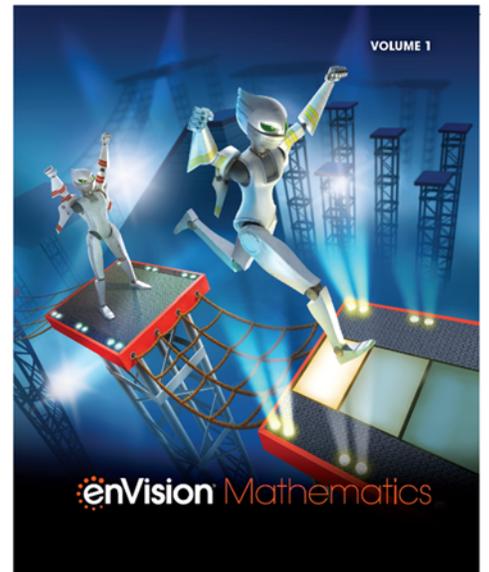
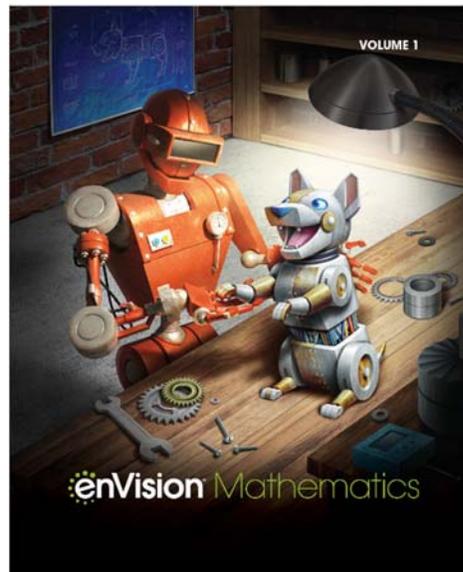
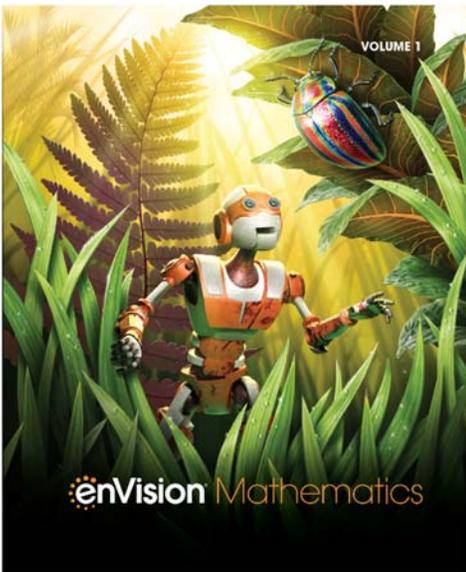


A Correlation of

enVision[®] Mathematics

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to the
North Carolina
Standard Course of Study
Mathematics
Grades 6-8

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Introduction

The new enVision® Mathematics ©2021 is the latest offering of the nationally recognized Grades K-12 series, created for print, digital, and blended instruction. Problem-Based Learning connects with Visual Learning to deep conceptual understanding. Interactive multimedia experiences engage learners in student choice and solving rich problems. Extensive customization and differentiation options empower every teacher and student.

UNDERSTANDING

A simple lesson design provides a clear, intentional pathway. Starting on a firm foundation of conceptual understanding, students can connect and apply math ideas in amazing ways. High-interest math projects invite all students to be active participants.

A simple lesson design provides a clear, intentional pathway.

STEP 1 Problem-Based Learning

STEP 2 Visual Learning

STEP 3 Assess and Differentiate

ASSESSMENT

The enVision Assessment Suite offers options to move students toward mastery of state standards while driving instructional differentiation.

DIAGNOSTIC Assessment

Reading Test, Diagnostic Test (Math Diagnosis and Intervention System), Review What You Know

FORMATIVE Assessment

SCOUT Observational Assessment used during Solve & Share, Do You Understand? And Convince Me! Guide Practice, Quick Check

SUMMATIVE Assessment

Topic Assessments, Topic Performance Assessments, Examview Test Generator, Fluency Assessments, Cumulative/Benchmarks Assessments, Progress Monitoring Assessments

INSTRUCTIONAL SUPPORT

Gain a new perspective on your teaching with embedded strategies, methods, and a wide range of Professional Development opportunities in print and digital formats.

Ideas, Inspiration, and Teaching Methods

Math background for every Topic and Lesson serves as an easy-to-access math methods course.

Make every lesson perfect for you. Access all digital content, assessments, and management tools at [SavvasRealize.com](https://www.savvasrealize.com).

Kids See the Math. Teachers See Results.

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North Carolina Standard Course of Study Mathematics–Grade 6	enVision Mathematics, ©2021 Grade 6
Standards for Mathematical Practice	
1. Make sense of problems and persevere in solving them.	<p>enVision Mathematics provides numerous instructional opportunities to help students develop proficiency in the math practices. To get students off to a good start on all eight practices, use the Math Practices and Problem Solving Handbook pages online. Each lesson begins with Problem-Based Learning, an activity in which students interact with their peers and teachers to make sense of and decide on a workable solution for a situation. Another feature of each lesson is the set of problem-solving exercises in which students persevere by applying different skills and strategies to solve problems. Each Problem-Solving Lesson provides instruction and practice focused on a specific math practice.</p> <p>SE/TE: 38, 43, 50, 54, 55, 56, 79, 80, 140, 149, 165, 214, 215, 272, 320, 371, 378, 384, 418, 431, 442, 446, 454, 473</p>
2. Reason abstractly and quantitatively.	<p>enVision Mathematics provides scaffolded instruction to help students develop both quantitative and abstract reasoning. In the Visual Learning Bridge, students can see how to represent a given situation numerically or algebraically. They will have opportunities later in the lesson to reason abstractly as they endeavor to represent situations symbolically. Reasonableness exercises remind students to compare their work to the original situation. Reasoning problems throughout the exercise sets focus students’ attention on the structure or meaning of an operation, for example, rather than merely the solution.</p> <p>SE/TE: 20, 26, 37, 38, 43, 44, 73, 78, 106, 109, 133, 154, 172, 190, 196, 222, 272, 283, 302, 304, 318, 331, 350, 351, 363, 372, 410, 441, 500</p>

