North Carolina Tutorials are designed specifically for the Common Core State Standards for English language arts, the North Carolina Standard Course of Study for Math, and the North Carolina Essential Standards, to prepare students for the READY End-of-Course Assessments.

Math Tutorials offer targeted instruction, practice and review designed to develop computational fluency, deepen conceptual understanding, and apply mathematical practices. They automatically identify and address learning gaps down to elementary-level content, using adaptive remediation to bring students to grade-level no matter where they start. Students engage with the content in an interactive, feedback-rich environment as they progress through standards-aligned modules. By constantly honing the ability to apply their knowledge in abstract and real world scenarios, students build the depth of knowledge and higher order skills required to demonstrate their mastery when put to the test.

In each module, the Learn It and Try It make complex ideas accessible to students through focused content, modeled logic and process, multi-modal representations, and personalized feedback as students reason through increasingly challenging problems. The Review It offers a high impact summary of key concepts and relates those concepts to students' lives. The Test It assesses students' mastery of the module's concepts, providing granular performance data to students and teachers after each attempt. To help students focus on the content most relevant to them, unit-level pretests and posttests can quickly identify where students are strong and where they're still learning.

1. RATIOS AND RATES

- **RATIOS**
  - **NC.6.RP.1.i** *Describe a ratio as a multiplicative relationship between two quantities.*
  - **NC.6.RP.1.ii** *Model a ratio relationship using a variety of representations.*
  - **NC.6.RP.3.i** *Creating and using a table to compare ratios.*
  - **NC.6.RP.3.ii** *Finding missing values in the tables.*
  - **NC.6.RP.3.v** *Plotting the pairs of values on the coordinate plane.*
  - **NC.6.NS.8** *Solve real-world and mathematical problems by graphing points in all four quadrants of the coordinate plane. Include use of coordinates and absolute value to find distances between points with the same first coordinate or the same second coordinate.*
  - **NC.6.NS.6.b.3** *Find and position pairs of rational numbers on a coordinate plane.*
  - **NC.6.NS.7.b** *Write, interpret, and explain statements of order for rational numbers in real-world contexts.*

- **RATES AND UNIT RATES**
  - **NC.6.RP.2** *Understand that ratios can be expressed as equivalent unit ratios by finding and interpreting both unit ratios in context.*
  - **NC.6.RP.3.iii** *Using a unit ratio.*

2. PERCENTS AND CONVERSIONS

- **SOLVING PERCENT PROBLEMS**
  - **NC.6.RP.4.i** *Understanding and finding a percent of a quantity as a ratio per 100.*
  - **NC.6.RP.4.iii** *Finding the whole, given a part and the percent.*

- **UNIT CONVERSIONS**
  - **NC.6.RP.3.iv** *Converting and manipulating measurements using given ratios.*

3. RATIONAL NUMBERS

- **ADDING RATIONAL NUMBERS**
  - **NC.6.NS.6.a.1** *Recognize opposite signs of numbers as indicating locations on opposite sides of 0 and that the opposite of the opposite of a number is the number itself.*
  - **NC.6.NS.9.i** *Describe situations in which opposite quantities combine to make 0.*
  - **NC.6.NS.9.ii** *Understand ?? + ?? as the number located a distance q from p, in the positive or negative direction depending on the sign of q. Show that a number and its additive inverse create a zero pair.*
  - **NC.6.NS.9.iii** *Understand subtraction of integers as adding the additive inverse, ?? - ?? = ?? + (– ??). Show that the distance between two integers on the number line is the absolute value of their difference.*
  - **NC.6.NS.9.iv** *Use models to add and subtract integers from -20 to 20 and describe real-world contexts using sums and differences.*

- **SUBTRACTING RATIONAL NUMBERS**
  - **NC.6.NS.9.i** *Describe situations in which opposite quantities combine to make 0.*
  - **NC.6.NS.9.ii** *Understand ?? + ?? as the number located a distance q from p, in the positive or negative direction depending on the sign of q. Show that a number and its additive inverse create a zero pair.*
  - **NC.6.NS.9.iii** *Understand subtraction of integers as adding the additive inverse, ?? - ?? = ?? + (– ??). Show that the distance between two integers on the number line is the absolute value of their difference.*
  - **NC.6.NS.9.iv** *Use models to add and subtract integers from -20 to 20 and describe real-world contexts using sums and differences.*

