i-Ready Classroom Mathematics

to the

2021 Tennessee Academic Standards for Mathematics

Grades K–5

2021 Tennessee Academic Standards for Mathematics Kindergarten		i-Ready Classroom Mathematics Lessons Kindergarten
Kindergarten		
K.CC	**Counting and Cardinality (CC)**	
K.CC.A	Know number names and the counting sequence.	
K.CC.A.1	Count to 100 by ones, fives, and tens. Count backward from 10.	**Lesson 29**: Count to 100 by Tens **Lesson 30**: Count to 100 by Ones **Educator Note:** Counting Backward from 10 **One-Day Activity:** Count by Fives **<u>Additional Content</u>:** Lesson 2: Count and Write to 5; Lesson 3: Numbers 0 to 5; Lesson 6: Count and Write to 10; Lesson 27: Count Teen Numbers *Note: Lessons do not cover counting by fives to 100 and counting backwards from 10.*
K.CC.A.2	Count forward by ones beginning from any given number within the known sequence (instead of having to begin at 1).	**Lesson 29**: Count to 100 by Tens **Lesson 30**: Count to 100 by Ones **<u>Additional Content</u>:** Lesson 26: *Understand* Teen Numbers; Lesson 28: Make Teen Numbers

2021 Tennessee Academic Standards for Mathematics Kindergarten		i-Ready Classroom Mathematics Lessons Kindergarten
K.CC.A.3	Write numbers from 0 to 20. Represent a quantity of objects with a written number 0-20.	**Lesson 1**: *Understand* Counting **Lesson 2**: Count and Write to 5 **Lesson 3**: Numbers 0 to 5 **Lesson 4**: Compare Within 5 **Lesson 6**: Count and Write to 10 **Lesson 7**: *Understand* 1 More **Lesson 8**: Compare Within 10 **Lesson 27**: Count Teen Numbers **Additional Content**: Lesson 5: Make 3, 4, and 5; Lesson 9: Sort and Count Objects; Lesson 10: Make 10; Lesson 11: Make 6, 7, 8, and 9; Lesson 12: Name Shapes; Lesson 16: *Understand* Addition; Lesson 17: Add Within 5; Lesson 18: *Understand* Subtraction; Lesson 19: Subtract Within 5; Lesson 20: Practice Facts to 5; Lesson 21: Add Within 10; Lesson 22: Find the Missing Part of 10; Lesson 23: Subtract Within 10; Lesson 24: Addition and Subtraction Word Problems to 10; Lesson 25: Word Problems with Both Addends Unknown; Lesson 26: *Understand* Teen Numbers; Lesson 28: Make Teen Numbers
K.CC.A.4	Recognize, describe, extend, and create patterns and explain a simple rule for a pattern using concrete materials. Analyze the structure of the repeating pattern by identifying the unit (core) of the pattern.	**Lesson 5:** Make 3, 4, and 5 **Lesson 9**: Sort and Count Objects **One-Day Activity:** Work with Patterns **Additional Content:** **Lesson 14**: Compare Shapes

2021 Tennessee Academic Standards for Mathematics Kindergarten		i-Ready Classroom Mathematics Lessons Kindergarten
K.CC.B	Count to tell the number of objects.	
K.CC.B.5	Understand the relationship between numbers and quantities; connect counting to cardinality.	
K.CC.B.5a	When counting objects 1-20, say the number names in the standard order, using one-to-one correspondence.	**Lesson 1**: *Understand* Counting **Lesson 2**: Count and Write to 5 **Lesson 6**: Count and Write to 10 **Lesson 27**: Count Teen Numbers
K.CC.B.5b	Recognize that the last number name said tells the number of objects counted. The number of objects is the same regardless of their arrangement or the order in which they were counted.	**Lesson 1**: *Understand* Counting **Lesson 2**: Count and Write to 5 **Lesson 6**: Count and Write to 10 **Additional Content:** Lesson 27: Count Teen Numbers
K.CC.B.5c	Recognize that each successive number name refers to a quantity that is one greater and each previous number is one less.	**Lesson 3**: Numbers 0 to 5 **Lesson 7***: Understand* 1 More **One-Day Activity:** Name 1 More and 1 Less **Additional Content:** Lesson 1: *Understand* Counting; Lesson 2: Count and Write to 5; Lesson 5: Make 3, 4, and 5; Lesson 6: Count and Write to 10; Lesson 11: Make 6, 7, 8, and 9; Lesson 27: Count Teen Numbers

2021 Tennessee Academic Standards for Mathematics Kindergarten		i-Ready Classroom Mathematics Lessons Kindergarten
K.CC.B.6	Count to answer "how many?" questions about as many as 20 things arranged in a line, a rectangular array, a circle, or as many as 10 things in a scattered configuration. Given a number from 1-20, count out that many objects.	**Lesson 2**: Count and Write to 5 **Lesson 3**: Numbers 0 to 5 **Lesson 6**: Count and Write to 10 **Lesson 7**: *Understand* 1 More **Lesson 27**: Count Teen Numbers **<u>Additional Content</u>:** Lesson 1: *Understand* Counting; Lesson 5: Make 3, 4, and 5; Lesson 9: Sort and Count Objects; Lesson 10: Make 10; Lesson 12: Name Shapes; Lesson 14: Compare Shapes; Lesson 16: *Understand* Addition; Lesson 17: Add Within 5; Lesson 18: *Understand* Subtraction; Lesson 19: Subtract Within 5; Lesson 20: Practice Facts to 5; Lesson 21: Add Within 5; Lesson 22: Find the Missing Part of 10; Lesson 23: Subtract Within 10; Lesson 24: Addition and Subtraction Word Problems with Both Addends Unknown; Lesson 25: Word Problems with Both Addends Unknown; Lesson 26: *Understand* Teen Numbers; Lesson 28: Make Teen Numbers
K.CC.C	Compare numbers.	
K.CC.C.7	Identify whether the number of objects in one group is greater than, less than, or equal to the number of objects in another group.	**Lesson 4:** Compare Within 5 **Lesson 8:** Compare Within 10 **<u>Additional Content:</u>** Lesson 9: Sort and Count Objects
K.CC.C.8	Compare two given numbers up to 10, when written as numerals, using the terms *greater than* , *less than* , or *equal to* . (Students need not use comparison symbols here.)	**Lesson 4**: Compare Within 5 **Lesson 8**: Compare Within 10

2021 Tennessee Academic Standards for Mathematics Kindergarten		i-Ready Classroom Mathematics Lessons Kindergarten
K.OA	**Operations and Algebraic Thinking (OA)**	
K.OA.A	Represent and solve problems involving addition and subtraction.	
K.OA.A.1	Represent addition and subtraction with objects, fingers, drawings, acting out situations, verbal explanations, expressions, or equations.	**Lesson 16**: *Understand* Addition **Lesson 18**: *Understand* Subtraction **Additional Content:** Lesson 5: Make 3, 4, and 5; Lesson 10: Make 10; Lesson 11: Make 6, 7, 8, and 9; Lesson 17: Add Within 5; Lesson 19: Subtract Within 5; Lesson 20: Practice Facts to 5; Lesson 21: Add Within 10; Lesson 23: Subtract Within 10; Lesson 25: Word Problems with Both Addends Unknown
K.OA.A.2	Add and subtract within 10 to solve contextual problems with result/total unknown involving situations of add to, take from, and put together/take apart. Use objects, drawings, or equations to represent the problem.	**Lesson 17**: Add Within 5 **Lesson 19**: Subtract Within 5 **Lesson 21**: Add Within 10 **Lesson 23**: Subtract Within 10 **Lesson 24**: Addition and Subtraction Word Problems to 10 **Additional Content:** Lesson 5: Make 3, 4, and 5; Lesson 10: Make 10; Lesson 11: Make 6, 7, 8, and 9; Lesson 25: Word Problems with Both Addends Unknown
K.OA.A.3	Decompose numbers less than or equal to 10 into addend pairs in more than one way *(e.g., 5 = 2 + 3 and 5 = 4 + 1)* by using objects or drawings. Record each decomposition using a drawing or writing an equation.	**Lesson 5:** Make 3, 4, and 5 **Lesson 10:** Make 10 **Lesson 11:** Make 6, 7, 8, and 9 **Lesson 25:** Word Problems with Both Addends Unknown **Additional Content:** Lesson 16: *Understand* Addition

2021 Tennessee Academic Standards for Mathematics Kindergarten		i-Ready Classroom Mathematics Lessons Kindergarten
K.OA.A.4	Find the number that makes 10, when added to any given number, from 1 to 9 using objects or drawings. Record the answer using a drawing or writing an equation.	**Lesson 10:** Make 10 **Lesson 22:** Find the Missing Part of 10 **<u>Additional Content:</u>** Lesson 25: Word Problems with Both Addends Unknown
K.OA.A.5	Use mental strategies flexibly to develop fluency in addition and subtraction within 10.	**Lesson 5:** Make 3, 4, and 5 **Lesson 10**: Make 10 **Lesson 11**: Make 6, 7, 8, and 9 **Lesson 17:** Add Within 5 **Lesson 19:** Subtract Within 5 **Lesson 20:** Practice Facts to 5 **Lesson 21**: Add Within 10 **Lesson 22**: Find the Missing Part of 10 **Lesson 23**: Subtract Within 10 **Lesson 24**: Addition and Subtraction Word Problems to 10 **<u>Additional Content:</u>** Lesson 16: *Understand* Addition; Lesson 18: *Understand* Subtraction
K.NBT	**Number and Operations in Base Ten (NBT)**	
K.NBT.A	Work with numbers 11 to 19 to gain foundations for place value.	
K.NBT.A.1	Compose and decompose numbers from 11 to 19 into a group of ten ones and some more ones by using objects or drawings (e.g., 18 equals 10 + 8). Record the composition or decomposition using a drawing or by writing an equation.	**Lesson 26:** *Understand* Teen Numbers **Lesson 28:** Make Teen Numbers
K.MD	**Measurement and Data (MD)**	
K.MD.A	Describe and compare measurable attributes.	
K.MD.A.1	Describe the measurable attributes of an object, such bas length (long/short), height (tall/short), or weight (heavy/light).	**Lesson 31:** Compare Length and Height **Lesson 32:** Compare Weight