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<p style="text-align: center;">North Carolina Standard Course of Study Mathematics–Grade 6</p>	<p style="text-align: center;">enVision Mathematics, ©2021 Grade 6</p>
<p>3. Construct viable arguments and critique the reasoning of others.</p>	<p>Consistent with a focus on reasoning and sense-making is a focus on critical reasoning—argumentation and critique of arguments. In enVision Mathematics, the Problem-Based Learning affords students opportunities to share with classmates their thinking about problems, their solution methods, and their reasoning about the solutions. Many exercises found throughout the program explicitly call for students to justify or explain their solutions. The ability to articulate a clear explanation for a process is a stepping stone to critical analysis and reasoning of both the student’s own process and those of others.</p> <p>SE/TE: 54, 55, 72, 80, 85, 92, 108, 111, 126, 128, 140, 142, 156, 165, 166, 188, 238, 239, 250, 272, 302, 308, 318, 324, 332, 364, 441, 448, 502</p>
<p>4. Model with mathematics.</p>	<p>Students using enVision Mathematics explicitly use mathematical modeling in each Topic during the 3-Act Math lesson. The Visual Learning Bridge also often presents real-world situations, demonstrating how these problems can be modeled mathematically.</p> <p>SE/TE: 44, 135, 142, 149, 155, 156, 164, 195, 201, 203, 204, 223, 230, 252, 288, 289, 290, 298, 304, 326, 378, 422, 448, 473, 486, 487, 488, 493, 505, 508, 514</p>
<p>5. Use appropriate tools strategically.</p>	<p>Students become fluent in the use of a wide assortment of tools ranging from physical objects, including manipulatives, integer chips, algebra tiles, and even pencil and paper, to digital tools, such as graphing calculators, Online Math Tools, and computers. As students become more familiar with the tools available to them, they are able to begin making decisions about which tools are most helpful in a particular situation.</p> <p>SE/TE: 104, 109, 110, 229, 230, 250, 251, 278, 288, 289, 290, 376, 416, 432, 446, 448, 486, 487, 488, 492, 493, 494, 513, 514</p>

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6. Attend to precision.	<p>Students are expected to use mathematical terms and symbols with precision. Key terms are highlighted in each lesson and important concepts presented in the Concept Summary. The Problem-Based Learning activity provides repeated opportunities for students to use precise language to explain their solution paths while solving problems. In the Convince Me! feature, students revisit these key terms or concepts and provide explicit definitions or explanations.</p> <p>SE/TE: 25, 37, 43, 49, 50, 56, 109, 141, 202, 213, 215, 296, 297, 298, 303, 309, 319, 325, 331, 363, 371, 378, 382, 405, 406, 411, 412, 417, 423, 430, 447, 448, 452, 453, 454, 508, 513</p>
7. Look for and make use of structure.	<p>Students are encouraged to look for structure as they develop solution plans. For example, as students mature in their mathematical thinking, they see structure when working with problems that can be represented <i>with</i> the Distributive Property. This focus on looking for and recognizing structure enables students to draw from patterns as they formalize their thinking about the structure of operations.</p> <p>SE/TE: 44, 50, 86, 103, 104, 110, 156, 164, 166, 171, 172, 244, 245, 246, 330, 351, 364, 370, 384, 424, 430, 453, 479</p>
8. Look for and express regularity in repeated reasoning.	<p>Students are reminded to think about problems they have encountered previously that may share features or processes. They are encouraged to draw on the solution plan developed for such problems, and, as their mathematical thinking matures, to look for and apply generalizations to similar situations.</p> <p>SE/TE: 19, 50, 127, 128, 166, 270, 271, 276, 277, 282, 283, 284, 310, 432</p>

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Ratio and Proportional Relationships	
Understand ratio concepts and use ratio reasoning to solve problems.	
NC.6.RP.1 Understand the concept of a ratio and use ratio language to: <ul style="list-style-type: none"> • Describe a ratio as a multiplicative relationship between two quantities. • Model a ratio relationship using a variety of representations. 	SE: 267–272, 273–278, 279–284, 285–290, 333–338 TE: 267A–272B, 273A–278B, 279A–284B, 285A–290B
NC.6.RP.2 Understand that ratios can be expressed as equivalent unit ratios by finding and interpreting both unit ratios in context.	SE: 315–320, 321–326, 327–332, 333–338 TE: 315A–320B, 321A–326B, 327A–332B, 333–338
NC.6.RP.3 Use ratio reasoning with equivalent whole-number ratios to solve real-world and mathematical problems by: <ul style="list-style-type: none"> • Creating and using a table to compare ratios. • Finding missing values in the tables. • Using a unit ratio. • Converting and manipulating measurements using given ratios. • Plotting the pairs of values on the coordinate plane. 	SE: 273–278, 279–284, 285–290, 333–338 TE: 273A–278B, 279A–284B, 285A–290B, 333–338
NC.6.RP.4 Use ratio reasoning to solve real-world and mathematical problems with percents by: <ul style="list-style-type: none"> • Understanding and finding a percent of a quantity as a ratio per 100. • Using equivalent ratios, such as benchmark percents (50%, 25%, 10%, 5%, 1%), to determine a part of any given quantity. • Finding the whole, given a part and the percent. 	SE: 347–352, 373–378, 379–384, 389–392 TE: 347A–352B, 373A–378B, 379A–384B, 389–392
The Number System	
Apply and extend previous understandings of multiplication and division to divide fractions by fractions.	
NC.6.NS.1 Use visual models and common denominators to: <ul style="list-style-type: none"> • Interpret and compute quotients of fractions. • Solve real-world and mathematical problems involving division of fractions. 	SE: 39–44, 45–50, 57–60 TE: 39A–44B, 45A–50B, 57–60

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Compute fluently with multi-digit numbers and find common factors and multiples.	
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.	SE: 15–20, 57–60 TE: 15A–20B, 57–60
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.	SE: 9 -14, 15–20, 51–56 TE: 9A–14B, 15A–20B, 51–56
NC.6.NS.4 Understand and use prime factorization and the relationships between factors to: <ul style="list-style-type: none"> • Find the unique prime factorization for a whole number. • Find the greatest common factor of two whole numbers less than or equal to 100. • Use the greatest common factor and the distributive property to rewrite the sum of two whole numbers, each less than or equal to 100. • Find the least common multiple of two whole numbers less than or equal to 12 to add and subtract fractions with unlike denominators. 	SE: 129–136, 173–176 TE: 129A–136B, 173–176
Apply and extend previous understandings of numbers to the system of rational numbers.	
NC.6.NS.5 Understand and use rational numbers to: <ul style="list-style-type: none"> • Describe quantities having opposite directions or values. • Represent quantities in real-world contexts, explaining the meaning of 0 in each situation. 	SE: 69–74, 75–80, 111–114 TE: 69A–74B, 75A–80B, 111–114
<ul style="list-style-type: none"> • Understand the absolute value of a rational number as its distance from 0 on the number line to: <ul style="list-style-type: none"> o Interpret absolute value as magnitude for a positive or negative quantity in a real-world context. o Distinguish comparisons of absolute value from statements about order. 	SE: 69–74, 81–86, 111–114 TE: 69A–74B, 75A–80B, 111–114