4. DIVIDING FRACTIONS

- **DIVIDING FRACTIONS**
  - **NC.6.NS.1.i** *Interpret and compute quotients of fractions.*
  - **NC.6.NS.1.ii** *Solve real-world and mathematical problems involving division of fractions.*

- **SOLVING PROBLEMS BY DIVIDING FRACTIONS**
  - **NC.6.NS.1.i** *Interpret and compute quotients of fractions.*
  - **NC.6.NS.1.ii** *Solve real-world and mathematical problems involving division of fractions.*

5. NUMBER SENSE

- **DIVIDING MULTI-DIGIT WHOLE NUMBERS**
  - **NC.6.NS.2** *Fluently divide using long division with a minimum of a four-digit dividend and interpret the quotient and remainder in context.*

- **DECIMAL OPERATIONS**
  - **NC.6.NS.3** *Apply and extend previous understandings of decimals to develop and fluently use the standard algorithms for addition, subtraction, multiplication and division of decimals.*

- **GREATEST COMMON FACTOR AND LEAST COMMON MULTIPLE**
  - **NC.6.NS.4.ii** *Find the greatest common factor of two whole numbers less than or equal to 100.*
  - **NC.6.NS.4.iii** *Use the greatest common factor and the distributive property to rewrite the sum of two whole numbers, each less than or equal to 100.*
  - **NC.6.NS.4.i** *Find the unique prime factorization for a whole number.*
  - **NC.6.NS.4.iv** *Find the least common multiple of two whole numbers less than or equal to 12 to add and subtract fractions with unlike denominators.*

6. SIGNED NUMBERS

- **SIGNED NUMBERS**
  - **NC.6.NS.5.i** *Describe quantities having opposite directions or values.*

- **NC.6.NS.6.a.1** *Recognize opposite signs of numbers as indicating locations on opposite sides of 0 and that the opposite of the opposite of a number is the number itself.*
- **NC.6.NS.5.ii** *Represent quantities in real-world contexts, explaining the meaning of 0 in each situation.*

- **INEQUALITIES AND COMPARISON**
  - **NC.6.NS.7.a** *Interpret statements of inequality as statements about the relative position of two numbers on a number line diagram.*
  - **NC.6.NS.6.a.1** *Recognize opposite signs of numbers as indicating locations on opposite sides of 0 and that the opposite of the opposite of a number is the number itself.*
  - **NC.6.EE.8.ii** *Writing an inequality of the form x > c or x < c to represent a constraint or condition in a real-world or mathematical problem.*
  - **NC.6.NS.7.b** *Write, interpret, and explain statements of order for rational numbers in real-world contexts.*

- **ABSOLUTE VALUE**
  - **NC.6.NS.5.iii.a** *Interpret absolute value as magnitude for a positive or negative quantity in a real-world context.*
  - **NC.6.NS.6.a.1** *Recognize opposite signs of numbers as indicating locations on opposite sides of 0 and that the opposite of the opposite of a number is the number itself.*
  - **NC.6.NS.5.iii.b** *Distinguish comparisons of absolute value from statements about order.*
  - **NC.6.NS.7.b** *Write, interpret, and explain statements of order for rational numbers in real-world contexts.*

7. THE COORDINATE PLANE

- **PLOTTING POINTS IN THE COORDINATE PLANE**
  - **NC.6.NS.6.a.1** *Recognize opposite signs of numbers as indicating locations on opposite sides of 0 and that the opposite of the opposite of a number is the number itself.*
  - **NC.6.NS.6.a.2** *Find and position rational numbers on a horizontal or vertical number line.*
  - **NC.6.NS.8** *Solve real-world and mathematical problems by graphing points in all four quadrants of the coordinate plane. Include use of coordinates and absolute value to find distances between points with the same first coordinate or the same second coordinate.*
  - **NC.6.NS.6.b.1** *Understand signs of numbers in ordered pairs as indicating locations in quadrants.*
  - **NC.6.NS.6.b.2** *Recognize that when two ordered pairs differ only by signs, the locations of the points are related by reflections across one or both axes.*
  - **NC.6.NS.6.b.3** *Find and position pairs of rational numbers on a coordinate plane.*
  - **NC.6.G.3.i** *Drawing polygons in the coordinate plane given coordinates for the vertices.*