2021 Tennessee Academic Standards for Mathematics Kindergarten		i-Ready Classroom Mathematics Lessons Kindergarten
K.MD.A.2	Directly compare two objects with a measurable attribute in common, to describe which object has more of/less of the attribute. For example, directly compare the heights of two children and describe one child as taller/shorter.	**Lesson 31:** Compare Length and Height **Lesson 32:** Compare Weight
K.MD.B	Work with money.	
K.MD.B.3	Identify the penny, nickel, dime, and quarter based on their attributes (size and color) and recognize the value of each.	**One-Day Activity:** Investigate Coins
K.MD.C	Classify objects and count the number of objects in each category.	
K.MD.C.4	Sort a collection of objects into a given category, with 10 or less in each category. Compare the categories by group size.	**Lesson 9:** *Understand* True and False Equations **Lesson 18:** Collect and Compare Data **Lesson 22:** Compare Numbers
K.G	**Geometry (G)**	
K.G.A	Identify and describe shapes and solids.	
K.G.A.1	Describe objects in the environment using names of shapes and solids (squares, circles, triangles, rectangles, hexagons, cubes, cones, cylinders, and spheres). Describe the relative positions of these objects using terms such as above, below, beside, in front of, behind, between, and next to.	**Lesson 13:** See Position and Shape **Educator Note:** Positional Term: Between
K.G.A.2	Correctly name shapes and solids (squares, circles, triangles, rectangles, hexagons, cubes, cones, cylinders, and spheres) regardless of their orientations or overallsize.	**Lesson 12:** Name Shapes **Additional Content:** Lesson 27: Count Teen Numbers
K.G.A.3	Identify shapes (squares, circles, triangles, rectangles, and hexagons) as two-dimensional and solids (cubes, cones, cylinders, and spheres) as three-dimensional.	**Lesson 12:** Name Shapes

2021 Tennessee Academic Standards for Mathematics Kindergarten		i-Ready Classroom Mathematics Lessons Kindergarten
K.G.B	Analyze, compare, create, and compose shapes.	
K.G.B.4	Describe similarities and differences between two- and three-dimensional shapes/solids, in different sizes and orientations.	**Lesson 14:** Compare Shapes
K.G.B.5	Model shapes/solids in the world by building or drawing them.	**Lesson 15:** Build Shapes
K.G.B.6	Compose a figure using simple shapes/solids and identify smaller shapes/solids within the figure.	**Lesson 15:** Build Shapes

2021 Tennessee Academic Standards for Mathematics Grade 1		i-Ready Classroom Mathematics Lessons Grade 1
Grade 1		
1.OA	**Operations and Algebraic Thinking (OA)**	
1.OA.A	Represent and solve problems involving addition and subtraction.	
1.OA.A.1	Add and subtract within 20 to solve contextual problems, with unknowns in all positions, involving situations of add to, take from, put together/take apart, and compare. Use objects, drawings, and equations with a symbol for the unknown number to represent the problem. NOTE: While start unknown situations may be introduced in first grade, they are not expected to be mastered until second grade.	**Lesson 7:** Add and Subtract in Word Problems **Lesson 8:** Subtract to Compare in Word Problems **Lesson 17:** Word Problems to 20 **Additional Content:** Lesson 1: Count On to Add; Lesson 2: Doubles and Near Doubles; Lesson 6: Count On to Subtract; Lesson 12: Make a Ten to Add; Lesson 18: Collect and Compare Data
1.OA.A.2	Add three whole numbers whose sum is within 20 to solve contextual problems using objects, drawings, and equations with a symbol for the unknown number to represent the problem.	**Lesson 14:** Add Three Numbers **Additional Content:** Lesson 18: Collect and Compare Data
1.OA.B	Understand and apply properties of operations and the relationship between addition and subtraction.	
1.OA.B.3	Apply properties of operations (additive identity, commutative, and associative) as strategies to add and subtract. (Students need not use formal terms for these properties.)	**Lesson 3:** Add in Any Order **Lesson 5:** Number Partners for 10 **Lesson 14:** Add Three Numbers **Additional Content:** Lesson 12: Make a Ten to Add; Lesson 15: Make a Ten to Subtract; Lesson 28: Add Two-Digit and One-Digit Numbers; Lesson 29: Add Two-Digit Numbers
1.OA.B.4	Understand the relationship between addition and subtraction by representing subtraction as an unknown-addend problem. For example, to solve 10 – 8 = __, a student can use 8 +__ = 10. (	**Lesson 4:** *Understand* Missing Addends **Additional Content:** Lesson 7: Add and Subtract in Word Problems; Lesson 10: Use Strategies for Addition and Subtraction Facts

2021 Tennessee Academic Standards for Mathematics Grade 1		i-Ready Classroom Mathematics Lessons Grade 1
1.OA.C	Add and subtract within 20.	
1.OA.C.5	Add and subtract within 20 using strategies such as counting on, counting back, making 10, related known facts, and composing/decomposing numbers with an emphasis on making ten *(e.g., 13 - 4 = 13 - 3 - 1 = 10 - 1 = 9 or adding 6 + 7 by creating the known equivalent 6 + 4 + 3 = 10 + 3 = 13).*	**Lesson 1:** Count On to Add **Lesson 6:** Count On to Subtract **Lesson 10**: Use Strategies for Addition and Subtraction Facts **Lesson 12**: Make a Ten to Add **Lesson 15**: Make a Ten to Subtract **Educator Note:** Counting Back **Additional Content:** Lesson 2: Doubles and Near Doubles; Lesson 7: Add and Subtract in Word Problems
1.OA.C.6	Use mental strategies flexibly and efficiently to develop fluency in addition and subtraction within 20. By the end of grade 1, know all sums and differences up to 10.	**Lesson 2:** Doubles and Near Doubles **Lesson 5:** Number Partners for 10 **Lesson 10:** Use Strategies for Addition and Subtraction Facts **Lesson 12:** Make a Ten to Add **Lesson 13:** Totals Greater than 10 **Lesson 15:** Make a Ten to Subtract **Additional Content:** Lesson 1: Count On to Add; Lesson 3: Add in Any Order; Lesson 4: *Understand* Missing Addends; Lesson 6: Count On to Subtract; Lesson 7: Add and Subtract in Word Problems; Lesson 8: Subtract to Compare in Word Problems; Lesson 9: *Understand* True and False Equations; Lesson 14: Add Three Numbers; Lesson 17: Word Problems to 20
1.OA.D	Work with addition and subtraction equations.	
1.OA.D.7	Understand the meaning of the equal sign (e.g., 6 = 6; 5 + 2 = 4 + 3; 7 = 8 - 1). Determine if equations involving addition and subtraction are true or false.	**Lesson 9:** *Understand* True and False Equations **Additional Content:** Lesson 12: Make a Ten to Add; Lesson 13: Totals Greater than 10

2021 Tennessee Academic Standards for Mathematics Grade 1		i-Ready Classroom Mathematics Lessons Grade 1
1.OA.D.8	Determine the unknown whole number in an addition or subtraction equation with sums/differences within 20, with the unknown in any position (e.g., 8 + ? = 11, 5 = ? - 3, 6 + 6 = ?).	**Lesson 3:** Add in Any Order **Lesson 5:** Number Partners for 10 **Lesson 16:** Find the Unknown Number **Additional Content:** Lesson 4: *Understand* Missing Addends; Lesson 8: Subtract to Compare in Word Problems; Lesson 9: *Understand* True and False Equations; Lesson 10: Use Strategies for Addition and Subtraction Facts
1.NBT	**Number and Operations in Base Ten (NBT)**	
1.NBT.A	Extend the counting sequence.	
1.NBT.A.1	Count to 120, by ones, twos, and fives starting at any multiple of that number. Count backward from 20. Read and write numbers to 120 and represent a quantity of objects with a written number.	**Lesson 20:** Counting to 120 **Educator Note:** Counting Backward from 20 **One-Day Activity:** Count by Twos and Fives
1.NBT.A.2	Recognize, describe, extend, and create patterns when counting by ones, twos, fives, and tens and use those patterns to predict the next number in the counting sequence up to 120 through counting or building with concrete materials.*For example: 1, 3, 5, ...; 2, 4, 6, ...; 5, 10, 15, ...; etc.*	**Lesson 20:** Counting to 120 **Lesson 22**: Compare Numbers **Lesson 24:** Money **Lesson 26:** Understand 10 More and 10 Less **One-Day Activity:** Investigate Patterns and Counting Sequences
1.NBT.B	Understand place value	
1.NBT.B.3	Know that the digits of a two-digit number represent groups of tens and ones *(e.g., 39 can be represented as 39 ones, 2 tens and 19 ones, or 3 tens and 9 ones).*	**Lesson 11:** *Understand* Teen Numbers **Lesson 19:** *Understand* Tens **Lesson 21:** *Understand* Tens and Ones **Additional Content:** Lesson 12: Make a Ten to Add; Lesson 13: Totals Greater than 10; Lesson 15: Make a Ten to Subtract; Lesson 22: Compare Numbers; Lesson 25: Add and Subtract Tens; Lesson 26: *Understand* 10 More and 10 Less; Lesson 27: Add Tens to Any Number

2021 Tennessee Academic Standards for Mathematics Grade 1		i-Ready Classroom Mathematics Lessons Grade 1
1.NBT.B.4	Compare two two-digit numbers based on the meanings of the digits in each place and use the symbols >, =, and < to show the relationship.	**Lesson 22:** Compare Numbers
1.NBT.C	Use place value understanding and properties of operations to add and subtract.	
1.NBT.C.5	Add a two-digit number to a one-digit number and a two-digit number to a multiple of ten (within 100). Use concrete models, drawings, strategies based on place value, properties of operations, and/or the relationship between addition and subtraction to explain the reasoning used.	**Lesson 25:** Add and Subtract Tens **Lesson 27:** Add Tens to Any Number **Lesson 28:** Add Two-Digit and One-Digit Numbers **Lesson 29:** Add Two-Digit Numbers
1.NBT.C.6	Mentally find 10 more or 10 less than a given two-digit number without having to count by ones and explain the reasoning used.	**Lesson 26:** *Understand* 10 More and 10 Less
1.NBT.C.7	Subtract multiples of 10 from any number in the range of 10-99 using concrete models, drawings, strategies based on place value, properties of operations, and/or the relationship between addition and subtraction.	**Lesson 25:** Add and Subtract Tens
1.MD	**Measurement and Data (MD)**	
1.MD.A	Measure lengths indirectly and by iterating length units.	
1.MD.A.1	Order three objects by length. Compare the lengths of two objects indirectly by using a third object. *For example, to compare indirectly the heights of Bill and Susan: if Bill is taller than mother and mother is taller than Susan, then Bill is taller than Susan.*	**Lesson 30:** Order Objects by Length **Lesson 31:** Compare Lengths
1.MD.A.2	Measure the length of an object using non-standard units (paper clips, cubes, etc.) and express this length as a whole number of units.	**Lesson 32:** *Understand* Length Measurement