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NC.6.NS.6 Understand rational numbers as points on the number line and as ordered pairs on a coordinate plane.	SE: 75–80, 89–94, 111–114 TE: 75A–80B, 89A–94B, 111–114
a. On a number line: o 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. o Find and position rational numbers on a horizontal or vertical number line.	SE: 69–74, 75–80, 111–114 TE: 69A–74B, 75A–80B, 111–114
b. On a coordinate plane: o Understand signs of numbers in ordered pairs as indicating locations in quadrants. o Recognize that when two ordered pairs differ only by signs, the locations of the points are related by reflections across one or both axes. o Find and position pairs of rational numbers on a coordinate plane.	SE: 89–94, 99–104, 105–110, 111–114 TE: 89A–94B, 99A–104B, 105A–110B, 111–114
NC.6.NS.7 Understand ordering of rational numbers.	
a. Interpret statements of inequality as statements about the relative position of two numbers on a number line diagram.	SE: 75–80, 111–114, 219–224, 253–258 TE: 75A–80B, 111–114, 219A–224B, 253–258
b. Write, interpret, and explain statements of order for rational numbers in real-world contexts.	SE: 75–80, 111–114, 219–224, 253–258 TE: 75A–80B, 111–114, 219A–224B, 253–258
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.	SE: 89–94, 99–104, 105–110, 111–114 TE: 89A–94B, 99A–104B, 105A–110B, 111–114

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<p>NC.6.NS.9 Apply and extend previous understandings of addition and subtraction.</p> <ul style="list-style-type: none"> • Describe situations in which opposite quantities combine to make 0. • Understand $p + q$ 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. • Understand subtraction of integers as adding the additive inverse, $p - q = p + (-q)$. Show that the distance between two integers on the number line is the absolute value of their difference. • Use models to add and subtract integers from -20 to 20 and describe real-world contexts using sums and differences. 	<p>Students apply inverse operations and addition and subtraction properties of equality to solve equations. They perform operations on negative (and positive) rational numbers in Grade 7 (Topic 1).</p> <p>Grade 6 pages: SE: 185, 192, 197–202, 209–216, 253–258</p> <p>TE: 185, 192, 197A–202B, 209A–216B, 253–258</p>
Expressions and Equations	
Apply and extend previous understandings of arithmetic to algebraic expressions.	
<p>NC.6.EE.1 Write and evaluate numerical expressions, with and without grouping symbols, involving whole-number exponents.</p>	<p>SE: 123–128, 137–142, 173–176</p> <p>TE: 123A–128B, 137A–142B, 173–176</p>
<p>NC.6.EE.2 Write, read, and evaluate algebraic expressions.</p> <ul style="list-style-type: none"> • Write expressions that record operations with numbers and with letters standing for numbers. • Identify parts of an expression using mathematical terms and view one or more of those parts as a single entity. • Evaluate expressions at specific values of their variables using expressions that arise from formulas used in real-world problems. 	<p>SE: 145–150, 151–156, 173–176</p> <p>TE: 145A–150B, 151A–156B, 173–176</p>
<p>NC.6.EE.3 Apply the properties of operations to generate equivalent expressions without exponents.</p>	<p>SE: 161–166, 167–172, 173–176</p> <p>TE: 161A–166B, 167A–172B, 173–176</p>
<p>NC.6.EE.4 Identify when two expressions are equivalent and justify with mathematical reasoning.</p>	<p>SE: 161–166, 167–172, 173–176, 191–196, 253–258</p> <p>TE: 161A–166B, 167A–172B, 173–176, 191A–196B, 253–258</p>

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Reason about and solve one-variable equations.	
NC.6.EE.5 Use substitution to determine whether a given number in a specified set makes an equation true.	SE: 185–190, 253–258 TE: 185A–190B, 253–258
NC.6.EE.6 Use variables to represent numbers and write expressions when solving a real-world or mathematical problem.	SE: 185–190, 197–202, 203–208, 209–216, 253–258 TE: 185A–190B, 197A–202B, 203A–208B, 209A–216B, 253–258
NC.6.EE.7 Solve real-world and mathematical problems by writing and solving equations of the form: • $x + p = q$ in which p , q and x are all nonnegative rational numbers; and, • $p \cdot x = q$ for cases in which p , q and x are all nonnegative rational numbers.	SE: 197–202, 203–208, 209–216, 253–258 TE: 197A–202B, 203A–208B, 209A–216B, 253–258
Reason about one variable inequalities.	
NC.6.EE.8 Reason about inequalities by: • Using substitution to determine whether a given number in a specified set makes an inequality true. • Writing an inequality of the form $x > c$ or $x < c$ to represent a constraint or condition in a real-world or mathematical problem. • Recognizing that inequalities of the form $x > c$ or $x < c$ have infinitely many solutions. • Representing solutions of inequalities on number line diagrams.	SE: 219–224, 225–230, 253–258 TE: 219A–224B, 225A–230B, 253–258
Represent and analyze quantitative relationships between dependent and independent variables.	
NC.6.EE.9 Represent and analyze quantitative relationships by: • Using variables to represent two quantities in a real-world or mathematical context that change in relationship to one another. • Analyze the relationship between quantities in different representations (context, equations, tables, and graphs).	SE: 235–240, 241–246, 247–252, 253–258 TE: 235A–240B, 241A–246B, 247A–252B, 253–258

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Geometry	
Solve real-world and mathematical problems involving area, surface area, and volume.	
NC.6.G.1 Create geometric models to solve real-world and mathematical problems to: <ul style="list-style-type: none"> • Find the area of triangles by composing into rectangles and decomposing into right triangles. • Find the area of special quadrilaterals and polygons by decomposing into triangles or rectangles. 	SE: 401–406, 407–412, 413–418, 419–424, 455–460 TE: 401A–406B, 407A–412B, 413A–413B, 419A–424B, 455–460
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.	SE: 449–454, 455–460 TE: 449A–454B, 455–460
NC.6.G.3 Use the coordinate plane to solve real-world and mathematical problems by: <ul style="list-style-type: none"> • Drawing polygons in the coordinate plane given coordinates for the vertices. • Using coordinates to find the length of a side joining points with the same first coordinate or the same second coordinate. 	SE: 99–104, 105–110, 111–114 TE: 99A–104B, 105A–110B, 111–114
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.	SE: 427–432, 437–442, 443–448, 455–460 TE: 427A–432B, 437A–442B, 443A–448B, 455–460
Statistics and Probability	
Develop understanding of statistical variability.	
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.	SE: 469–474, 519–522 TE: 469A–474B, 519–522
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.	SE: 469–474, 519–522 TE: 469A–474B, 519–522

