Readtopia®

DON·JOHNSTON
Human Learning Tools

NC Extended Content Standards for Math

● = Aligned with Standard   ◒ = Partially Meets Standard (and/or can be met with additional teacher input)

6TH GRADE MATH STANDARDS

NUMBER SENSE

Aligned College & Career Readiness Standard	NC Extended Content Standard		Addressed with Readtopia
6.RP.1. Understand the concept of a ratio, and use ratio language to describe a ratio relationship between two quantities. For example, "The ratio of wings to beaks in the bird house at the zoo was 2:1, because for every 2 wings there was 1 beak." "For every vote candidate A received, candidate C received nearly three votes."	NC.6.RP.1.	Demonstrate a ratio relationship with whole numbers using pictures or numbers.	●
6.RP.3. Use ratio and rate reasoning to solve real-world and mathematical problems, e.g., by reasoning about tables of equivalent ratios, tape diagrams, double number line diagrams, or equations.	NC.6.RP.3.	Find equivalent ratios by multiplying or dividing quantities by the same whole number.	●
6.NS.1. Interpret and compute quotients of fractions, and solve word problems involving division of fractions by fractions, e.g., by using visual fraction models and equations to represent the problem. For example, create a story context for $(2/3) \div (3/4)$, and use a visual fraction model to show the quotient; use the relationship between multiplication and division to explain that $(2/3) \div (3/4) = 8/9$ because $3/4$ of $8/9$ is $2/3$. (In general, $(a/b) \div (c/d) = ad/bc$.) How much chocolate will each person get if 3 people share $1/2$ lb. of chocolate equally? How many $3/4$-cup servings are in $2/3$ of a cup of yogurt? How wide is a rectangular strip of land with length $3/4$ mi and area $1/2$ square mi?	NC.6.NS.1	Compare the relationships between two unit fractions.	●

EXPRESSIONS AND EQUATIONS

Aligned College & Career Readiness Standard	NC Extended Content Standard		Addressed with Readtopia
6.EE.2.c. Evaluate expressions at specific values of their variables. Include expressions that arise from formulas used in real-world problems. Perform arithmetic operations, including those involving whole-number exponents, in the conventional order when there are no parentheses to specify a particular order (Order of Operations). For example, use the formulas $V = s3$ and $A = 6s2$ to find the volume and surface area of a cube with sides of length $s = 1/2$.			●

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EXPRESSIONS AND EQUATIONS

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6.EE.3. Apply the properties of operations to generate equivalent expressions. For example, apply the distributive property to the expression 3(2 + x) to produce the equivalent expression 6 + 3x; apply the distributive property to the expression 24x + 18y to produce the equivalent expression 6(4x + 3y); apply properties of operations to y + y + y to produce the equivalent expression 3y.	**NC.6.EE.3.**	Apply the properties of addition to identify equivalent numerical expressions.	●
6.EE.4. Identify when two expressions are equivalent (i.e., when the two expressions name the same number regardless of which value is substituted into them). For example, the expressions y + y + y and 3y are equivalent because they name the same number regardless of which number y stands for.			●
6.EE.5. Understand solving an equation or inequality as a process of answering a question: which values from a specified set, if any, make the equation or inequality true? Use substitution to determine whether a given number in a specified set makes an equation or inequality true.	**NC.6.EE.7.**	Identify an equation that represents a real-world problem in which variables are used to represent numbers.	●
6.EE.6. Use variables to represent numbers and write expressions when solving a real-world or mathematical problem; understand that a variable can represent an unknown number, or, depending on the purpose at hand, any number in a specified set.			
6.EE.7. Solve real-world and mathematical problems by writing and solving equations of the form x + p = q and px = q for cases in which p, q and x are all nonnegative rational numbers.			

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6TH GRADE MATH STANDARDS

MULTIPLICATION

Aligned College & Career Readiness Standard	NC Extended Content Standard		Addressed with Readtopia
6.NS.3. Fluently add, subtract, multiply, and divide multi-digit decimals using the standard algorithm for each operation.	NC.6.NS.3.	Solve two-factor multiplication problems with products up to 50 using concrete objects and using a calculator.	●

DIVISION

Aligned College & Career Readiness Standard	NC Extended Content Standard		Addressed with Readtopia
6.NS.2. Fluently divide multi-digit numbers using the standard algorithm.	NC.6.NS.2.	Apply the concept of fair share and equal shares to divide.	●

