, or ordered pairs (include reading these from a table).   | <b>SE/TE:</b> 61-68, 71, 74-75, 227-234<br><b>TE:</b> 61A-68B, 227A-234B  |
| NC.M3.F-BF.1b Build a new function, in terms of a context, by combining standard function types using arithmetic operations.  | <b>SE/TE:</b> 203-210<br><b>TE:</b> 203A-210B   |
| <b>Building Functions</b>   |   |
| <b>Build new functions from existing functions.</b>   |   |
| NC.M3.F-BF.3 Extend an understanding of the effects on the graphical and tabular representations of a function when replacing $f(x)$ with $k \cdot f(x)$ , $f(x)+k$ , $f(x+k)$ to include $f(k \cdot x)$ for specific values of $k$ (both positive and negative). | <b>SE/TE:</b> 13-22, 109-116, 131-139, 185-192, 227-234, 262, 265, 340-347<br><b>TE:</b> 13A-22B, 109A-116B, 131A-139B, 185A-192B, 227A-234B, 340A-347B   |
| NC.M3.F-BF.4 Find an inverse function.  | <b>SE/TE:</b> 211-219, 355-362<br><b>TE:</b> 211A-219B, 355A-362B   |
| NC.M3.F-BF.4a Understand the inverse relationship between exponential and logarithmic, quadratic and square root, and linear to linear functions and use this relationship to solve problems using tables, graphs, and equations.                                 | <b>SE/TE:</b> 254-260, 261-266, 267-272, 273-279<br><b>TE:</b> 254A-260B, 261A-266B, 267A-272B, 273A-279B   |
| NC.M3.F-BF.4b Determine if an inverse function exists by analyzing tables, graphs, and equations.   | <b>SE/TE:</b> 211-219<br><b>TE:</b> 211A-219B   |
| NC.M3.F-BF.4c If an inverse function exists for a linear, quadratic and/or exponential function, $f$ , represent the inverse function, $f^{-1}$ , with a table, graph, or equation and use it to solve problems in terms of a context.                            | <b>SE/TE:</b> 211-219, 355-362<br><b>TE:</b> 211A-219B, 355A-362B   |



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| <b>Linear, Quadratic, and Exponential Models</b>   |   |
| <b>Construct and compare linear and exponential models and solve problems.</b>   |   |
| NC.M3.F-LE.3 Compare the end behavior of functions using their rates of change over intervals of the same length to show that a quantity increasing exponentially eventually exceeds a quantity increasing as a polynomial function.   | <b>SE/TE:</b> 227-234, 235-245, 247-253<br><b>TE:</b> 227A-234B, 235A-245B, 247A-253B |
| NC.M3.F-LE.4 Use logarithms to express the solution to $ab^{ct}=d$ where $a$ , $b$ , $c$ , and $d$ are numbers and evaluate the logarithm using technology.  | <b>SE/TE:</b> 273-279<br><b>TE:</b> 273A-279B   |
| <b>Trigonometric Functions</b>   |   |
| <b>Extend the domain of trigonometric functions using the unit circle.</b>   |   |
| NC.M3.F-TF.1 Understand radian measure of an angle as: <ul style="list-style-type: none"> <li>• The ratio of the length of an arc on a circle subtended by the angle to its radius.</li> <li>• A dimensionless measure of length defined by the quotient of arc length and radius that is a real number.</li> <li>• The domain for trigonometric functions.</li> </ul> | <b>SE/TE:</b> 305-315<br><b>TE:</b> 305A-315B   |
| NC.M3.F-TF.2 Build an understanding of trigonometric functions by using tables, graphs and technology to represent the cosine and sine functions.  | <b>SE/TE:</b> 316-322, 323-331, 333-339<br><b>TE:</b> 316A-322B, 323A-331B, 333A-339B |
| NC.M3.F-TF.2a Interpret the sine function as the relationship between the radian measure of an angle formed by the horizontal axis and a terminal ray on the unit circle and its y coordinate.   | <b>SE/TE:</b> 316-317<br><b>TE:</b> 316A-322B   |
| NC.M3.F-TF.2b Interpret the cosine function as the relationship between the radian measure of an angle formed by the horizontal axis and a terminal ray on the unit circle and its x coordinate.   | <b>SE/TE:</b> 316-317<br><b>TE:</b> 316A-322B   |