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NC.6.SP.3 Understand that both a measure of center and a description of variability should be considered when describing a numerical data set.	SE: 475–482, 497–502, 519–522 TE: 475A–482B, 497A–502B, 519–522
a. Determine the measure of center of a data set and understand that it is a single number that summarizes all the values of that data set. o 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. o Understand the median as a measure of center that is the numerical middle of an ordered data set.	SE: 475–482, 483–488, 497–502, 503–508, 519–522 TE: 475A–482B, 483A–488B, 497A–502B, 503A–508B, 519–522
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.	SE: 475–482, 497–502, 503–508, 509–514, 519–522 TE: 475A–482B, 497A–502B, 503A–508B, 509A–514B, 519–522
Summarize and describe distributions.	
NC.6.SP.4 Display numerical data in plots on a number line. • Use dot plots, histograms, and box plots to represent data. • Compare the attributes of different representations of the same data.	SE: 483–488, 489–494, 497–502, 519–522 TE: 483A–488B, 489A–494B, 497A–502B, 519–522
NC.6.SP.5 Summarize numerical data sets in relation to their context.	SE: 489–494, 497–502, 503–508, 509–514, 519–522 TE: 489A–494B, 497A–502B, 503A–508B, 509A–514B, 519–522

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<p>a. Describe the collected data by:</p> <ul style="list-style-type: none"> o Reporting the number of observations in dot plots and histograms. o Communicating the nature of the attribute under investigation, how it was measured, and the units of measurement. 	<p>SE: 489–494, 497–502, 503–508, 509–514, 519–522</p> <p>TE: 489A–494B, 497A–502B, 503A–508B, 509A–514B, 519–522</p>
<p>b. Analyze center and variability by:</p> <ul style="list-style-type: none"> o Giving quantitative measures of center, describing variability, and any overall pattern, and noting any striking deviations. o Justifying the appropriate choice of measures of center using the shape of the data distribution. 	<p>SE: 475–482, 483–488, 497–502, 503–508, 509–514, 519–522</p> <p>TE: 475A–482B, 483A–488B, 497A–502B, 503A–508B, 509A–514B, 519–522</p>

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North Carolina Standard Course of Study Mathematics–Grade 7	enVision Mathematics, ©2021 Grade 7
Standards for Mathematical Practice	
1. Make sense of problems and persevere in solving them.	<p>enVision Mathematics provides numerous instructional opportunities to help students develop proficiency in the math practices. To get students off to a good start on all eight practices, use the Math Practices and Problem Solving Handbook pages online. Each lesson begins with Problem-Based Learning, an activity in which students interact with their peers and teachers to make sense of and decide on a workable solution for a situation. Another feature of each lesson is the set of problem-solving exercises in which students persevere by applying different skills and strategies to solve problems. Each Problem-Solving Lesson provides instruction and practice focused on a specific math practice.</p> <p>SE/TE: 14, 32, 46, 69, 93, 130, 148, 153, 159, 160, 168, 178, 212, 218, 220, 225, 243, 274, 278, 279, 328, 330, 344, 373, 377, 378, 379, 388, 461</p>
2. Reason abstractly and quantitatively.	<p>enVision Mathematics provides scaffolded instruction to help students develop both quantitative and abstract reasoning. In the Visual Learning Bridge, students can see how to represent a given situation numerically or algebraically. They will have opportunities later in the lesson to reason abstractly as they endeavor to represent situations symbolically. Reasonableness exercises remind students to compare their work to the original situation. Reasoning problems throughout the exercise sets focus students' attention on the structure or meaning of an operation, for example, rather than merely the solution.</p> <p>SE/TE: 12, 13, 30, 31, 37, 56, 68, 105, 106, 128, 129, 152, 166, 184, 212, 329, 335, 378, 384, 454, 456</p>

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<p style="text-align: center;">North Carolina Standard Course of Study Mathematics–Grade 7</p>	<p style="text-align: center;">envision Mathematics, ©2021 Grade 7</p>
<p>3. Construct viable arguments and critique the reasoning of others.</p>	<p>Consistent with a focus on reasoning and sense-making is a focus on critical reasoning—argumentation and critique of arguments. In enVision Mathematics, the Problem-Based Learning affords students opportunities to share with classmates their thinking about problems, their solution methods, and their reasoning about the solutions. Many exercises found throughout the program explicitly call for students to justify or explain their solutions. The ability to articulate a clear explanation for a process is a stepping stone to critical analysis and reasoning of both the student’s own process and those of others.</p> <p>SE/TE: 26, 31, 36, 45, 64, 68, 98, 105, 112, 146, 148, 152, 154, 158, 166, 183, 214, 244, 292, 309, 327, 335, 336, 337, 350, 372, 378, 384, 440, 460, 480</p>
<p>4. Model with mathematics.</p>	<p>Students using enVision Mathematics explicitly use mathematical modeling in each Topic during the 3-Act Math lesson. The Visual Learning Bridge also often presents real-world situations, demonstrating how these problems can be modeled mathematically.</p> <p>SE/TE: 12, 25, 26, 30, 38, 50, 63, 70, 93, 111, 122, 160, 201, 225, 272, 273, 274, 286, 287, 288, 292, 293, 294, 308, 374, 402, 410, 440, 441, 442, 447, 480</p>

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<p style="text-align: center;">North Carolina Standard Course of Study Mathematics–Grade 7</p>	<p style="text-align: center;">enVision Mathematics, ©2021 Grade 7</p>
<p>5. Use appropriate tools strategically.</p>	<p>Students become fluent in the use of a wide assortment of tools ranging from physical objects, including manipulatives, integer chips, algebra tiles, and even pencil and paper, to digital tools, such as graphing calculators, Online Math Tools, and computers. As students become more familiar with the tools available to them, they are able to begin making decisions about which tools are most helpful in a particular situation.</p> <p>SE/TE: 12, 13, 25, 122, 128, 286, 287, 288, 292, 293, 294, 308, 402, 410, 440, 441, 442, 447, 480</p>
<p>6. Attend to precision.</p>	<p>Students are expected to use mathematical terms and symbols with precision. Key terms are highlighted in each lesson and important concepts presented in the Concept Summary. The Problem-Based Learning activity provides repeated opportunities for students to use precise language to explain their solution paths while solving problems. In the Convince Me! feature, students revisit these key terms or concepts and provide explicit definitions or explanations.</p> <p>SE/TE: 18, 20, 45, 51, 106, 146, 147, 168, 182, 201, 236, 308, 327, 391, 392, 435, 455, 456, 461, 468, 469, 470, 478, 479, 480, 484, 485, 486, 490, 491, 492</p>

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7. Look for and make use of structure.	<p>Students are encouraged to look for structure as they develop solution plans. For example, as students mature in their mathematical thinking, they see structure when working with problems that can be represented with the Distributive Property. This focus on looking for and recognizing structure enables students to draw from patterns as they formalize their thinking about the structure of operations.</p> <p>SE/TE: 19, 38, 44, 57, 58, 62, 90, 123, 177, 200, 218, 242, 248, 250, 266, 272, 274, 454</p>
8. Look for and express regularity in repeated reasoning.	<p>Students are reminded to think about problems they have encountered previously that may share features or processes. They are encouraged to draw on the solution plan developed for such problems, and, as their mathematical thinking matures, to look for and apply generalizations to similar situations.</p> <p>SE/TE: 99, 182, 200, 206, 207, 218, 219, 220, 225, 403, 404, 470, 475</p>
Ratio and Proportional Relationships	
Analyze proportional relationships and use them to solve real-world and mathematical problems.	
NC.7.RP.1 Compute unit rates associated with ratios of fractions to solve real-world and mathematical problems.	<p>SE: 89–94, 95–100, 131–134</p> <p>TE: 89A–94B, 95A–100B, 131–134</p>
NC.7.RP.2 Recognize and represent proportional relationships between quantities.	<p>SE: 101–106, 107–112, 119–124, 125–130, 131–134, 155–160, 185–188, 431–436, 493–498</p> <p>TE: 101A–106B, 107A–112B, 119A–124B, 125A–130B, 131–134, 155A–160B, 185–188, 431A–436B, 493–498</p>