GEOMETRY

Aligned College & Career Readiness Standard	NC Extended Content Standard		Addressed with Readtopia
6.G.1. Find the area of right triangles, other triangles, special quadrilaterals, and polygons by composing into rectangles or decomposing into triangles and other shapes; apply these techniques in the context of solving real-world and mathematical problems.	NC.6.G.1.	Solve real-world and mathematical problems about area using unit squares.	●
6.G.2. Find the volume of a right rectangular prism with fractional edge lengths by packing it with unit cubes of the appropriate unit fraction edge lengths, and show that the volume is the same as would be found by multiplying the edge lengths of the prism. Apply the formulas $V = lwh$ and $V = bh$ to find volumes of right rectangular prisms with fractional edge lengths in the context of solving real-world and mathematical problems.			●

6TH GRADE MATH STANDARDS

STATISTICS AND PROBABILITY

Aligned College & Career Readiness Standard	NC Extended Content Standard		Addressed with Readtopia
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. For example, "How old am I?" is not a statistical question, but "How old are the students in my school?" is a statistical question because one anticipates variability in students' ages.	**NC.6.SP.1.**	Display data on a graph or table that shows variability in the data.	●
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.			
6.SP.4. Display numerical data in plots on a number line, including dot plots, histograms, and box plots.			

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7TH GRADE MATH STANDARDS

NUMBER SENSE

Aligned College & Career Readiness Standard	NC Extended Content Standard		Addressed with Readtopia
7.NS.1. Apply and extend previous understandings of addition and subtraction to add and subtract rational numbers; represent addition and subtraction on a horizontal or vertical number line diagram.	**NC.7.NS.1.**	Add fractions with like denominators (halves, thirds, fourths, and tenths) with sums less than or equal to one.	●
7.NS.1.d. Apply properties of operations as strategies to add and subtract rational numbers.			
7.NS.2.c. Apply properties of operations as strategies to multiply and divide rational numbers.			
7.NS.2.d. Convert a rational number to a decimal using long division; know that the decimal form of a rational number terminates in 0s or eventually repeats.			●
7.NS.3. Solve real-world and mathematical problems involving the four operations with rational numbers.			

EXPRESSIONS AND EQUATIONS

Aligned College & Career Readiness Standard	NC Extended Content Standard		Addressed with Readtopia
7.EE.3. Solve multi-step real-life and mathematical problems posed with positive and negative rational numbers in any form (whole numbers, fractions, and decimals), using tools strategically. Apply properties of operations to calculate with numbers in any form, convert between forms as appropriate, and assess the reasonableness of answers using mental computation and estimation strategies. For example: If a woman making $25 an hour gets a 10% raise, she will make an additional 1/10 of her salary an hour, or $2.50, for a new salary of $27.50. If you want to place a towel bar 9 3/4 inches long in the center of a door that is 27 1/2 inches wide, you will need to place the bar about 9 inches from each edge; this estimate can be used as a check on the exact computation.			●

7TH GRADE MATH STANDARDS

MULTIPLICATION

Aligned College & Career Readiness Standard	NC Extended Content Standard		Addressed with Readtopia
7.NS.2.a. Understand that multiplication is extended from fractions to rational numbers by requiring that operations continue to satisfy the properties of operations, particularly the distributive property, leading to products such as (–1)(–1) = 1 and the rules for multiplying signed numbers. Interpret products of rational numbers by describing real-world contexts.	**NC.7.NS.2.a.**	Solve multiplication problems with products up to 100 using a calculator.	●

DIVISION

Aligned College & Career Readiness Standard	NC Extended Content Standard		Addressed with Readtopia
7.NS.2.b. Understand that integers can be divided, provided that the divisor is not zero, and every quotient of integers (with non-zero divisor) is a rational number. If p and q are integers, then –(p/q) = (–p)/q = p/(–q). Interpret quotients of rational numbers by describing real-world contexts.	**NC.7.NS.2.b.**	Solve division problems with divisors up to five and also with a divisor of 10 without remainders.	●

GEOMETRY

Aligned College & Career Readiness Standard	NC Extended Content Standard		Addressed with Readtopia
7.G.1. Solve problems involving scale drawings of geometric figures, including computing actual lengths and areas from a scale drawing and reproducing a scale drawing at a different scale.	**NC.7.G.1.**	Identify two similar geometric shapes that are proportional in size and in the same orientation.	●
7.G.2. Draw (freehand, with ruler and protractor, and with technology) geometric shapes with given conditions. Focus on constructing triangles from three measures of angles or sides, noticing when the conditions determine a unique triangle, more than one triangle, or no triangle.	**NC.7.G.2.**	Recognize geometric shapes with given conditions.	●
7.G.3. Describe the two-dimensional figures that result from slicing three-dimensional figures, as in plane sections of right rectangular prisms and right rectangular pyramids.			●