2021 Tennessee Academic Standards for Mathematics Grade 1		i-Ready Classroom Mathematics Lessons Grade 1
1.MD.B	Work with time and money.	
1.MD.B.3	Recognize a clock as a measurement tool. Tell and write time in hours and half-hours using analog and digital clocks.	**Lesson 23:** Tell Time **<u>Additional Content:</u>** Lesson 35: *Understand* Breaking Shapes into Equal Parts
1.MD.B.4	Count the value of a set of like coins less than one dollar using the ¢ symbol only.	**One-Day Activity:** Find the Value of Sets of Coins
1.MD.C	Represent and interpret data.	
1.MD.C.5	Organize, represent, and interpret data with up to three categories using pictographs, bar graphs, and tally charts. Ask and answer questions about the total number of data points, how many in each category, and how many more or less are in one category than in another.	**Lesson 9:** *Understand* True and False Equations **Lesson 18:** Collect and Compare Data **Lesson 22:** Compare Numbers **One-Day Activity:** Show Data on Bar Graphs
1.G	**Geometry (G)**	
1.G.A	Reason with shapes/solids and their attributes.	
1.G.A.1	Distinguish between attributes that define a shape *(e.g., number of sides and vertices)* versus attributes that do not define the shape *(e.g., color, orientation, overall size)* ; build and draw two-dimensional shapes to possess defining attributes.	**Lesson 33:** Shapes

2021 Tennessee Academic Standards for Mathematics Grade 1		i-Ready Classroom Mathematics Lessons Grade 1
1.G.A.2	Create a composite figure and use the composite figure to make new figures by using two-dimensional shapes (rectangles, squares, hexagons, trapezoids, triangles, halfcircles, and quarter-circles) or three-dimensional solids (cubes, spheres, rectangular prisms, cones, and cylinders).	**Lesson 34:** Putting Shapes Together
1.G.A.3	Partition circles and rectangles into two and four equal shares, describe the shares using the words halves, fourths, and quarters, and use the phrases half of, fourth of, and quarter of. Describe the whole as two of, or four of the shares. Understand for these examples that partitioning into more equal shares creates smaller shares.	**Lesson 35:** *Understand* Breaking Shapes into Equal Parts **Additional Content:** Lesson 23: Tell Time

Tennessee Academic Standards for Mathematics Grade 2		i-Ready Classroom Mathematics Lessons Grade 2
Grade 2		
2.OA	**Operations and Algebraic Thinking (OA)**	
2.OA.A	Represent and solve problems involving addition and subtraction.	
2.OA.A.1	Add and subtract within 100 to solve one- and two-step contextual problems, with unknowns in all positions, involving situations of add to, take from, put together/take apart, and compare. Use objects, drawings, and equations with a symbol for the unknown number to represent the problem.	**Lesson 3:** Solve One-Step Word Problems **Lesson 5:** Solve Two-Step Word Problems **Lesson 9:** Solve Word Problems with Two-Digit Numbers **Lesson 10:** Solve Word Problems Involving Money **Additional Content:** Lesson 1: Mental Math Strategies for Addition; Lesson 2: Mental Math Strategies for Subtraction; Lesson 4: Draw and Use Bar Graphs and Picture Graphs; Lesson 25: Add and Subtract Lengths; Lesson 26: Add and Subtract on the Number Line **Math in Action**: 124-134, 290-300
2.OA.B	Add and subtract witin 30.	
2.OA.B.2	Fluently add and subtract within 30 using mental strategies. By end of 2nd grade, know all sums of two one-digit numbers and related subtraction facts.	**Lesson 1:** Mental Math Strategies for Addition **Lesson 2**: Mental Math Strategies for Subtraction **Additional Content:** Lesson 3: Solve One-Step Word Problems *Note: Lessons include fluently adding and subtracting within 20* **.**
2.OA.C	Work with equal groups of objects to gain foundations for multiplication.	
2.OA.C.3	Determine whether a group of objects (up to 20) has an odd or even number of members by pairing objects or counting them by 2s. Write an equation to express an even number as a sum of two equal addends .	**Lesson 32**: Even and Odd Numbers **Math in Action**: 772-782

Tennessee Academic Standards for Mathematics Grade 2		i-Ready Classroom Mathematics Lessons Grade 2
2.OA.C.4	Use repeated addition to find the total number of objects arranged in rectangular arrays with up to 5 rows and up to 5 columns; write an equation to express the total as a sum of equal addends. *For example, a 3 by 4 array can be expressed as 3 + 3 + 3 + 3 = 12 or 4 + 4 + 4 = 12.*	**Lesson 31**: Add Using Arrays **Math in Action**: 772-782
2.OA.D.1	Identify arithmetic patterns in an addition or hundreds chart and explain them using properties of operations. For example, analyze patterns in the addition chart and observe an alternating pattern of even and odd numbers (because each time we move to the right one box or down one box, we are adding one more to our sum: (2 + 3) + 1 = 2 + (3 + 1)= 2 + 4 which uses the associative property of addition).	**One-Day Activity:** Identify Arithmetic Patterns
2.NBT	**Number and Operations in Base Ten (NBT)**	
2.NBT.A	Understand place value.	
2.NBT.A.1	Know that the three digits of a three-digit number represent amounts of hundreds, tens, and ones *(e.g., 706 can be represented in multiple ways as 7 hundreds, 0 tens, and 6 ones; 706 ones; or 70 tens and 6 ones)* .	**Lesson 12:** *Understand* Three-Digit Numbers **Additional Content:** Lesson 13: Read and Write Three-Digit Numbers
2.NBT.A.2	Recognize, describe, extend, and create patterns when counting by ones, twos, fives, tens, and hundreds and use those patterns to predict the next number in the counting sequence up to 1000 through counting. *For example: 111, 113, 115, ...; 82, 84, 86, ...; 370, 380, 390....; 100, 200, 300,...; etc.*	**Lesson 1:** Mental Math Strategies for Addition **Lesson 6:** Add Two-Digit Numbers **Lesson 10:** Solve Word Problems Involving Money **Lesson 11:** Tell and Write Time **Educator Note:** Skip Counting by Twos

Tennessee Academic Standards for Mathematics Grade 2		i-Ready Classroom Mathematics Lessons Grade 2
2.NBT.A.3	Read and write numbers to 1000 using standard form, word form, and expanded form. *For example, write 234 as 200 + 30 + 4.*	**Lesson 13:** Read and Write Three-Digit Numbers **Additional Content**: Lesson 14: Compare Three-Digit Numbers; Lesson 16: Add Three-Digit Numbers; Lesson 17: Subtract Three-Digit Numbers **Math in Action:** 480-490
2.NBT.A.4	Compare two three-digit numbers based on the meanings of the digits in each place and use the symbols >, =, and < to show the relationship.	**Lesson 14:** Compare Three-Digit Numbers **Math in Action**: 480-490
2.NBT.B	Use place value understanding and properties of operations to add and subtract.	
2.NBT.B.5	Fluently add and subtract within 100 using properties of operations, strategies based on place value, and/or the relationship between addition and subtraction.	**Lesson 6:** Add Two-Digit Numbers **Lesson 7:** Subtract Two-Digit Numbers **Lesson 8:** Use Addition and Subtraction Strategies with Two-Digit Numbers **Additional Content:** Lesson 9: Solve Word Problems with Two-Digit Numbers; Lesson 10: Solve Word Problems Involving Money; Lesson 19: Add Several Two-Digit Numbers; Lesson 25: Add and Subtract Lengths **Math in Action:** 290-300
2.NBT.B.6	Add up to four two-digit numbers using properties of operations and strategies based on place value.	**Lesson 19:** Add Several Two-Digit Numbers
2.NBT.C	Use place value understanding and properties of operations to add and subtract.	
2.NBT.C.7	Add and subtract within 1000, using concrete models, drawings, strategies based on place value, properties of operations, and/or the relationship between addition and subtraction to explain the reasoning used. (Explanations may include words, drawing, or objects.)	**Lesson 16:** Add Three-Digit Numbers **Lesson 17:** Subtract Three-Digit Numbers **Lesson 18:** Use Addition and Subtraction Strategies with Three-Digit Numbers **Math in Action:** 480-490

Tennessee Academic Standards for Mathematics Grade 2		i-Ready Classroom Mathematics Lessons Grade 2
2.NBT.C.8	Mentally add or subtract 10 or 100 to/from any given number within 1000.	**Lesson 15:** Mental Addition and Subtraction **Additional Content:** Lesson 16: Add Three-Digit Numbers Lesson 17: Subtract Three-Digit Numbers **Math in Action:** 480-490
2.MD	**Measurement and Data (MD)**	
2.MD.A	Measure and estimate lengths in standard units.	
2.MD.A.1	Measure the length of an object in whole number units by selecting and using appropriate tools such as rulers, yardsticks, meter sticks, and measuring tapes.	**Lesson 20:** Measure in Inches and Centimeters **Lesson 21:** Measure in Feet and Meters **Additional Content:** Lesson 23: Estimate and Measure Length; Lesson 24: Compare Lengths **Math in Action:** 664-674
2.MD.A.2	Measure the length of an object using two different whole number units of measure and describe how the two measurements relate to the size of the unit chosen.	**Lesson 22**: *Understand* Measurement with Different Units **Math in Action**: 664-674
2.MD.A.3	Estimate lengths using units of inches, feet, centimeters, and meters.	**Lesson 23:** Estimate and Measure Length **Educator Note**: Estimating Length in Yards **Math in Action:** 664-674
2.MD.A.4	Measure, using whole number lengths, to determine how much longer one object is than another and express the difference in terms of a standard unit of length.	**Lesson 24:** Compare Lengths **Math in Action:** 664-674
2.MD.B	Relate addition and subtraction to length.	
2.MD.B.5	Add and subtract within 100 to solve contextual problems, with the unknown in any position, involving lengths that are given in the same units by using drawings and equations with a symbol for the unknown to represent the problem.	**Lesson 25:** Add and Subtract Lengths **Math in Action:** 664-674