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|---|---|
| <b>Trigonometric Functions</b>  |   |
| <b>Model periodic phenomena with trigonometric functions.</b>   |   |
| NC.M3.F-TF.5 Use technology to investigate the parameters, $a$ , $b$ , and $h$ of a sine function, $(x)=a \cdot \sin(b \cdot x)+h$ , to represent periodic phenomena and interpret key features in terms of a context.  | <b>SE/TE:</b> 323-331, 333-339<br><b>TE:</b> 323A-331B, 333A-339B   |
| <b>Geometry</b>   |   |
| <b>Congruence</b>   |   |
| <b>Prove geometric theorems.</b>  |   |
| NC.M3.G-CO.10 Verify experimentally properties of the centers of triangles (centroid, in center, and circumcenter).   | This standard is addressed in enVision Integrated Mathematics I and enVision Integrated Mathematics II. Please see:<br><br><b>Mathematics I</b><br><b>SE/TE:</b> 71, 292, 299-305, 371-379<br><b>TE:</b> 298B, 299A-305B, 371A-379B<br><br><b>Mathematics II</b><br><b>SE/TE:</b> 319-326, 328-335, 336-342, 343-348, 445-451<br><b>TE:</b> 319A-326B, 328A-335B, 336A-342B, 343A-348B, 445A-451B |
| NC.M3.G-CO.11 Prove theorems about parallelograms.<br><ul style="list-style-type: none"> <li>• Opposite sides of a parallelogram are congruent.</li> <li>• Opposite angles of a parallelogram are congruent.</li> <li>• Diagonals of a parallelogram bisect each other.</li> <li>• If the diagonals of a parallelogram are congruent, then the parallelogram is a rectangle.</li> </ul> | This standard is addressed in enVision Integrated Mathematics I and enVision Integrated Mathematics II. Please see:<br><br><b>Mathematics I</b><br><b>SE/TE:</b> 290, 351, 408-414<br><b>TE:</b> 291, 353, 408A-414B<br><br><b>Mathematics II</b><br><b>SE/TE:</b> 374-382, 383-390, 391-397, 398-405<br><b>TE:</b> 374A-382B, 383A-390B, 391A-397B, 398A-405B                                    |
| NC.M3.G-CO.14 Apply properties, definitions, and theorems of two-dimensional figures to prove geometric theorems and solve problems.  | This standard is addressed in enVision Integrated Mathematics II. Please see:<br><br><b>Mathematics II</b><br><b>SE/TE:</b> 357-363, 365-373, 374-382, 383-390, 391-397, 398-405<br><b>TE:</b> 357A-363B, 365A-373B, 374A-382B, 383A-390B, 391A-397B, 398A-405B   |