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7TH GRADE MATH STANDARDS

GEOMETRY

Aligned College & Career Readiness Standard	NC Extended Content Standard		Addressed with Readtopia
7.G.4. Know the formulas for the area and circumference of a circle, and use them to solve problems; give an informal derivation of the relationship between the circumference and area of a circle.	NC.7.G4.	Determine the perimeter of a rectangle by adding the measures of the sides.	●
7.G.6. Solve real-world and mathematical problems involving area, volume, and surface area of two- and three-dimensional objects composed of triangles, quadrilaterals, polygons, cubes, and right prisms.	NC.7.G.6.	Determine the area of a rectangle using the formula for length × width, and confirm the result using tiling or partitioning into unit squares.	●

STATISTICS AND PROBABILITY

Aligned College & Career Readiness Standard	NC Extended Content Standard		Addressed with Readtopia
7.SP.1. Understand that statistics can be used to gain information about a population by examining a sample of the population; generalizations about a population from a sample are valid only if the sample is representative of that population. Understand that random sampling tends to produce representative samples and support valid inferences.	NC.7.SP.1.	Answer a question related to the collected data from an experiment, given model of data, or from data collected by the student.	●
7.SP.2. Use data from a random sample to draw inferences about a population with an unknown characteristic of interest. Generate multiple samples (or simulated samples) of the same size to gauge the variation in estimates or predictions. For example, estimate the mean word length in a book by randomly sampling words from the book; predict the winner of a school election based on randomly sampled survey data. Gauge how far off the estimate or prediction might be.			
7.SP.3. Informally assess the degree of visual overlap of two numerical data distributions with similar variabilities, measuring the difference between the centers by expressing it as a multiple of a measure of variability. For example, the mean height of players on the basketball team is 10 cm greater than the mean height of players on the soccer team, about twice the variability (mean absolute deviation) on either team; on a dot plot, the separation between the two distributions of heights is noticeable.	NC.7.SP.3.	Compare two sets of data within a single data display such as a picture graph, line plot, or bar graph.	●

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NC Extended Content Standards
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8TH GRADE MATH STANDARDS

NUMBER SENSE

Aligned College & Career Readiness Standard	NC Extended Content Standard		Addressed with Readtopia
8.NS.1. Know that numbers that are not rational are called irrational. Understand informally that every number has a decimal expansion; for rational numbers show that the decimal expansion repeats eventually, and convert a decimal expansion which repeats eventually into a rational number.	NC.8.NS.1.	Subtract fractions with like denominators (halves, thirds, fourths, and tenths) with minuends less than or equal to one.	●
8.NS.2. Use rational approximations of irrational numbers to compare the size of irrational numbers, locate them approximately on a number line diagram, and estimate the value of expressions (e.g., $\pi 2$). For example, by truncating the decimal expansion of $\sqrt{2}$, show that $\sqrt{2}$ is between 1 and 2, then between 1.4 and 1.5, and explain how to continue on to get better approximations.	NC.8.NS.2.a.	Express a fraction with a denominator of 100 as a decimal.	●
	NC.8.NS.2.b.	Compare decimal quantities using less than (<), greater than (>), or equal to (=), in real-world examples to the hundredths place.	●

EXPRESSIONS AND EQUATIONS

Aligned College & Career Readiness Standard	NC Extended Content Standard		Addressed with Readtopia
8.EE.5. Graph proportional relationships, interpreting the unit rate as the slope of the graph. Compare two different proportional relationships represented in different ways. For example, compare a distance-time graph to a distance-time equation to determine which of two moving objects has greater speed.	NC.8.EE.5.	Given a table or graph with identified points, determine a ratio that describes the relationship between quantities.	●
8.EE.7. Solve linear equations in one variable.	NC.8.EE.7.	Solve simple algebraic equations with one variable using addition and subtraction.	●
8.EE.7.a. Give examples of linear equations in one variable with one solution, infinitely many solutions, or no solutions. Show which of these possibilities is the case by successively transforming the given equation into simpler forms, until an equivalent equation of the form $x = a$, $a = a$, or $a = b$ results (where a and b are different numbers).			●

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8TH GRADE MATH STANDARDS

GEOMETRY

Aligned College & Career Readiness Standard	NC Extended Content Standard		Addressed with Readtopia
8.G.2. Understand that a two-dimensional figure is congruent to another if the second can be obtained from the first by a sequence of rotations, reflections, and translations; sgiven two congruent figures, describe a sequence that exhibits the congruence between them.	NC.8.G.2.	Identify congruent shapes after transformation (translation, rotation, and reflection).	●
8.G.4. Understand that a two-dimensional figure is similar to another if the second can be obtained from the first by a sequence of rotations, reflections, translations, and dilations; given two similar two-dimensional figures, describe a sequence that exhibits the similarity between them.	NC.8.G.4.	Identify similar shapes after dilation (resizing).	
8.G.9. Know the formulas for the volumes of cones, cylinders, and spheres, and use them to solve real-world and mathematical problems.	NC.8.G.9.	Use the formula for volume to solve real-world and mathematical problems (limited to volume of rectangular prisms).	