Tennessee Academic Standards for Mathematics Grade 2		i-Ready Classroom Mathematics Lessons Grade 2
2.MD.B.6	Represent whole numbers as lengths from 0 on a number line and know that the points corresponding to the numbers on the number line are equally spaced. Use a number line to represent whole number sums and differences of lengths within 100.	**Lesson 26:** Add and Subtract on the Number Line **Additional Content**: Lesson 27: Read and Make Line Plots **Math in Action:** 664-674
2.MD.C	Work with time and money.	
2.MD.C.7	Tell and write time in quarter hours and to the nearest five minutes (in a.m. and p.m.) using analog and digital clocks.	**Lesson 11:** Tell and Write Time
2.MD.C.8	Solve contextual problems involving amounts less than one dollar including quarters, dimes, nickels, and pennies using the ¢ symbol appropriately. Solve contextual problems involving whole number dollar amounts up to $100 using the $ symbol appropriately.	**Lesson 10:** Solve Word Problems Involving Money **Additional Content:** Lesson 19: Add Several Two-Digit Numbers **Math in Action:** 290-300
2.MD.D	Represent and interpret data.	
2.MD.D.9	Given a set of data, create a line plot, where the horizontal scale is marked off in whole-number units.	**Lesson 27:** Read and Make Line Plots **Educator Note:** Line Plot Data **Math in Action**: 664-674
2.MD.D.10	Draw a pictograph (with a key of values of 1, 2, 5, or 10) and a bar graph (with intervals of one) to represent a data set with up to four categories. Solve addition and subtraction problems related to the data in a graph.	**Lesson 4:** Draw and Use Bar Graphs and Picture Graphs **One-Day Activity:** Work with Scaled Pictographs
2.G	**Geometry (G)**	
2.G.A	Reason about shapes and their attributes.	
2.G.A.1	Identify triangles, quadrilaterals, pentagons, and hexagons. Draw two-dimensional shapes having specified attributes (as determined directly or visually, not by measuring), such as a given number of angles/vertices or a given number of sides of equal length.	**Lesson 28:** Recognize and Draw Shapes **Educator Note:** Cubes **Math in Action:** 772-782

Tennessee Academic Standards for Mathematics Grade 2		i-Ready Classroom Mathematics Lessons Grade 2
2.G.A.2	Partition a rectangle into rows and columns of same-sized squares and find the total number of squares.	**Lesson 30:** Partition Rectangles **Math in Action:** 772-782
2.G.A.3	Partition circles and rectangles into two, three, and four equal shares. Describe the shares using the words *halves* , *thirds* , fourths, *half of* , a *third of* , and a *fourth of,* and describe the whole as two halves, three thirds, four fourths. Recognize that equal shares of identical wholes need not have the same shape.	**Lesson 29:** *Understand* Partitioning Shapes into Halves, Thirds, and Fourths **Math in Action:** 772-782

2021 Tennessee Academic Standards for Mathematics Grade 3		i-Ready Classroom Mathematics Lessons Grade 3
GRADE 3		
3.OA	**Operations and Algebraic Thinking (OA)**	
3.OA.A	Represent and solve problems involving multiplication and division.	
3.OA.A.1	Interpret the factors and products in whole number multiplication equations *(e.g., 4 x 7 is 4 groups of 7 objects with a total of 28 objects or 4 strings measuring 7 inches each with a total of 28 inches.)*	**Lesson 4:** *Understand* the Meaning of Multiplication **Additional Content:** Lesson 8: Use Order and Grouping to Multiply; Lesson 9: Use Place Value to Multiply; Lesson 19: Scaled Graphs
3.OA.A.2	Interpret the dividend, divisor, and quotient in whole number division equations (*e.g., 28 ÷ 7 can be interpreted as 28 objects divided into 7 equal groups with 4 objects in each group or 28 objects divided so there are 7 objects in each of the 4 equal groups*).	**Lesson 10:** *Understand* the Meaning of Division **Math in Action:** 284-294
3.OA.A.3	Multiply and divide within 100 to solve contextual problems, with unknowns in all positions, in situations involving equal groups, arrays/area,, and measurement quantities using strategies based on place value, the properties of operations, and the relationship between multiplication and division (*e.g., contexts including computations such as 3 x ? = 24, 6 x 16 = ?, ? ÷ 8 = 3, or 96 ÷ 6 = ?*)	**Lesson 5:** Multiply with 0, 1, 2, 5, and 10 **Lesson 6:** Multiply with 3, 4, and 6 **Lesson 7:** Multiply with 7, 8, and 9 **Lesson 17:** Solve One-Step Word Problems Using Multiplication and Division **Additional Content**: Lesson 4: *Understand* the Meaning of Multiplication; Lesson 8: Use Order and Grouping to Multiply; Lesson 12: Multiplication and Division Facts; Lesson 15: Multiply to Find Area; Lesson 16: Add Areas; Lesson 18: Solve Two-Step Word Problems Using the Four Operations; Lesson 19: Scaled Graphs; Lesson 28: Liquid Volume; Lesson 29: Mass; Lesson 32: Area and Perimeter of Shapes **Math in Action:** 284-294, 442-452

2021 Tennessee Academic Standards for Mathematics Grade 3		i-Ready Classroom Mathematics Lessons Grade 3
3.OA.A.4	Determine the unknown whole number in a multiplication or division equation relating three whole numbers within 100. *For example, determine the unknown number that makes the equation true in each of the equations: 8 x ? = 48, 5 = ? ÷ 3, 6 x 6 =?*	**Lesson 12:** Multiplication and Division Facts **Additional Content:** Lesson 17: Solve One-Step Word Problems Using Multiplication and Division; Lesson 18: Solve Two-Step Word Problems Using the Four Operations **Math in Action:** 284-294
3.OA.B	Understand properties of multiplication and the relationship between multiplication and division.	
3.OA.B.5	Apply properties of operations as strategies to multiply and divide. (Students need not use formal terms for these properties.) *Examples: If 6 × 4 = 24 is known, then 4 × 6 = 24 is also known. (Commutative property of multiplication.) 3 × 5 × 2 can be found by 3 × 5 = 15, then 15 × 2 = 30, or by 5 × 2 = 10, then 3 × 10 = 30. (Associative property of multiplication.) Knowing that 8 × 5 = 40 and 8 × 2 = 16, one can find 8 × 7 as 8 × (5 + 2) = (8 × 5) + (8 × 2) = 40 + 16 = 56. (Distributive property.)*	**Lesson 5:** Multiply with 0, 1, 2, 5, and 10 **Lesson 6:** Multiply with 3, 4, and 6 **Lesson 7:** Multiply with 7, 8, and 9 **Lesson 8:** Use Order and Grouping to Multipy **Additional Content:** Lesson 9: Use Place Value to Multiply; Lesson 10: *Understand* the Meaning of Division; Lesson 12: Multiplication and Division Facts; Lesson 16: Add Areas
3.OA.B.6	Understand division as an unknown-factor problem. *For example, find 32 ÷ 8 by finding the number that makes 32 when multiplied by 8.*	**Lesson 11:** *Understand* How Multiplication and Division Are Connected **Additional Content:** Lesson 12: Multiplication and Division Facts; Lesson 17: Solve One-Step Word Problems Using Multiplication and Division **Math in Action:** 284-294

2021 Tennessee Academic Standards for Mathematics Grade 3		i-Ready Classroom Mathematics Lessons Grade 3
3.OA.C	Multiply and divide within 100.	
3.OA.C.7	Fluently multiply and divide within 100, using strategies such as the properties of operations or the relationship between multiplication and division (*e.g., knowing that 8 x 5 = 40, one knows 40 ÷ 5 = 8*). By the end of 3rd grade, know all products of two one-digit numbers and related division facts.	**Lesson 5:** Multiply with 0, 1, 2, 5, and 10 **Lesson 6:** Multiply with 3, 4, and 6 **Lesson 7:** Multiply with 7, 8, and 9 **Lesson 12:** Multiplication and Division Facts **<u>Additional Content:</u>** Lesson 9: Use Place Value to Multiply; Lesson 17: Solve One-Step Word Problems Using Multiplication and Division; Lesson 18: Solve Two-Step Word Problems Using the Four Operations; Lesson 28: Liquid Volume; Lesson 29: Mass; Lesson 32: Area and Perimeter of Shapes **Math in Action:** 284-294
3.OA.D	Solve problems involving the four operations, and identify and explain patterns in arithmetic.	
3.OA.D.8	Solve two-step contextual problems using the four operations. Represent these problems using equations with a letter standing for the unknown quantity. Assess the reasonableness of answers using mental computation and estimation strategies including rounding	**Lesson 18:** Solve Two-Step Word Problems Using the Four Operations **Math in Action:** 442-452

2021 Tennessee Academic Standards for Mathematics Grade 3		i-Ready Classroom Mathematics Lessons Grade 3
3.OA.D.9	Identify patterns in a multiplication chart and explain them using properties of operations. *For example, in the multiplication chart, observe that 4 times a number is always even (because 4 x 6 = (2 x 2) x 6 = 2 x (2 x 6), which uses the associative property of multiplication) or, for example, observe that 6 times 7 is one more group of 7 than 5 times 7 (because 6 x 7 = (5 + 1) x 7 = (5 x 7) + (1 x 7), which uses the distributive property of multiplication over addition).*	**Lesson 13:** *Understand* Patterns
3.NBT	**Number and Operations in Base Ten (NBT)**	
3.NBT.A	Use place value understanding and properties of operations to perform multi-digit arithmetic.	
3.NBT.A.1	Round whole numbers to the nearest 10 or 100 using understanding of place value and use a number line to explain how the number was rounded.	**Lesson 1:** Use Place Value to Round Numbers **<u>Additional Content:</u>** Lesson 2: Add Three-Digit Numbers; Lesson 3: Subtract Three-Digit Numbers; Lesson 18: Solve Two-Step Word Problems Using the Four Operations
3.NBT.A.2	Fluently add and subtract within 1000 using strategies and algorithms based on place value, properties of operations, and/or the relationship between addition and subtraction.	**Lesson 2:** Add Three-Digit Numbers **Lesson 3:** Subtract Three-Digit Numbers **<u>Additional Content:</u>** Lesson 18: Solve Two-Step Word Problems Using the Four Operations; Lesson 28: Liquid Volume; Lesson 29: Mass
3.NBT.A.3	Multiply one-digit whole numbers by multiples of 10 in the range 10–90 *(e.g., 9 x 80, 5 x 60)* using strategies based on place value and properties of operations.	**Lesson 9:** Use Place Value to Multiply