- **QUADRANTS AND AXES**
  - **NC.6.NS.8** *Solve real-world and mathematical problems by graphing points in all four quadrants of the coordinate plane. Include use of coordinates and absolute value to find distances between points with the same first coordinate or the same second coordinate.*
  - **NC.6.NS.6.b.1** *Understand signs of numbers in ordered pairs as indicating locations in quadrants.*
  - **NC.6.NS.6.b.3** *Find and position pairs of rational numbers on a coordinate plane.*

- **USING GRAPHS TO SOLVE PROBLEMS**
  - **NC.6.NS.8** *Solve real-world and mathematical problems by graphing points in all four quadrants of the coordinate plane. Include use of coordinates and absolute value to find distances between points with the same first coordinate or the same second coordinate.*
  - **NC.6.NS.6.b.3** *Find and position pairs of rational numbers on a coordinate plane.*
  - **NC.6.G.3.ii** *Using coordinates to find the length of a side joining points with the same first coordinate or the same second coordinate.*

8. NUMERICAL AND ALGEBRAIC EXPRESSIONS

- **EXPONENTS**

- **NC.6.EE.1** *Write and evaluate numerical expressions, with and without grouping symbols, involving whole-number exponents.*
- **NC.6.EE.2.iii** *Evaluate expressions at specific values of their variables using expressions that arise from formulas used in real-world problems.*

- **UNDERSTANDING PARTS OF EXPRESSIONS**
  - **NC.6.EE.2.ii** *Identify parts of an expression using mathematical terms and view one or more of those parts as a single entity.*

9. WRITING AND EVALUATING EXPRESSIONS

- **WRITING EXPRESSIONS**
  - **NC.6.EE.2.i** *Write expressions that record operations with numbers and with letters standing for numbers.*
  - **NC.6.EE.6** *Use variables to represent numbers and write expressions when solving a real-world or mathematical problem.*
  - **NC.6.EE.9.i** *Using variables to represent two quantities in a real-world or mathematical context that change in relationship to one another.*
  - **NC.6.EE.7.i** *?? + ?? = ?? in which p, q and x are all nonnegative rational numbers; and,*
  - **NC.6.EE.7.ii** *?? · ?? = ?? for cases in which p, q and x are all nonnegative rational numbers.*

- **EVALUATING EXPRESSIONS**
  - **NC.6.EE.2.iii** *Evaluate expressions at specific values of their variables using expressions that arise from formulas used in real-world problems.*

- **EQUIVALENT EXPRESSIONS**
  - **NC.6.EE.3** *Apply the properties of operations to generate equivalent expressions without exponents.*
  - **NC.6.EE.4** *Identify when two expressions are equivalent and justify with mathematical reasoning.*

10. EXPRESSIONS AND EQUATIONS

- **WRITING EXPRESSIONS TO SOLVE PROBLEMS**
  - **NC.6.EE.2.i** *Write expressions that record operations with numbers and with letters standing for numbers.*
  - **NC.6.EE.6** *Use variables to represent numbers and write expressions when solving a real-world or mathematical problem.*
  - **NC.6.EE.7.i** *?? + ?? = ?? in which p, q and x are all nonnegative rational numbers; and,*
  - **NC.6.EE.7.ii** *?? · ?? = ?? for cases in which p, q and x are all nonnegative rational numbers.*
  - **NC.6.EE.9.i** *Using variables to represent two quantities in a real-world or mathematical context that change in relationship to one another.*
  - **NC.6.EE.9.ii** *Analyze the relationship between quantities in different representations (context, equations, tables, and graphs).*

- **INDEPENDENT AND DEPENDENT VARIABLES**
  - **NC.6.EE.2.i** *Write expressions that record operations with numbers and with letters standing for numbers.*
  - **NC.6.EE.6** *Use variables to represent numbers and write expressions when solving a real-world or mathematical problem.*
  - **NC.6.EE.9.i** *Using variables to represent two quantities in a real-world or mathematical context that change in relationship to one another.*
  - **NC.6.EE.9.ii** *Analyze the relationship between quantities in different representations (context, equations, tables, and graphs).*