STATISTICS AND PROBABILITY

Aligned College & Career Readiness Standard	NC Extended Content Standard		Addressed with Readtopia
8.SP.4. Understand that patterns of association can also be seen in bivariate categorical data by displaying frequencies and relative frequencies in a two-way table. Construct and interpret a two-way table summarizing data on two categorical variables collected from the same subjects. Use relative frequencies calculated for rows or columns to describe possible association between the two variables. For example, collect data from students in your class on whether or not they have a curfew on school nights and whether or not they have assigned chores at home. Is there evidence that those who have a curfew also tend to have chores?			●

NC Extended Content Standards for Math

HIGH SCHOOL

NUMBER SENSE

Aligned College & Career Readiness Standard	NC Extended Content Standard		Addressed with Readtopia
N-Q.1. Use units as a way to understand problems and to guide the solution of multi-step problems; choose and interpret units consistently in formulas; choose and interpret the scale and the origin in graphs and data displays.			●

EXPRESSIONS AND EQUATIONS

Aligned College & Career Readiness Standard	NC Extended Content Standard		Addressed with Readtopia
A-CED.1. Create equations and inequalities in one variable, and use them to solve problems. Include equations arising from linear and quadratic functions, and simple rational and exponential functions.	NC.ECS. M1.ACED.1	Use equations to solve problems using addition and subtraction with decimals when a part is unknown (e.g., a can of soda cost $0.75 and John has $0.50 how much more money does he need?).	●
A-CED.2. Create equations in two or more variables to represent relationships between quantities; graph equations on coordinate axes with labels and scales.	NC.M1.A-REI.1	Explain each step in solving an equation.	●
A-REI.1. Explain each step in solving a simple equation as following from the equality of numbers asserted at the previous step, starting from the assumption that the original equation has a solution. Construct a viable argument to justify a solution method.	NC.ECS.M1. A-SSE.1	Identify the different parts of the linear expression (Ax +B) and explain their meaning within the context of a problem.	●
A-REI.3. Solve linear equations and inequalities in one variable, including equations with coefficients represented by letters.	NC.ECS. M1.AREI.3	Solve a three step linear equation.	●

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HIGH SCHOOL

MULTIPLICATION

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A-SSE.3. Choose and produce an equivalent form of an expression to reveal and explain properties of the quantity represented by the expression.			●

GEOMETRY

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G-GPE.7. Use coordinates to compute perimeters of polygons and areas of triangles and rectangles, e.g., using the distance formula.	NC.ECS.M1. G-GPE.4	On a coordinate plane find the perimeter and area of geometric figures, in which all needed measurements can be counted on the grid. Identify geometric figures on the coordinate plane, using estimation and counting.	●
G-CO.4. Develop definitions of rotations, reflections, and translations in terms of angles, circles, perpendicular lines, parallel lines, and line segments.	NC.ECS.M1. G-GPE.5	Know the attributes of perpendicular lines, parallel lines, and line segmentsCompare lines on the coordinate plane, to identify parallel lines and recognize that parallel lines have the same slope (rate of change).	●
G-CO.6. Use geometric descriptions of rigid motions to transform figures and to predict the effect of a given rigid motion on a given figure; given two figures, use the definition of congruence in terms of rigid motions to decide if they are congruent.			●
G-GPE.7. Use coordinates to compute perimeters of polygons and areas of triangles and rectangles, e.g., using the distance formula.			●

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HIGH SCHOOL

STATISTICS AND PROBABILITY

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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.	NC.ECS.M1. S-ID.1	Given data, use technology to construct a simple graph (line, pie, bar, or picture) or table, and interpret the data.	●

DIVISION

Aligned College & Career Readiness Standard	NC Extended Content Standard		Addressed with Readtopia
A-SSE.3. Choose and produce an equivalent form of an expression to reveal and explain properties of the quantity represented by the expression.	NC.M1.A-REI.1	Explain each step in solving an equation.	●