2021 Tennessee Academic Standards for Mathematics Grade 3		i-Ready Classroom Mathematics Lessons Grade 3
3.NBT.A.4	Read and write multi-digit whole numbers (less than or equal to 100,000) using standard form, word form, and expanded form (*e.g., 23,456 can be written as 20,000 + 3,000 + 400 + 50 + 6*).	**One-Day Activity:** Read and Write Numbers Through 100,000
3.NF	**Number and Operations—Fractions (NF)**	
3.NF.A	Develop understanding of fractions as numbers.	
3.NF.A.1	Understand a fraction, 1/*b* , as the quantity formed by 1 part when a whole is partitioned into *b* equal parts; understand a non-unit fraction, n/b, as the quantity formed by n parts of size 1/b. *For example, 3/4 represents a quantity formed by 3 parts of size 1/4.*	**Lesson 20:** *Understand* What a Fraction Is **<u>Additional Content:</u>** Lesson 21: *Understand* Fractions on a Number Line; Lesson 22: *Understand* Equivalent Fractions; Lesson 24: *Understand* Comparing Fractions; Lesson 33: Partition Shapes into Parts with Equal Areas
3.NF.A.2	Understand a fraction as a number on the number line. Represent fractions on a number line.	
3.NF.A.2a	Represent a fraction 1/b on a number line diagram by defining the interval from 0 to 1 as the whole and partitioning it into b equal parts. Recognize that each part has size 1/b and that the endpoint locates the number 1/b on the number line. *For example, on a number line from 0 to 1, students can partition it into 4 equal parts and recognize that each part represents a length of 1/4 and the first part has an endpoint at 1/4 on the number line.*	**Lesson 21:** *Understand* Fractions on a Number Line **<u>Additional Content:</u>** Lesson 22: *Understand* Equivalent Fractions; Lesson 23: Find Equivalent Fractions; Lesson 24: *Understand* Comparing Fractions; Lesson 25: Use Symbols to Compare Fractions; Lesson 26: Measure Length and Plot Data on Line Plots

2021 Tennessee Academic Standards for Mathematics Grade 3		i-Ready Classroom Mathematics Lessons Grade 3
3.NF.A.2b	Represent a fraction *n/b* on a number line diagram by marking off *n* lengths *1/b* from 0. Recognize that the resulting interval has size n/b and that its endpoint locates the number n/b on the number line. *For example, 5/3 is the distance from 0 when there are 5 iterations of 1/3.*	**Lesson 21:** *Understand* Fractions on a Number Line **Additional Content:** Lesson 22: *Understand* Equivalent Fractions; Lesson 23: Find Equivalent Fractions; Lesson 24: *Understand* Comparing Fractions; Lesson 25: Use Symbols to Compare Fractions; Lesson 26: Measure Length and Plot Data on Line Plots
3.NF.A.3	Explain equivalence of fractions and compare fractions by reasoning about their size.	
3.NF.A.3a	Understand two fractions as equivalent (equal) if they are the same size or the same point on a number line	**Lesson 22:** *Understand* Equivalent Fractions **Additional Content:** Lesson 23: Find Equivalent Fractions
3.NF.A.3b	Recognize and generate simple equivalent fractions (*e.g., 1/2 = 2/4, 4/6 = 2/3) and explain why the fractions are equivalent using a visual fraction model.*	**Lesson 23:** Find Equivalent Fractions **Additional Content**: Lesson 25: Use Symbols to Compare Fractions; Lesson 33: Partition Shapes into Parts with Equal Areas
3.NF.A.3c	Express whole numbers as fractions and recognize fractions that are equivalent to whole numbers. *For example, express 3 in the form 3 = 3/1; recognize that 6/1 = 6; locate 4/4 and 1 at the same point on a number line diagram.*	**Lesson 23:** Find Equivalent Fractions
3.NF.A.3d	Compare two fractions with the same numerator or the same denominator by reasoning about their size. Recognize that comparisons are valid only when the two fractions refer to the same whole. Use the symbols >, =, or < to show the relationship and justify the conclusions.	**Lesson 24:** *Understand* Comparing Fractions **Lesson 25:** Use Symbols to Compare Fractions **Additional Content:** Lesson 33: Partition Shapes into Parts with Equal Areas **Math in Action:** 572-582

2021 Tennessee Academic Standards for Mathematics Grade 3		i-Ready Classroom Mathematics Lessons Grade 3
3.MD	**Measurement and Data (MD)**	
3.MD.A	Solve problems involving measurement and estimation of intervals of time, liquid volumes, and masses of objects.	
3.MD.A.1	Solve contextual problems in time and money.	
3.MD.A.1.a	Tell and write time to the nearest minute and measure time intervals in minutes. Solve contextual problems involving addition and subtraction of time intervals in minutes.	**Lesson 27:** Time **Math in Action:** 660-670
3.MD.A.1.b	Solve one-step contextual problems involving amounts less than one dollar including quarters, dimes, nickels, and pennies using the ¢ symbol appropriately. Solve contextual problems involving whole number dollar amounts up to $1000 using the $ symbol appropriately.	**One-Day Activity:** Solve Problems About Money
3.MD.A.2	Measure the mass of objects and liquid volume using standard units of grams (g), kilograms (kg), milliliters (ml), and liters (l). Estimate the mass of objects and liquid volume using benchmarks. *For example, a large paper clip is about one gram, so a box of about 100 large clips is about 100 grams.*	**Lesson 28:** Liquid Volume **Lesson 29:** Mass **One-Day Activity:** Work with Milliliters
3.MD.B	Represent and interpret data.	
3.MD.B.3	Draw a scaled pictograph and a scaled bar graph to represent a data set with several categories. Solve one- and two-step "how many more" and "how many less" problems using information presented in scaled graphs.	**Lesson 19:** Scaled Graphs
3.MD.B.4	Generate measurement data by measuring lengths using rulers marked with halves and fourths of an inch. Show the data by making a line plot, where the horizontal scale is marked off in appropriate units: whole numbers, halves, or quarters.	**Lesson 26:** Measure Length and Plot Data on Line Plots

2021 Tennessee Academic Standards for Mathematics Grade 3		i-Ready Classroom Mathematics Lessons Grade 3
3.MD.C	Geometric measurement: understand and apply concepts of area and relate area to multiplication and to addition.	
3.MD.C.5	Recognize that plane figures have an area and understand concepts of area measurement.	
3.MD.C.5a	Understand that a square with side length 1 unit, called "a unit square," is said to have "one square unit" of area and can be used to measure area.	**Lesson 14:** *Understand* Area
3.MD.C.5b	Understand that a plane figure which can be covered without gaps or overlaps by n unit squares is said to have an area of n square units.	**Lesson 14:** *Understand* Area
3.MD.C.6	Measure areas by counting unit squares (square centimeters, square meters, square inches, square feet, and improvised units).	**Lesson 14:** *Understand* Area **Additional Content:** Lesson 15: Multiply to Find Area
3.MD.C.7	Relate area to the operations of multiplication and addition.	
3.MD.C.7a	Find the area of a rectangle with whole-number side lengths by tiling it and show that the area is the same as would be found by multiplying the side lengths.	**Lesson 15:** Multiply to Find Area **Additional Content:** Lesson 16: Add Areas; Lesson 17: Solve One-Step Word Problems Using Multiplication and Division; Lesson 32: Area and Perimeter of Shapes
3.MD.C.7b	Multiply side lengths to find areas of rectangles with whole number side lengths in the context of solving real-world and mathematical problems and represent whole-number products as rectangular areas in mathematical reasoning.	**Lesson 15:** Multiply to Find Area **Additional Content:** Lesson 16: Add Areas; Lesson 17: Solve One-Step Word Problems Using Multiplication and Division; Lesson 32: Area and Perimeter of Shapes

2021 Tennessee Academic Standards for Mathematics Grade 3		i-Ready Classroom Mathematics Lessons Grade 3
3.MD.C.7c	Use tiling to show in a concrete case that the area of a rectangle with whole-number side lengths a and $(b + c)$ is the sum of $(a \times b)$ and $(a \times c)$. Use area models to represent the distributive property in mathematical reasoning. *For example, in a rectangle with dimensions 4 by 6, students can decompose the rectangle into 4 x 3 and 4 x 3 to find the total area of 4 x 6.*	**Lesson 16:** Add Areas
3.MD.C.7d	Recognize area as additive. Find areas of rectilinear figures by decomposing them into non-overlapping rectangles and adding the areas of the non-overlapping parts, applying this technique to solve real-world problems.	**Lesson 16:** Add Areas
3.MD.D	Geometric measurement: recognize perimeter as an attributemof plane figures and distinguish between linear and area measures.	
3.MD.D.8	Solve real-world and mathematical problems involving perimeters of polygons, including finding the perimeter given the side lengths, finding an unknown side length, and exploring rectangles with the same perimeter and different areas or with the same area and different perimeters.	**Lesson 32:** Area and Perimeter of Shapes **Math in Action:** 754-764
3.G	**Geometry (G)**	
3.G.A	Reason about shapes and their attributes.	
3.G.A.1	Understand that shapes in different categories may share attributes and that the shared attributes can define a larger category. Recognize rhombuses, rectangles, and squares as examples of quadrilaterals and draw examples of quadrilaterals that do not belong to any of these subcategories.	**Lesson 30:** *Understand* Categories of Shapes **Lesson 31:** Classify Quadrilaterals **Educator Note:** Drawing Quadrilaterals **Additional Content:** Lesson 32: Area and Perimeter of Shapes **Math in Action:** 754-764