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<p>a. Understand that a proportion is a relationship of equality between ratios.</p> <ul style="list-style-type: none"> o Represent proportional relationships using tables and graphs. o Recognize whether ratios are in a proportional relationship using tables and graphs. o Compare two different proportional relationships using tables, graphs, equations, and verbal descriptions. 	<p>SE: 101–106, 107–112, 119–124, 125–130, 131–134</p> <p>TE: 101A–106B, 107A–112B, 119A–124B, 125A–130B, 131–134</p>
<p>b. Identify the unit rate (constant of proportionality) within two quantities in a proportional relationship using tables, graphs, equations, and verbal descriptions.</p>	<p>SE: 95–100, 101–106, 107–112, 119–124, 131–134</p> <p>TE: 95A–100B, 101A–106B, 107A–112B, 119A–124B, 131–134</p>
<p>c. Create equations and graphs to represent proportional relationships.</p>	<p>SE: 107–112, 119–124, 131–134, 155–160, 185–188, 431–436, 493–498</p> <p>TE: 107A–112B, 119A–124B, 131–134, 155A–160B, 185–188, 431A–436B, 493–498</p>
<p>d. Use a graphical representation of a proportional relationship in context to:</p> <ul style="list-style-type: none"> o Explain the meaning of any point (x, y). o Explain the meaning of $(0, 0)$ and why it is included. o Understand that the y-coordinate of the ordered pair $(1, r)$ corresponds to the unit rate and explain its meaning. 	<p>SE: 119–124, 131–134</p> <p>TE: 119A–124B, 131–134</p>
<p>NC.7.RP.3 Use scale factors and unit rates in proportional relationships to solve ratio and percent problems.</p>	<p>SE: 149–154, 155–160, 173–178, 179–184, 185–188, 431–436, 493–498</p> <p>TE: 149A–154B, 155A–160B, 173A–178B, 179A–184B, 185–188, 431A–436B, 493–498</p>

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The Number System	
Apply and extend previous understandings of operations with fractions to add, subtract, multiply, and divide rational numbers.	
NC.7.NS.1 Apply and extend previous understandings of addition and subtraction to add and subtract rational numbers, using the properties of operations, and describing real-world contexts using sums and differences.	SE: 21–26, 27–32, 33–38, 65–70, 75–80 TE: 21A–26B, 27A–32B, 33A–38B, 65A–70B, 75–80
NC.7.NS.2 Apply and extend previous understandings of multiplication and division.	SE: 41–46, 47–52, 53–58, 59–64, 65–70, 75–80 TE: 41A–46B, 47A–52B, 53A–58B, 59A–64B, 65A–70B, 75–80
a. Understand that a rational number is any number that can be written as a quotient of integers with a non-zero divisor.	SE: 53–58, 59–64, 75–80 TE: 53A–58B, 59A–64B, 75–80
b. Apply properties of operations as strategies, including the standard algorithms, to multiply and divide rational numbers and describe the product and quotient in real-world contexts.	SE: 41–46, 47–52, 53–58, 59–64, 65–70, 75–80 TE: 41A–46B, 47A–52B, 53A–58B, 59A–64B, 65A–70B, 75–80
c. Use division and previous understandings of fractions and decimals. o Convert a fraction to a decimal using long division. o Understand that the decimal form of a rational number terminates in 0s or eventually repeats.	SE: 15–20, 75–80 TE: 15A–20B, 75–80
NC.7.NS.3 Solve real-world and mathematical problems involving numerical expressions with rational numbers using the four operations.	SE: 65–70, 75–80 TE: 65A–70B, 75–80
Expressions and Equations	
Use properties of operations to generate equivalent expressions.	
NC.7.EE.1 Apply properties of operations as strategies to: • Add, subtract, and expand linear expressions with rational coefficients. • Factor linear expression with an integer GCF.	SE: 215–220, 221–226, 233–238, 239–244, 251–254 TE: 215A–220B, 221A–226B, 233A–238B, 239A–244B, 251–254

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NC.7.EE.2 Understand that equivalent expressions can reveal real-world and mathematical relationships. Interpret the meaning of the parts of each expression in context.	SE: 203–208, 209–214, 215–220, 221–226, 251–254 TE: 203A–208B, 209A–214B, 215A–220B, 221A–226B, 245A–250B, 251–254
Solve real-world and mathematical problems using numerical and algebraic expressions, equations, and inequalities.	
NC.7.EE.3 Solve multi-step real-world and mathematical problems posed with rational numbers in algebraic expressions. • Apply properties of operations to calculate with positive and negative numbers in any form. • Convert between different forms of a number and equivalent forms of the expression as appropriate.	SE: 15–20, 33–38, 47–52, 59–64, 65–70, 75–80, 203–208, 209–214, 215–220, 221–226, 245–250, 251–254 TE: 15A–20B, 33A–38B, 47A–52B, 59A–64B, 65A–70B, 75–80, 203A–208B, 209A–214B, 215A–220B, 221A–226B, 245A–250B, 251–254
NC.7.EE.4 Use variables to represent quantities to solve real-world or mathematical problems.	SE: 107–112, 131–134, 263–268, 269–274, 275–280, 283–288, 289–294, 299–304, 305–310, 311–314 TE: 107A–112B, 131–134, 263A–263B, 269A–274B, 275A–280B, 283A–288B, 289A–294B, 299A–304B, 305A–310B, 311–314
a. Construct equations to solve problems by reasoning about the quantities. o Fluently solve multistep equations with the variable on one side, including those generated by word problems. o Compare an algebraic solution to an arithmetic solution, identifying the sequence of the operations used in each approach. o Interpret the solution in context.	SE: 107–112, 131–134, 263–268, 269–274, 275–280, 311–314 TE: 107A–112B, 131–134, 263A–263B, 269A–274B, 275A–280B, 311–314
b. Construct inequalities to solve problems by reasoning about the quantities. o Fluently solve multi-step inequalities with the variable on one side, including those generated by word problems. o Compare an algebraic solution process for equations and an algebraic solution process for inequalities. o Graph the solution set of the inequality and interpret in context.	SE: 283–288, 289–294, 299–304, 305–310, 311–314 TE: 283A–288B, 289A–294B, 299A–304B, 305A–310B, 311–314