- **MULTIPLE REPRESENTATIONS: TABLES, GRAPHS, AND EQUATIONS**
  - **NC.6.EE.9.ii** *Analyze the relationship between quantities in different representations (context, equations, tables, and graphs).*
  - **NC.6.EE.9.i** *Using variables to represent two quantities in a real-world or mathematical context that change in relationship to one another.*

11. SOLVING EQUATIONS

- **SOLVING ADDITION EQUATIONS**

- **NC.6.EE.7.i** *?? + ?? = ?? in which p, q and x are all nonnegative rational numbers; and,*
- **NC.6.EE.7.ii** *?? · ?? = ?? for cases in which p, q and x are all nonnegative rational numbers.*

SOLVING MULTIPLICATION EQUATIONS

- **NC.6.EE.7.ii** *?? · ?? = ?? for cases in which p, q and x are all nonnegative rational numbers.*

12. SOLVING INEQUALITIES

SOLUTIONS OF EQUATIONS AND INEQUALITIES

- **NC.6.EE.5** *Use substitution to determine whether a given number in a specified set makes an equation true.*
- **NC.6.EE.7.i** *?? + ?? = ?? in which p, q and x are all nonnegative rational numbers; and,*
- **NC.6.EE.7.ii** *?? · ?? = ?? for cases in which p, q and x are all nonnegative rational numbers.*
- **NC.6.EE.8.i** *Using substitution to determine whether a given number in a specified set makes an inequality true.*

SOLVING INEQUALITIES

- **NC.6.EE.5** *Use substitution to determine whether a given number in a specified set makes an equation true.*
- **NC.6.EE.8.i** *Using substitution to determine whether a given number in a specified set makes an inequality true.*
- **NC.6.EE.8.iv** *Representing solutions of inequalities on number line diagrams.*
- **NC.6.EE.8.ii** *Writing an inequality of the form x > c or x < c to represent a constraint or condition in a real-world or mathematical problem.*

13. TWO-DIMENSIONAL GEOMETRY

AREA

- **NC.6.G.1.i** *Find the area of triangles by composing into rectangles and decomposing into right triangles.*
- **NC.6.G.1.ii** *Find the area of special quadrilaterals and polygons by decomposing into triangles or rectangles.*

COORDINATE GEOMETRY

- **NC.6.NS.8** *Solve real-world and mathematical problems by graphing points in all four quadrants of the coordinate plane. Include use of coordinates and absolute value to find distances between points with the same first coordinate or the same second coordinate.*
- **NC.6.NS.6.b.3** *Find and position pairs of rational numbers on a coordinate plane.*
- **NC.6.G.3.i** *Drawing polygons in the coordinate plane given coordinates for the vertices.*
- **NC.6.G.3.ii** *Using coordinates to find the length of a side joining points with the same first coordinate or the same second coordinate.*

14. THREE-DIMENSIONAL GEOMETRY

VOLUME

- **NC.6.G.2** *Apply and extend previous understandings of the volume of a right rectangular prism to find the volume of right rectangular prisms with fractional edge lengths. Apply this understanding to the context of solving real-world and mathematical problems.*

SOLID FIGURES

- **NC.6.G.4** *Represent right prisms and right pyramids using nets made up of rectangles and triangles, and use the nets to find the surface area of these figures. Apply these techniques in the context of solving real-world and mathematical problems.*

15. INTRODUCTION TO STATISTICS

STATISTICAL QUESTIONS AND DATA DISTRIBUTIONS

- **NC.6.SP.1** *Recognize a statistical question as one that anticipates variability in the data related to the question and accounts for it in the answers.*

- **NC.6.SP.2** *Understand that a set of data collected to answer a statistical question has a distribution which can be described by its center, spread, and overall shape.*
- **NC.6.SP.3.a.1** *Understand that a mean is a measure of center that represents a balance point or fair share of a data set and can be influenced by the presence of extreme values within the data set.*
- **NC.6.SP.3.a.2** *Understand the median as a measure of center that is the numerical middle of an ordered data set.*
- **NC.6.SP.5.b.1** *Giving quantitative measures of center, describing variability, and any overall pattern, and noting any striking deviations.*
- **NC.6.SP.5.a.2** *Communicating the nature of the attribute under investigation, how it was measured, and the units of measurement.*
- **NC.6.SP.5.b.2** *Justifying the appropriate choice of measures of center using the shape of the data distribution.*