2021 Tennessee Academic Standards for Mathematics Grade 3		i-Ready Classroom Mathematics Lessons Grade 3
3.G.A.2	Partition shapes into parts with equal areas. Recognize that equal shares of identical wholes need not have the same shape. Express the area of each part as a unit fraction of the whole. *For example, partition a shape into 4 parts with equal area, and describe the area of each part as 1/4 of the area of the shape* .	**Lesson 33:** Partition Shapes into Parts with Equal Areas **Additional Content:** Lesson 20: *Understand* What a Fraction Is **Math in Action**: 754-764
3.G.A.3	Determine if a figure is a polygon.	**One-Day Activity:** Recognize Polygons

Tennessee Academic Standards for Mathematics Grade 4		i-Ready Classroom Mathematics Lessons Grade 4
Grade 4		
4.OA	**Operations and Algebraic Thinking (OA)**	
4.OA.A	Use the four operations with whole numbers to solve problems.	
4.OA.A.1	Interpret a multiplication equation as a comparison *(e.g., interpret 35 = 5 x 7 as a statement that 35 is 5 times as many as 7 and 7 times as much as 5*). Represent verbal/written statements of multiplicative comparisons as multiplication equations.	**Lesson 6:** *Understand* Multiplication as a Comparison **Additional Content:** Lesson 7: Multiplication and Division in Word Problems **Math in Action:** 214-224
4.OA.A.2	Multiply or divide to solve contextual problems involving multiplicative comparison, and distinguish multiplicative comparison from additive comparison. *For example, school A has 300 students and school B has 600 students: to say that school B has two times as many students is an example of multiplicative comparison; to say that school B has 300 more students is an example of additive comparison.*	**Lesson 7:** Multiplication and Division in Word Problems **Additional Content:** Lesson 6: *Understand* Multiplication as a Comparison; Lesson 10: Model and Solve Multi-Step Problems; Lesson 28: Problems About Time and Money; Lesson 29: Problems About Length, Liquid Volume, Mass, and Weight **Math in Action:** 214-224
4.OA.A.3	Solve multi-step contextual problems (posed with whole numbers and having whole-number answers using the four operations, including problems in which remainders must be interpreted. Represent these problems using equations with a letter standing for the unknown quantity.	**Lesson 10:** Model and Solve Multi-Step Problems **Additional Content:** Lesson 28: Problems About Time and Money; Lesson 29: Problems About length, Liquid Volume, Mass, and Weight **Math in Action:** 214-224
4.OA.B	Gain familiarity with factors and multiples.	
4.OA.B.4	Find all factor pairs for a whole number in the range 1–100 using models. Recognize that a whole number is a multiple of each of its factors. Determine whether a given whole number is prime or composite and whether the given number is a multiple of a given one-digit number.	**Lesson 8:** Multiples and Factors **Additional Content:** Lesson 9: Number and Shape Patterns **Math in Action**: 214-224

Tennessee Academic Standards for Mathematics Grade 4		i-Ready Classroom Mathematics Lessons Grade 4
4.OA.C	Generate and analyze patterns.	
4.OA.C.5	Generate a number or shape pattern that follows a given rule. Identify apparent features of the pattern that were not explicit in the rule itself. *For example, given the rule "Add 3" and the starting number 1, generate terms in the resulting sequence and observe that the terms appear to alternate between odd and even numbers. Explain informally why the numbers will continue to alternate in this way.*	**Lesson 9:** Number and Shape Patterns
4.NBT	**Number and Operations in Base Ten (NBT)**	
4.NBT.A	Generalize place value understanding for multi-digit whole numbers.	
4.NBT.A.1	Recognize that in a multi-digit whole number (less than or equal to 1,000,000), a digit in one place represents 10 times as much as it represents in the place to its right. *For example, recognize that 7 in 700 is 10 times bigger than the 7 in 70 because 700 ÷ 70 = 10 and 70 x 10 = 700.*	**Lesson 1:** *Understand* Place Value **Additional Content:** Lesson 2: Compare Whole Numbers; Lesson 11: Multiply by One-Digit Numbers
4.NBT.A.2	Read and write multi-digit whole numbers (less than or equal to 1,000,000) using standard form, word form, and expanded form (*e.g. the expanded form of 4256 is written as 4 x 1000 + 2 x 100 + 5 x 10 + 6 x 1*). Compare two multidigit numbers based on meanings of the digits in each place and use the symbols >, =, and < to show the relationship.	**Lesson 1:** *Understand* Place Value **Lesson 2:** Compare Whole Numbers **Math in Action:** 92-102
4.NBT.A.3	Round multi-digit whole numbers to any place (up to and including the hundred-thousand place) using understanding of place value and use a number line to explain how the number was rounded.	**Lesson 3:** Round Whole Numbers **Additional Content:** Lesson 4: Add Whole Numbers; Lesson 5: Subtract Whole Numbers; Lesson 11: Multiply by One-Digit Numbers **Math in Action:** 92-102

Tennessee Academic Standards for Mathematics Grade 4		i-Ready Classroom Mathematics Lessons Grade 4
4.NBT.B	Use place value understanding and properties of operations to perform multi-digit arithmetic.	
4.NBT.B.4	Fluently add and subtract within 1,000,000 using efficient strategies and algorithms.	**Lesson 4:** Add Whole Numbers **Lesson 5:** Subtract Whole Numbers **Additional Content:** Lesson 28: Problems About Time and Money; Lesson 29: Problems About Length, Liquid Volume, Mass, and Weight **Math in Action:** 92-102
4.NBT.B.5	Multiply a whole number of up to four digits by a one-digit whole number and multiply two two-digit numbers, using strategies based on place value and the properties of operations. Illustrate and explain the calculation by using equations, rectangular arrays, and/or area models.	**Lesson 11:** Multiply by One-Digit Numbers **Lesson 12:** Multiply by Two-Digit Numbers **Additional Content:** Lesson 13: Use Mutiplication to Convert Measurements; Lesson 14: Divide Three-Digit Numbers; Lesson 15: Divide Four-Digit Numbers; Lesson 16: Find Perimeter and Area; Lesson 28: Problems About Time and Money; Lesson 29: Problems About Length, Liquid Volume, Mass, and Weight **Math in Action:** 350-360
4.NBT.B.6	Find whole-number quotients and remainders with up to four-digit dividends and one-digit divisors, using strategies based on place value, the properties of operations, and/or the relationship between multiplication and division. Illustrate and explain the calculation by using equations, rectangular arrays, and/or area models.	**Lesson 14:** Divide Three-Digit Numbers **Lesson 15:** Divide Four-Digit Numbers **Additional Content**: Lesson 10: Model and Solve Multi-Step Problems; Lesson 16: Find Perimeter and Area; Lesson 28: Problems About Time and Money; Lesson 29: Problems About Length, Liquid, Liquid Volume, Mass, and Weight **Math in Action**: 350-360

Tennessee Academic Standards for Mathematics Grade 4		i-Ready Classroom Mathematics Lessons Grade 4
4.NF	**Number and Operations—Fractions (NF)**	
4.NF.A	Extend understanding of fraction equivalence and comparison.	
4.NF.A.1	Explain why a fraction *a/b* is equivalent to a fraction *a x n/ b x n* or $a \div n / b \div n$ by using visual fraction models, with attention to how the number and size of the parts differ even though the two fractions themselves are the same size. Use this principle to recognize and generate equivalent fractions. *For example, 3/4 = 3 x 2/4 x 2 = 6/8.*	**Lesson 17:** *Understand* Equivalent Fractions **Additional Content:** Lesson 18: Compare Fractions; Lesson 25: Fractions as Tenths and Hundredths **Math in Action:** 628-638
4.NF.A.2	Compare two fractions with different numerators and different denominators by creating common denominators or common numerators or by comparing to a benchmark such as 0 or 1/2 or 1. Recognize that comparisons are valid only when the two fractions refer to the same whole. Use the symbols >, =, or < to show the relationship and justify the conclusions.	**Lesson 18:** Compare Fractions **Math in Action**: 628-638
4.NF.B	Build fractions from unit fractions by applying and extending previous understanding of operations on whole numbers.	
4.NF.B.3	Understand a fraction *a/b* with a > 1 as a sum of unit fractions *1/b*. *For example, 4/5 = 1/5 + 1/5 + 1/5 + 1/5.*	
4.NF.B.3a	Understand addition and subtraction of fractions as joining and separating parts referring to the same whole.	**Lesson 19:** *Understand* Fraction Addition and Subtraction **Additional Content:** Lesson 20: Add and Subtract Fractions; Lessons 21: Add and Subtract Mixed Numbers **Math in Action:** 628-638

Tennessee Academic Standards for Mathematics Grade 4		i-Ready Classroom Mathematics Lessons Grade 4
4.NF.B.3b	Decompose a fraction into a sum of fractions with the same denominator in more than one way (e.g., 3/8 = 1/8 + 1/8 + 1/8 ; 3/8 = 1/8 + 2/8 ; 2 1/8 = 1 + 1 + 1/8 = 8/8 + 8/8 + 1/8 recording each decomposition by an equation. Justify decompositions by using a visual fraction model.	**Lesson 20:** Add and Subtract Fractions **Additional Content:** Lesson 21: Add and Subtract Mixed Numbers **Math in Action:** 628-638
4.NF.B.3c	Add and subtract mixed numbers with like denominators by replacing each mixed number with an equivalent fraction and/or by using properties of operations and the relationship between addition and subtraction.	**Lesson 21:** Add and Subtract Mixed Numbers **Additional Content:** Lesson 22: Add and Subtract Fractions in Line Plots; Lesson 29: Problems About Length, Liquid Volume, Mass, and Weight **Math in Action:** 628-638
4.NF.B.3d	Solve contextual problems involving addition and subtraction of fractions referring to the same whole and having like denominators	**Lesson 20:** Add and Subtract Fractions **Additional Content:** Lesson 21: Add and Subtract Mixed Numbers; Lesson 22: Add and Subtract Fractions in Line Plots; Lesson 29: Problems About Length, Liquid Volume, Mass, and Weight **Math in Action:** 628-638
4.NF.B.4	Apply and extend previous understandings of multiplication as repeated addition to multiply a whole number by a fraction.	
4.NF.B.4a	Understand a fraction a/b as a multiple of 1/b. *For example, use a visual fraction model to represent 5/4 as the product 5 × (1/4), recording the conclusion by the equation 5/4 = 5 × (1/4).*	**Lesson 23:** *Understand* Fraction Multiplication **Additional Content**: Lesson 24: Multiply Fractions by Whole Numbers **Math in Action:** 628-638