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Geometry	
Draw, construct, and describe geometrical figures and describe the relationships between them.	
NC.7.G.1 Solve problems involving scale drawings of geometric figures by: <ul style="list-style-type: none"> • Building an understanding that angle measures remain the same and side lengths are proportional. • Using a scale factor to compute actual lengths and areas from a scale drawing. • Creating a scale drawing. 	SE: 431–436, 493–498 TE: 431A–436B, 493–498
NC.7.G.2 Understand the characteristics of angles and side lengths that create a unique triangle, more than one triangle or no triangle. Build triangles from three measures of angles and/or sides.	SE: 437–442, 443–450, 493–498 TE: 437A–424B, 443A–450B, 493–498
Solve real-world and mathematical problems involving angle measure, area, surface area, and volume.	
NC.7.G.4 Understand area and circumference of a circle. <ul style="list-style-type: none"> • Understand the relationships between the radius, diameter, circumference, and area. • Apply the formulas for area and circumference of a circle to solve problems. 	SE: 457–462, 465–470, 493–498 TE: 457A–462B, 465A–470B, 493–498
NC.7.G.5 Use facts about supplementary, complementary, vertical, and adjacent angles in a multi-step problem to write and solve equations for an unknown angle in a figure.	SE: 451–456, 493–498 TE: 451A–456B, 493–498
NC.7.G.6 Solve real-world and mathematical problems involving: <ul style="list-style-type: none"> • Area and perimeter of two-dimensional objects composed of triangles, quadrilaterals, and polygons. • Volume and surface area of pyramids, prisms, or three-dimensional objects composed of cubes, pyramids, and right prisms. 	In Grade 7, students solve problems involving the circumferences and areas of circles. Areas of triangles, quadrilaterals, and polygons are developed and practiced in Grade 6 (Topic 7). Grade 7 pages SE: 457–462, 465–470, 475–480, 481–486, 487–492, 493–498 TE: 457A–462B, 465A–470B, 475A–480B, 481A–486B, 487A–492B, 493–498

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Statistics and Probability	
Use random sampling to draw inferences about a population.	
<p>NC.7.SP.1 Understand that statistics can be used to gain information about a population by:</p> <ul style="list-style-type: none"> • Recognizing that generalizations about a population from a sample are valid only if the sample is representative of that population. • Using random sampling to produce representative samples to support valid inferences. 	<p>SE: 323–330, 331–338, 341–346, 347–352, 357–360</p> <p>TE: 323A–330B, 331A–338B, 341A–346B, 347A–352B, 357–360</p>
<p>NC.7.SP.2 Generate multiple random samples (or simulated samples) of the same size to gauge the variation in estimates or predictions, and use this data to draw inferences about a population with an unknown characteristic of interest.</p>	<p>SE: 323–330, 357–360</p> <p>TE: 323A–330B, 357–360</p>
Make informal inferences to compare two populations.	
<p>NC.7.SP.3 Recognize the role of variability when comparing two populations.</p>	<p>SE: 331–338, 341–346, 347–352, 357–360</p> <p>TE: 331A–338B, 341A–346B, 347A–352B, 357–360</p>
<p>a. Calculate the measure of variability of a data set and understand that it describes how the values of the data set vary with a single number.</p> <ul style="list-style-type: none"> o Understand the mean absolute deviation of a data set is a measure of variability that describes the average distance that points within a data set are from the mean of the data set. o Understand that the range describes the spread of the entire data set. o Understand that the interquartile range describes the spread of the middle 50% of the data. 	<p>This standard is developed and practiced in Grade 6 (Topic 8) for a single data set. In Grade 7, students apply this understanding as they measures of center and variability for two data sets.</p> <p>Grade 7 pages</p> <p>SE: 331–338, 341–346, 347–352, 357–360</p> <p>TE: 331A–338B, 341A–346B, 347A–352B, 357–360</p>
<p>b. Informally assess the difference between two data sets by examining the overlap and separation between the graphical representations of two data sets.</p>	<p>SE: 331–338, 341–346, 347–352, 357–360</p> <p>TE: 331A–338B, 341A–346B, 347A–352B, 357–360</p>

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NC.7.SP.4 Use measures of center and measures of variability for numerical data from random samples to draw comparative inferences about two populations.	SE: 331–338, 341–346, 347–352, 357–360 TE: 331A–338B, 341A–346B, 347A–352B, 357–360
Investigate chance processes and develop, use, and evaluate probability models.	
NC.7.SP.5 Understand that the probability of a chance event is a number between 0 and 1 that expresses the likelihood of the event occurring.	SE: 369–374, 375–380, 417–422 TE: 369A–374B, 375A–380B, 417–422
NC.7.SP.6 Collect data to calculate the experimental probability of a chance event, observing its long-run relative frequency. Use this experimental probability to predict the approximate relative frequency.	SE: 381–386, 417–422 TE: 381A–386B, 417–422
NC.7.SP.7 Develop a probability model and use it to find probabilities of simple events.	SE: 387–392, 399–404, 417–422 TE: 387A–392B, 399A–404B, 417–422
a. Develop a uniform probability model by assigning equal probability to all outcomes, and use the model to determine probabilities of events.	SE: 387–392, 417–422 TE: 387A–392B, 417–422
b. Develop a probability model (which may not be uniform) by repeatedly performing a chance process and observing frequencies in the data generated.	SE: 387–392, 399–404, 417–422 TE: 387A–392B, 399A–404B, 417–422
c. Compare theoretical and experimental probabilities from a model to observed frequencies; if the agreement is not good, explain possible sources of the discrepancy.	SE: 375–380, 381–386, 417–422 TE: 375A–380B, 381A–386B, 417–422
NC.7.SP.8 Determine probabilities of compound events using organized lists, tables, tree diagrams, and simulation.	SE: 399–404, 405–410, 411–416, 417–422 TE: 399A–404B, 405A–410B, 411A–416B, 417–422

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a. Understand that, just as with simple events, the probability of a compound event is the fraction of outcomes in the sample space for which the compound event occurs.	SE: 399–404, 405–410, 417–422 TE: 399A–404B, 405A–410B, 417–422
b. For an event described in everyday language, identify the outcomes in the sample space which compose the event, when the sample space is represented using organized lists, tables, and tree diagrams.	SE: 399–404, 405–410, 417–422 TE: 399A–404B, 405A–410B, 417–422
c. Design and use a simulation to generate frequencies for compound events.	SE: 411–416, 417–422 TE: 411A–416B, 417–422