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| <b>Circles</b>   |   |
| <b>Understand and apply theorems about circles.</b>  |   |
| NC.M3.G-C.2 Understand and apply theorems about circles. <ul style="list-style-type: none"> <li>• Understand and apply theorems about relationships with angles and circles, including central, inscribed and circumscribed angles.</li> <li>• Understand and apply theorems about relationships with line segments and circles including, radii, diameter, secants, tangents and chords.</li> </ul> | <b>SE/TE:</b> 519-526, 528-535, 536-542, 543-550<br><b>TE:</b> 519A-526B, 528A-535B, 536A-542B, 543A-550B |
| NC.M3.G-C.5 Using similarity, demonstrate that the length of an arc, $s$ , for a given central angle is proportional to the radius, $r$ , of the circle. Define radian measure of the central angle as the ratio of the length of the arc to the radius of the circle, $s/r$ . Find arc lengths and areas of sectors of circles.   | <b>SE/TE:</b> 511-518<br><b>TE:</b> 511A-518B   |
| <b>Expressing Geometric Properties with Equations</b>  |   |
| <b>Translate between the geometric description and the equation for a conic section.</b>   |   |
| NC.M3.G-GPE.1 Derive the equation of a circle of given center and radius using the Pythagorean Theorem; complete the square to find the center and radius of a circle given by an equation.  | <b>SE/TE:</b> 491-496<br><b>TE:</b> 491A-496B   |
| <b>Geometric Measurement &amp; Dimension</b>   |   |
| <b>Explain volume formulas and use them to solve problems.</b>   |   |
| NC.M3.G-GMD.3 Use the volume formulas for prisms, cylinders, pyramids, cones, and spheres to solve problems.   | <b>SE/TE:</b> 557-562, 563-570, 572-578, 579-584<br><b>TE:</b> 557A-562B, 563A-570B, 572A-578B, 579A-584B |
| <b>Geometric Measurement &amp; Dimension</b>   |   |
| <b>Visualize relationships between two-dimensional and three-dimensional objects.</b>  |   |
| NC.M3.G-GMD.4 Identify the shapes of two-dimensional cross-sections of three-dimensional objects, and identify three-dimensional objects generated by rotations of two-dimensional objects.  | <b>SE/TE:</b> 557-562<br><b>TE:</b> 557A-562B   |

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| <b>Modeling with Geometry</b>  |  |
| <b>Apply geometric concepts in modeling situations.</b>  |  |
| NC.M3.G-MG.1 Apply geometric concepts in modeling situations <ul style="list-style-type: none"> <li>• Use geometric and algebraic concepts to solve problems in modeling situations:</li> <li>• Use geometric shapes, their measures, and their properties, to model real-life objects.</li> <li>• Use geometric formulas and algebraic functions to model relationships.</li> <li>• Apply concepts of density based on area and volume.</li> <li>• Apply geometric concepts to solve design and optimization problems.</li> </ul> | <b>SE/TE:</b> 459, 462, 465, 472, 487, 489-490, 496, 562, 564-567, 570<br><b>TE:</b> 466B, 472B, 571A-571B |
| <b>Statistics and Probability</b>  |  |
| <b>Making Inference and Justifying Conclusions</b>   |  |
| <b>Understand and evaluate random processes underlying statistical experiments.</b>  |  |
| NC.M3.S-IC1 Understand the process of making inferences about a population based on a random sample from that population.  | <b>SE/TE:</b> 393-399, 400-406<br><b>TE:</b> 393A-399B, 400A-406B  |
| <b>Making Inference and Justifying Conclusions</b>   |  |
| <b>Make inferences and justify conclusions from sample surveys, experiments, and observational studies.</b>  |  |
| NC.M3.S-IC.3 Recognize the purposes of and differences between sample surveys, experiments, and observational studies and understand how randomization should be used in each.   | <b>SE/TE:</b> 400-406<br><b>TE:</b> 400A-406B  |
| NC.M3.S-IC.4 Use simulation to understand how samples can be used to estimate a population mean or proportion and how to determine a margin of error for the estimate.   | <b>SE/TE:</b> 407-414, 415-422, 423-430<br><b>TE:</b> 407A-414B, 415A-422B, 423A-430B                      |

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| <p>NC.M3.S-IC.5 Use simulation to determine whether observed differences between samples from two distinct populations indicate that the two populations are actually different in terms of a parameter of interest.</p> | <p><b>SE/TE:</b> 431-438<br/><b>TE:</b> 431A-438B</p>  |
| <p>NC.M3.S-IC.6 Evaluate articles and websites that report data by identifying the source of the data, the design of the study, and the way the data are graphically displayed.</p>                                      | <p><b>SE/TE:</b> 431-438<br/><b>TE:</b> 431A-438B</p>  |