Tennessee Academic Standards for Mathematics Grade 4		i-Ready Classroom Mathematics Lessons Grade 4
4.NF.B.4b	Understand a multiple of a/b as a multiple of 1/b, and use this understanding to multiply a a whole number by a fraction. *For example, use a visual fraction model to express 3 × (2/5) as 6 × (1/5), recognizing this product as 6/5. (In general, n × (a/b) = (n × a)/b.)*	**Lesson 23:** *Understand* Fraction Multiplication **Additional Content:** Lesson 24: Multiply Fractions by Whole Numbers **Math in Action:** 628-638
4.NF.B.4c	Solve contextual problems involving multiplication of a whole number by a fraction (e.g., by using visual fraction models and equations to represent the problem). *For example, if each person at a party will eat 3/8 of a pound of roast beef, and there will be 4 people at the party, how many pounds of roast beef will be needed? Between what two whole numbers does your answer lie?*	**Lesson 24:** Multiply Fractions by Whole Numbers **Math in Action:** 628-638
4.NF.C	Understand decimal notation for fractions and compare decimal fractions.	
4.NF.C.5	Express a fraction with denominator 10 as an equivalent fraction with denominator 100, and use this technique to add two fractions with respective denominators 10 and 100.	**Lesson 25:** Fractions as Tenths and Hundreths **Math in Action:** 628-638
4.NF.C.6	Read and write decimal notation for fractions with denominators 10 or 100. Locate these decimals on a number line.	**Lesson 26:** Relate Decimals and Fractions **Math in Action**: 628-638
4.NF.C.7	Compare two decimals to hundredths by reasoning about their size. Recognize that comparisons are valid only when the two decimals refer to the same whole. Use symbols >, =, or < to show the relationship and justify the conclusions.	**Lesson 27:** Compare Decimals **Math in Action:** 628-638

Tennessee Academic Standards for Mathematics Grade 4		i-Ready Classroom Mathematics Lessons Grade 4
4.MD	**Measurement and Data (MD)**	
4.MD.A	Estimate and solve problems involving measurement.	
4.MD.A.1	Measure and estimate to determine relative sizes of measurement units within a single system of measurement involving length, liquid volume, and mass/weight of objects using customary and metric units.	**Lesson 13:** Use Multiplication to Convert Measurements **One-Day Activity:** Reason About Relative Units of Measurement **Additional Content:** Lesson 28: Problems About Time and Money; Lesson 29: Problems About Length, Liquid Volume, Mass, and Weight
4.MD.A.2	Solve one- or two-step real-world problems involving whole number measurements (including length, liquid volume, mass/weight, time, and money) with all four operations within a single system of measurement. (Contexts need not include conversions.)	**Lesson 28:** Problems About Time and Money **Lesson 29:** Problems About Length, Liquid Volume, Mass, and Weight **Educator Note:** Problems Involving Measurement
4.MD.A.3	Know and apply the area and perimeter formulas for rectangles in real- world and mathematical contexts. *For example, find the width of a rectangular room given the area of the flooring and the length, by viewing the area formula as a multiplication equation with an unknown factor.*	**Lesson 16:** Find Perimeter and Area **Math in Action**: 350-360
4.MD.B	Represent and interpret data.	
4.MD.B.4	Make a line plot to display a data set of measurements in fractions of the same unit (1/2 or 1/4 or 1/8). Use operations on fractions for this grade to solve problems involving information presented in line plots. *For example, from a line plot find and interpret the difference in length between the longest and shortest specimens in an insect collection.*	**Lesson 22:** Add and Subtract Fractions in Line Plots **Math in Action:** 628-638

Tennessee Academic Standards for Mathematics Grade 4		i-Ready Classroom Mathematics Lessons Grade 4
4.MD.C	Geometric measurement: understand concepts of angle and measure angles.	
4.MD.C.5	Recognize angles as geometric shapes that are formed wherever two rays share a common endpoint; and understand concepts of angle measurement:	
4.MD.C.5a	Understand that an angle is measured with reference to a circle with its center at the common endpoint of the rays, by considering the fraction of the circular arc between the points where the two rays intersect the circle.	**Lesson 31:** Angles **Additional Content:** Lesson 32: Add and Subtract with Angles **Math in Action**: 628-638
4.MD.C.5b	Understand that an angle that turns through 1/360 of a circle is called a "one-degree angle," and can be used to measure angles. An angle that turns through *n* one-degree angles is said to have an angle measure of *n* degrees and represents a fractional portion of the circle.	**Lesson 31:** Angles **Additional Content:** Lesson 32: Add and Subtract with Angles **Math in Action**: 628-638
4.MD.C.6	Measure angles in whole-number degrees using a protractor. Sketch angles of specified measure.	**Lesson 31:** Angles **Math in Action:** 628-638
4.MD.C.7	Recognize angle measure as additive. When an angle is decomposed into non-overlapping parts, the angle measure of the whole is the sum of the angle measures of the parts. Solve addition and subtraction problems to find unknown angles on a diagram in real-world and mathematical problems *(e.g., by using an equation with a symbol for the unknown angle measure).*	**Lesson 32:** Add and Subtract with Angles **Math in Action:** 628-638

Tennessee Academic Standards for Mathematics Grade 4		i-Ready Classroom Mathematics Lessons Grade 4
4.G	**Geometry (G)**	
4.G.A	Draw and identify lines and angles and classify shapes by properties of their lines and angles.	
4.G.A.1	Draw points, lines, line segments, rays, angles (right, acute, obtuse, straight, reflex), and perpendicular and parallel lines. Identify these in two-dimensional figures.	**Lesson 30:** Points, Lines, Rays, and Angles **Educator Note:** Straight and Reflex Angles **Additional Content:** Lesson 33: Classify Two-Dimensional Figures **Math in Action:** 760-770
4.G.A.2	Classify two-dimensional figures based on the presence or absence of parallel or perpendicular lines or the presence or absence of angles of a specified size. Classify triangles based on the measure of the angles as right, acute, or obtuse.	**Lesson 33:** Classify Two-Dimensional Figures **Math in Action:** 760-770
4.G.A.3	Recognize and draw lines of symmetry for two-dimensional figures.	**Lesson 34:** Symmetry **Math in Action:** 760-770

Tennessee Academic Standards for Mathematics Grade 5		i-Ready Classroom Mathematics Lessons Grade 5
Grade 5		
5.OA	**Operations and Algebraic Thinking (OA)**	
5.OA.A	Write and interpret numerical expressions.	
5.OA.A.1	Use parentheses and/or brackets in numerical expressions involving whole numbers and evaluate expressions having these symbols using the conventional order by applying the Order of Operations. (When applying the order of operations, the evaluation of exponents need not be included.)	**Lesson 30:** Evaluate, Write, and Interpret Expressions **Additional Content:** Lesson 3: Find Volume Using Formulas; Lesson 8: Read and Write Decimals **Math in Action**: 702-802
5.OA.A.2	Write numerical expressions that record calculations with numbers and interpret numerical expressions without evaluating them. *For example, express the calculation "add 8 and 7, then multiply by 2" as 2 x (8 + 7). Recognize that 3 x (18,932 + 921) is three times as large as 18,932 + 921, without having to calculate the indicated sum or product.*	**Lesson 30:** Evaluate, Write, and Interpret Expressions **Math in Action**: 702-802
5.OA.B	Analyze patterns and relationships.	
5.OA.B.3	Generate two numerical patterns using two given rules. *For example, given the rule "Add 3" and the starting number 0, and given the rule "Add 6" and the starting number 0, generate terms in the resulting sequences.*	**Lesson 33:** Analyze Patterns and Relationships
5.OA.B.3.a	Identify relationships between corresponding terms in two numerical patterns.	**Lesson 33:** Analyze Patterns and Relationships
5.OA.B.3.b	Form ordered pairs (limited to first quadrant) consisting of corresponding terms from two numerical patterns and graph the ordered pairs on a coordinate plane.	**Lesson 33:** Analyze Patterns and Relationships

Tennessee Academic Standards for Mathematics Grade 5		i-Ready Classroom Mathematics Lessons Grade 5
5.NBT	**Number and Operations in Base Ten (NBT)**	
5.NBT.A	Understand the place value system.	
5.NBT.A.1	Recognize that in a multi-digit number, a digit in one place represents 10 times as much as it represents in the place to its right and 1/10 of what it represents in the place to its left .	**Lesson 6:** *Understand* Decimal Place Value **Additional Content:** Lesson 7: *Understand* Powers of 10; Lesson 15: Multiply a Decimal by a Whole Number; Lesson 16: Multiply Decimals; Lesson 17: Divide Decimals **Math in Action:** 292-302
5.NBT.A.2	Explain patterns in the number of zeros of the product when multiplying a number by powers of 10, and explain patterns in the placement of the decimal point when a decimal is multiplied or divided by a power of 10. Use whole-number exponents to denote powers of 10.	**Lesson 7:** *Understand* Powers of 10 **Additional Content:** Lesson 25: Convert Measurement Units; Lesson 26: Solve Word Problems Involving Conversions **Math in Action:** 292-302
5.NBT.A.3	Read and write decimals to thousandths usingstandard form, word form, and ex panded notation *(e.g., the expanded notation of 347.392 is written as (3 x 100) + (4 x 10) + (7 x 1) + (3 x (1/10)) + (9 x (1/100)) + (2 x (1/1000)))* . Compare two decimals to thousandths based on meanings of the digits in each place and use the symbols >, =, and < to show the relationship	**Lesson 8:** Read and Write Decimals **Lesson 9:** Compare and Round Decimals **Math in Action**: 292-302
5.NBT.A.4	Round decimals to the nearest hundredth, tenth, or whole number using understanding of place value, and use a number line to explain how the number was rounded.	**Lesson 9:** Compare and Round Decimals **Additional Content:** Lesson 14: Add and Subtract in Word Problems **Math in Action**: 292-302