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Standards for Mathematical Practice	
1. Make sense of problems and persevere in solving them.	<p>enVision Mathematics provides numerous instructional opportunities to help students develop proficiency in the math practices. To get students off to a good start on all eight practices, use the Math Practices and Problem Solving Handbook pages online. Each lesson begins with Problem-Based Learning, an activity in which students interact with their peers and teachers to make sense of and decide on a workable solution for a situation. Another feature of each lesson is the set of problem-solving exercises in which students persevere by applying different skills and strategies to solve problems. Each Problem-Solving Lesson provides instruction and practice focused on a specific math practice.</p> <p>SE/TE: 92, 93, 126, 150, 192, 204, 235, 243, 320, 330, 413, 438, 443, 444, 457</p>
2. Reason abstractly and quantitatively.	<p>enVision Mathematics provides scaffolded instruction to help students develop both quantitative and abstract reasoning. In the Visual Learning Bridge, students can see how to represent a given situation numerically or algebraically. They will have opportunities later in the lesson to reason abstractly as they endeavor to represent situations symbolically. Reasonableness exercises remind students to compare their work to the original situation. Reasoning problems throughout the exercise sets focus students’ attention on the structure or meaning of an operation, for example, rather than merely the solution.</p> <p>SE/TE: 14, 18, 20, 24, 50, 74, 98, 104, 112, 113, 130, 137, 180, 194, 224, 248, 276, 286, 319, 324, 326, 340, 348, 355, 374, 419, 438, 442</p>

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<p style="text-align: center;">North Carolina Standard Course of Study Mathematics–Grade 8</p>	<p style="text-align: center;">envision Mathematics, ©2021 Grade 8</p>
<p>3. Construct viable arguments and critique the reasoning of others.</p>	<p>Consistent with a focus on reasoning and sense-making is a focus on critical reasoning—argumentation and critique of arguments. In enVision Mathematics, the Problem-Based Learning affords students opportunities to share with classmates their thinking about problems, their solution methods, and their reasoning about the solutions. Many exercises found throughout the program explicitly call for students to justify or explain their solutions. The ability to articulate a clear explanation for a process is a stepping stone to critical analysis and reasoning of both the student’s own process and those of others.</p> <p>SE/TE: 18, 19, 24, 30, 32, 36, 38, 46, 51, 56, 58, 62, 73, 111, 113, 132, 150, 169, 174, 193, 200, 228, 248, 271, 276, 284, 286, 290, 340, 349, 374, 375, 398, 437</p>
<p>4. Model with mathematics.</p>	<p>Students using enVision Mathematics explicitly use mathematical modeling in each Topic during the 3-Act Math lesson. The Visual Learning Bridge also often presents real-world situations, demonstrating how these problems can be modeled mathematically.</p> <p>SE/TE: 26, 46, 94, 98, 99, 125, 137, 138, 143, 148, 149, 168, 174, 175, 176, 193, 204, 205, 206, 222, 223, 242, 276, 277, 278, 292, 312, 313, 318, 319, 320, 331, 341, 342, 349, 354, 355, 356, 406, 418</p>

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5. Use appropriate tools strategically.	<p>Students become fluent in the use of a wide assortment of tools ranging from physical objects, including manipulatives, integer chips, algebra tiles, and even pencil and paper, to digital tools, such as graphing calculators, Online Math Tools, and computers. As students become more familiar with the tools available to them, they are able to begin making decisions about which tools are most helpful in a particular situation.</p> <p>SE/TE: 94, 144, 148, 149, 174, 175, 176, 204, 205, 206, 223, 276, 277, 278, 312, 313, 318, 319, 320, 341, 342, 354, 355, 356</p>
6. Attend to precision.	<p>Students are expected to use mathematical terms and symbols with precision. Key terms are highlighted in each lesson and important concepts presented in the Concept Summary. The Problem-Based Learning activity provides repeated opportunities for students to use precise language to explain their solution paths while solving problems. In the Convince Me! feature, students revisit these key terms or concepts and provide explicit definitions or explanations.</p> <p>SE/TE: 12, 25, 31, 36, 56, 57, 286, 354, 361, 362, 363, 364, 368, 369, 370, 375, 376, 399, 400, 404, 405, 406, 419, 436, 437, 438, 442, 443, 444, 450, 451, 452, 456, 457, 458</p>

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7. Look for and make use of structure.	<p>Students are encouraged to look for structure as they develop solution plans. For example, as students mature in their mathematical thinking, they see structure when working with problems that can be represented with the Distributive Property. This focus on looking for and recognizing structure enables students to draw from patterns as they formalize their thinking about the structure of operations.</p> <p>SE/TE: 12, 52, 72, 93, 99, 104, 105, 111, 136, 148, 169, 170, 198, 242, 270, 285, 361, 398, 404, 412, 450</p>
8. Look for and express regularity in repeated reasoning.	<p>Students are reminded to think about problems they have encountered previously that may share features or processes. They are encouraged to draw on the solution plan developed for such problems, and, as their mathematical thinking matures, to look for and apply generalizations to similar situations.</p> <p>SE/TE: 31, 45, 51, 63, 131, 250, 291, 330, 399, 405, 413, 457</p>
The Number System	
Know that there are numbers that are not rational, and approximate them by rational numbers.	
NC.8.NS.1 Understand that every number has a decimal expansion. Building upon the definition of a rational number, know that an irrational number is defined as a non-repeating, non-terminating decimal.	<p>SE: 15–20, 75–80</p> <p>TE: 15A–20B, 75–80</p>

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<p>NC.8.NS.2 Use rational approximations of irrational numbers to compare the size of irrational numbers and locate them approximately on a number line. Estimate the value of expressions involving:</p> <ul style="list-style-type: none"> • Square roots and cube roots to the tenths. • π to the hundredths. 	<p>SE: 15–20, 21–26, 27–32, 75–80, 439–444, 447–452, 453–458, 463–466</p> <p>TE: 15A–20B, 21A–26B, 27A–32B, 75–80, 439A–444B, 447A–452B, 453A–458B, 463–466</p>
Expressions and Equations	
Work with radicals and integer exponents.	
<p>NC.8.EE.1 Develop and apply the properties of integer exponents to generate equivalent numerical expressions.</p>	<p>SE: 41–46, 47–52, 75–80</p> <p>TE: 41A–46B, 47A–52B, 75–80</p>
<p>NC.8.EE.2 Use square root and cube root symbols to:</p> <ul style="list-style-type: none"> • Represent solutions to equations of the form $x^2 = p$ and $x^3 = p$, where p is a positive rational number. • Evaluate square roots of perfect squares and cube roots of perfect cubes for positive numbers less than or equal to 400. 	<p>SE: 27–32, 33–38, 75–80</p> <p>TE: 27A–32B, 33A–38B, 75–80</p>
<p>NC.8.EE.3 Use numbers expressed in scientific notation to estimate very large or very small quantities and to express how many times as much one is than the other.</p>	<p>SE: 53–58, 59–64, 75–80</p> <p>TE: 53A–58B, 59A–64B, 75–80</p>
<p>NC.8.EE.4 Perform multiplication and division with numbers expressed in scientific notation to solve real-world problems, including problems where both decimal and scientific notation are used.</p>	<p>SE: 69–74, 75–80</p> <p>TE: 69A–74B, 75–80</p>