MEASURES OF CENTER AND VARIABILITY

- **NC.6.SP.2** *Understand that a set of data collected to answer a statistical question has a distribution which can be described by its center, spread, and overall shape.*
- **NC.6.SP.3.a.1** *Understand that a mean is a measure of center that represents a balance point or fair share of a data set and can be influenced by the presence of extreme values within the data set.*
- **NC.6.SP.4.ii** *Compare the attributes of different representations of the same data.*
- **NC.6.SP.5.b.1** *Giving quantitative measures of center, describing variability, and any overall pattern, and noting any striking deviations.*

16. DISPLAYING DATA

BOX PLOTS

- **NC.6.SP.3.a.2** *Understand the median as a measure of center that is the numerical middle of an ordered data set.*
- **NC.6.SP.4.i** *Use dot plots, histograms, and box plots to represent data.*
- **NC.6.SP.5.b.1** *Giving quantitative measures of center, describing variability, and any overall pattern, and noting any striking deviations.*
- **NC.6.SP.5.a.2** *Communicating the nature of the attribute under investigation, how it was measured, and the units of measurement.*
- **NC.6.SP.2** *Understand that a set of data collected to answer a statistical question has a distribution which can be described by its center, spread, and overall shape.*

DOT PLOTS AND HISTOGRAMS

- **NC.6.SP.4.i** *Use dot plots, histograms, and box plots to represent data.*
- **NC.6.SP.5.a.1** *Reporting the number of observations in dot plots and histograms.*
- **NC.6.SP.5.a.2** *Communicating the nature of the attribute under investigation, how it was measured, and the units of measurement.*
- **NC.6.SP.4.ii** *Compare the attributes of different representations of the same data.*

17. SUMMARIZING DATA

COLLECTING DATA

- **NC.6.SP.5.a.1** *Reporting the number of observations in dot plots and histograms.*
- **NC.6.SP.5.a.2** *Communicating the nature of the attribute under investigation, how it was measured, and the units of measurement.*
- **NC.6.SP.4.ii** *Compare the attributes of different representations of the same data.*

SUMMARIZING DATA USING MEASURES OF CENTER AND VARIABILITY

- **NC.6.SP.3.a.1** *Understand that a mean is a measure of center that represents a balance point or fair share of a data set and can be influenced by the presence of extreme values within the data set.*
- **NC.6.SP.3.a.2** *Understand the median as a measure of center that is the numerical middle of an ordered data set.*
- **NC.6.SP.4.ii** *Compare the attributes of different representations of the same data.*
- **NC.6.SP.5.b.1** *Giving quantitative measures of center, describing variability, and any overall pattern, and noting any striking deviations.*

- **NC.6.SP.2** *Understand that a set of data collected to answer a statistical question has a distribution which can be described by its center, spread, and overall shape.*
- **NC.6.SP.3.b** *Understand that describing the variability of a data set is needed to distinguish between data sets in the same scale, by comparing graphical representations of different data sets in the same scale that have similar measures of center, but different spreads.*

CHOOSING APPROPRIATE MEASURES TO SUMMARIZE DATA SETS

- **NC.6.SP.2** *Understand that a set of data collected to answer a statistical question has a distribution which can be described by its center, spread, and overall shape.*
- **NC.6.SP.3.a.1** *Understand that a mean is a measure of center that represents a balance point or fair share of a data set and can be influenced by the presence of extreme values within the data set.*
- **NC.6.SP.3.a.2** *Understand the median as a measure of center that is the numerical middle of an ordered data set.*
- **NC.6.SP.5.b.1** *Giving quantitative measures of center, describing variability, and any overall pattern, and noting any striking deviations.*
- **NC.6.SP.5.b.2** *Justifying the appropriate choice of measures of center using the shape of the data distribution.*
- **NC.6.SP.3.b** *Understand that describing the variability of a data set is needed to distinguish between data sets in the same scale, by comparing graphical representations of different data sets in the same scale that have similar measures of center, but different spreads.*
- **NC.6.SP.4.ii** *Compare the attributes of different representations of the same data.*