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Analyze and solve linear equations and inequalities.	
<p>NC.8.EE.7 Solve real-world and mathematical problems by writing and solving equations and inequalities in one variable.</p> <ul style="list-style-type: none"> • Recognize linear equations in one variable as having one solution, infinitely many solutions, or no solutions. • Solve linear equations and inequalities including multi-step equations and inequalities with the same variable on both sides. 	<p>Students solve inequalities in one variable in Grade 6 (Topic 4) and Grade 7 (Topic 5). The following references are to writing and solving equations in Grade 8.</p> <p>SE: 89–94, 95–100, 101–106, 107–114, 151–156</p> <p>TE: 89A–94B, 95A–100B, 101A–106B, 107A–114B, 151–156</p>
Analyze and solve pairs of simultaneous linear equations.	
<p>NC.8.EE.8 Analyze and solve a system of two linear equations in two variables in slope-intercept form.</p> <ul style="list-style-type: none"> • Understand that solutions to a system of two linear equations correspond to the points of intersection of their graphs because the point of intersection satisfies both equations simultaneously. • Solve real-world and mathematical problems leading to systems of linear equations by graphing the equations. Solve simple cases by inspection. 	<p>SE: 267–272, 273–278, 281–286, 287–292, 297–300</p> <p>TE: 267A–272B, 273A–273B, 281A–286B, 287A–292B, 297–300</p>
Functions	
Define, evaluate, and compare functions.	
<p>NC.8.F.1 Understand that a function is a rule that assigns to each input exactly one output.</p> <ul style="list-style-type: none"> • Recognize functions when graphed as the set of ordered pairs consisting of an input and exactly one corresponding output. • Recognize functions given a table of values or a set of ordered pairs. 	<p>SE: 165–170, 171–176, 207–210</p> <p>TE: 165A–170B, 171A–176B, 207–210</p>
<p>NC.8.F.2 Compare properties of two linear functions each represented in a different way (algebraically, graphically, numerically in tables, or by verbal descriptions).</p>	<p>SE: 171–176, 177–182, 189–194, 207–210</p> <p>TE: 171A–176B, 177A–182B, 189A–194B, 207–210</p>
<p>NC.8.F.3 Identify linear functions from tables, equations, and graphs.</p>	<p>SE: 171–176, 177–182, 195–200, 207–210</p> <p>TE: 171A–176B, 177A–182B, 195A–200B, 207–210</p>

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Use functions to model relationships between quantities.	
<p>NC.8.F.4 Analyze functions that model linear relationships.</p> <ul style="list-style-type: none"> • Understand that a linear relationship can be generalized by $y = mx + b$. • Write an equation in slope-intercept form to model a linear relationship by determining the rate of change and the initial value, given at least two (x, y) values or a graph. • Construct a graph of a linear relationship given an equation in slope-intercept form. • Interpret the rate of change and initial value of a linear function in terms of the situation it models, and in terms of the slope and y-intercept of its graph or a table of values. 	<p>SE: 171–176, 177–182, 189–194, 195–200, 201–206, 207–210</p> <p>TE: 171A–176B, 177A–182B, 189A–194B, 195A–200B, 201A–206B, 207–210</p>
<p>NC.8.F.5 Qualitatively analyze the functional relationship between two quantities.</p> <ul style="list-style-type: none"> • Analyze a graph determining where the function is increasing or decreasing; linear or non-linear. • Sketch a graph that exhibits the qualitative features of a real-world function. 	<p>SE: 171–176, 177–182, 195–200, 201–206, 207–210</p> <p>TE: 171A–176B, 177A–182B, 195A–200B, 201A–206B, 207–210</p>
Geometry	
Understand congruence and similarity using physical models, transparencies, or geometry software.	
<p>NC.8.G.2 Use transformations to define congruence.</p> <ul style="list-style-type: none"> • Verify experimentally the properties of rotations, reflections, and translations that create congruent figures. • 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. • Given two congruent figures, describe a sequence that exhibits the congruence between them. 	<p>SE: 309–314, 315–320, 321–326, 337–342, 377–382</p> <p>TE: 309A–314B, 315A–320B, 321A–326B, 337A–342B, 377–382</p>

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NC.8.G.3 Describe the effect of dilations about the origin, translations, rotations about the origin in 90 degree increments, and reflections across the x -axis and y -axis on two-dimensional figures using coordinates.	SE: 345–350, 351–356, 377–382 TE: 345A–350B, 351A–356B, 377–382
NC.8.G.4 Use transformations to define similarity. <ul style="list-style-type: none"> • Verify experimentally the properties of dilations that create similar figures. • 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. 	SE: 351–356, 377–382 TE: 351A–356B, 377–382
Analyze angle relationships.	
NC.8.G.5 Use informal arguments to analyze angle relationships. <ul style="list-style-type: none"> • Recognize relationships between interior and exterior angles of a triangle. • Recognize the relationships between the angles created when parallel lines are cut by a transversal. • Recognize the angle-angle criterion for similarity of triangles. • Solve real-world and mathematical problems involving angles. 	SE: 357–364, 365–370, 371–376, 377–382 TE: 357A–364B, 365A–370B, 371A–376B, 377–382
Understand and apply the Pythagorean Theorem.	
NC.8.G.6 Explain the Pythagorean Theorem and its converse.	SE: 395–400, 401–406, 421–424 TE: 395A–400B, 401A–406B, 421–424
NC.8.G.7 Apply the Pythagorean Theorem and its converse to solve real-world and mathematical problems.	SE: 395–400, 409–414, 421–424 TE: 395A–400B, 409A–414B, 421–424
NC.8.G.8 Apply the Pythagorean Theorem to find the distance between two points in a coordinate system.	SE: 415–420, 421–424 TE: 415A–420B, 421–424

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Solve real-world and mathematical problems involving volume of cylinders, cones, and spheres.	
NC.8.G.9 Understand how the formulas for the volumes of cones, cylinders, and spheres are related and use the relationship to solve real-world and mathematical problems.	SE: 439–444, 447–452, 453–458, 463–466 TE: 439A–444B, 447A–452B, 453A–458B, 463–466
Statistics and Probability	
Investigate patterns of association in bivariate data.	
NC.8.SP.1 Construct and interpret scatter plots for bivariate measurement data to investigate patterns of association between two quantities. Investigate and describe patterns such as clustering, outliers, positive or negative association, linear association, and nonlinear association.	SE: 219–224, 255–258 TE: 219A–224B, 255–258
NC.8.SP.2 Model the relationship between bivariate quantitative data to: • Informally fit a straight line for a scatter plot that suggests a linear association. • Informally assess the model fit by judging the closeness of the data points to the line.	SE: 225–230, 231–236, 255–258 TE: 225A–230B, 231A–236B, 255–258
NC.8.SP.3 Use the equation of a linear model to solve problems in the context of bivariate quantitative data, interpreting the slope and y -intercept.	SE: 231–236, 255–258 TE: 231A–236B, 255–258
NC.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.	SE: 239–244, 245–250, 255–258 TE: 239A–244B, 245A–250B, 255–258