Tennessee Academic Standards for Mathematics Grade 5		i-Ready Classroom Mathematics Lessons Grade 5
5.NBT.B	Perform operations with multi-digit whole numbers and with decimals to hundredths.	
5.NBT.B.5	Fluently multiply multi-digit whole numbers (up to three-digit by four-digit factors) using appropriate strategies and algorithms.	**Lesson 4:** Multiply Multi-Digit Numbers **Educator Note:** Multi-Digit Multiplication **Additional Content:** Lesson 3: Find Volume Using Formulas; Lesson 26: Solve Word Problems Involving Conversions **Math in Action:** 104-114
5.NBT.B.6	Find whole-number quotients and remainders of whole numbers with up to four-digit dividends and two-digit divisors, using strategies based on place value, the properties of operations, and/or the relationship between multiplication and division. Illustrate and explain the calculation by using equations, rectangular arrays, and/or area models.	**Lesson 5:** Divide Multi-Digit Numbers **One-Day Activity:** Find Whole-Number Quotients and Remainders **Math in Action:** 104-114
5.NBT.B.7	Add, subtract, multiply, and divide decimals to hundredths, using concrete models or drawings and strategies based on place value, properties of operations, and/or the relationship between operations. Assess the reasonableness of answers using estimation strategies. (Limit multiplication problems so that the product does not exceed thousandths. Limit division problems so that either the dividend or the divisor is a whole number.)	**Lesson 10:** Add Decimals **Lesson 11:** Subtract Decimals **Lesson 14:** Add and Subtract in Word Problems **Lesson 15:** Multiply a Decimal by a Whole Number **Lesson 16:** Multiply Decimals **Lesson 17:** Divide Decimals
5.NF	**Number and Operations—Fractions (NF)**	
5.NF.A	Use equivalent fractions to add and subtract fractions.	
5.NF.A.1	Add and subtract fractions with unlike denominators (including mixed numbers) by replacing given fractions with equivalent fractions in such a way as to produce an equivalent sum or difference of fractions with like denominators. *For example, 2/3 + 5/4 = 8/12 + 15/12 = 23/12 or 3/5 + 7/10 = 6/10 + 7/10 = 13/10.*	**Lesson 12:** Add Fractions **Lesson 13:** Subtract Fractions **Additional Content:** Lesson 14: Add and Subtract in Word Problems; Lesson 27: Make Line Plots and Interpret Data **Math in Action:** 292-302

Tennessee Academic Standards for Mathematics Grade 5		i-Ready Classroom Mathematics Lessons Grade 5
5.NF.A.2	Solve contextual problems involving addition and subtraction of fractions referring to the same whole, including cases of unlike denominators. Use benchmark fractions and number sense of fractions to estimate mentally and assess the reasonableness of answers. *For example, recognize an incorrect result 2/5 + 1/2 = 3/7, by observing that 3/7 < 1/2).*	**Lesson 12:** Add Fractions **Lesson 13:** Subtract Fractions **Lesson 14:** Add and Subtract in Word Problems **Additional Content:** Lesson 27: Make Line Plots and Interpret Data **Math in Action**: 292-302
5.NF.B	Apply and extend previous understandings of multiplication and division to multiply and divide fractions.	
5.NF.B.3	Interpret a fraction as division of the numerator by the denominator ($a/b = a \div b$). *For example, 3/4 = 3 ÷ 4 so when 3 wholes are shared equally among 4 people, each person has a share of size 3/4.* Solve contextual problems involving division of whole numbers leading to answers in the form of fractions or mixed numbers by using visual fraction models or equations to represent the problem. *For example, if 8 people want to share 49 sheets of construction paper equally, how many sheets will each person receive? Between what two whole numbers does your answer lie?*	**Lesson 18:** Fractions as Division **Additional Content:** Lesson 25: Convert Measurement Units; Lesson 26: Solve Word Problems Involving Conversions **Math in Action:** 492-502

Tennessee Academic Standards for Mathematics Grade 5		i-Ready Classroom Mathematics Lessons Grade 5
5.NF.B.4	Apply and extend previous understandings of multiplication to multiply a fraction by a whole number or a fraction by a fraction.	
5.NF.B.4a	Interpret the product $(a/b) \times q$ as a x $(q \div b)$ (partition the quantity q into b equal parts and then multiply by a). Interpret the product a/b x q as $(a \times q) \div b$ (multiply a times the quantity q and then partition the product into b equal parts). *For example, use a visual fraction model or write a story context to show that 2/3 x 6 can be interpreted as 2 x (6 ÷ 3) or (2 x 6) ÷ 3. Do the same with 2/3 x 4/5 = 8/15. (In general, a/b x c/d = ac/bd.)*	**Lesson 19:** *Understand* Multiplication by a Fraction **Additional Content:** Lesson 20: Multiply Fractions to Find Area; Lesson 22: Multiply Fractions in Word Problems **Math in Action:** 492-502
5.NF.B.4b	Find the area of a rectangle with fractional side lengths by tiling it with unit squares of the appropriate unit fraction side lengths, and show that the area is the same as would be found by multiplying the side lengths. Multiply fractional side lengths to find areas of rectangles and represent fraction products as rectangular areas.	**Lesson 19:** *Understand* Multiplication by a Fraction **Additional Content:** Lesson 20: Multiply Fractions to Find Area Lesson 22: Multiply Fractions in Word Problems
5.NF.B.5	Interpret multiplication as scaling (resizing).	
5.NF.B.5a	Compare the size of a product to the size of one factor on the basis of the size of the other factor, without performing the indicated multiplication. *For example, know if the product will be greater than, less than, or equal to the factors.*	**Lesson 21:** *Understand* Multiplication as Scaling **Math in Action:** 492-502

Tennessee Academic Standards for Mathematics Grade 5		i-Ready Classroom Mathematics Lessons Grade 5
5.NF.B.5b	Explaining why multiplying a given number by a fraction greater than 1 results in a product greater than the given number (recognizing multiplication by whole numbers greater than 1 as a familiar case); explain why multiplying a given number by a fraction between 0 and 1 results in a product less than the given number; and relate the principle offraction equivalence $a/b = (a \times n)/(b \times n)$ to the effect of multiplying a/b by 1.	**Lesson 21:** *Understand* Multiplication as Scaling
5.NF.B.6	Solve real-world problems involving multiplication of fractions and mixed numbers by using visual fraction models or equations to represent the problem.	**Lesson 22:** Multiply Fractions in Word Problems **Additional Content:** Lesson 20: Multiply Fractions to Find Area; Lesson 26: Solve Word Problems Involving Conversions; Lesson 27: Make Line Plots and Interpret Data **Math in Action:** 492-502
5.NF.B.7	Apply and extend previous understandings of division to divide unit fractions by whole numbers and whole numbers by unit fractions.	
5.NF.B.7a	Interpret division of a unit fraction by a non-zero whole number and compute such quotients. *For example, use visual models and the relationship between multiplication and division to explain that (1/3) ÷ 4 = 1/12 because (1/12) x 4 = 1/3. In other words, when thirds are partitioned into 4 equal groups, they become twelfths.*	**Lesson 23:** *Understand* Division with Unit Fractions **Additional Content:** Lesson 24: Divide Unit Fractions in Word Problems **Math in Action:** 492-502
5.NF.B.7b	Interpret division of a whole number by a unit fraction, and compute such quotients. *For example, use visual models and the relationship between multiplication and division to explain that 4 ÷ (1/5) = 20 because 20 x (1/5) = 4 (i.e., there are 20 groups of 1/5 inside 4 wholes and connect this to ? x (1/5) = 4).*	**Lesson 23:** *Understand* Division with Unit Fractions **Additional Content:** Lesson 24: Divide Unit Fractions in Word Problems **Math in Action:** 492-502

Tennessee Academic Standards for Mathematics Grade 5		i-Ready Classroom Mathematics Lessons Grade 5
5.NF.B.7c	Solve real-world problems involving division of unit fractions by non-zero whole numbers and division of whole numbers by unit fractions and non-unit fractions by using visual fraction models and equations to represent the problem. For example, how much chocolate will each person get if 3 people share 1/2lb of chocolate equally? How many 1/3 cup servings are in 2 cups of raisins?	**Lesson 24:** Divide Unit Fractions in Word Problems **One-Day Activity:** Divide Whole Numbers by Fractions **Math in Action:** 492-502
5.MD	**Measurement and Data (MD)**	
5.MD.A	Convert like measurement units within a given measurement system from a larger unit to a smaller unit.	
5.MD.A.1	Convert customary and metric measurement units within a single system by expressing measurements of a larger unit in terms of a smaller unit. Use these conversions to solve multi-step real-world problems involving distances, intervals of time, liquid volumes, masses of objects, and money (including problems involving simple fractions or decimals). *For example, 3.6 liters and 4.1 liters can be combined as 7.7 liters or 7700 milliliters*	**Lesson 25:** Convert Measurement Units **Lesson 26:** Solve Word Problems Involving Conversions **Educator Note:** Customary and Metric Unit Conversions **Math in Action:** 608-618
5.MD.B	Represent and interpret data.	
5.MD.B.2	Make a line plot to display a data set of measurements in fractions of a unit (1/2, 1/4, 1/8). Use operations on fractions for this grade to solve problems involving information presented in line plots. *For example, given different measurements of liquid in identical beakers, find the amount of liquid each beaker would contain if the total amount in all the beakers were redistributed equally.*	**Lesson 27:** Make Line Plots and Interpret Data **Math in Action:** 608-618

Tennessee Academic Standards for Mathematics Grade 5		i-Ready Classroom Mathematics Lessons Grade 5
5.MD.C	Geometric measurement: understand concepts of volume and relate volume to multiplication and to addition.	
5.MD.C.3	Recognize volume as an attribute of solid figures and understand concepts of volume measurement.	
5.MD.C.3a	A cube with side length 1 unit, called a "unit cube," is said to have "one cubic unit" of volume, and can be used to measure volume.	**Lesson 1:** *Understand* Volume **Additional Content:** Lesson 2: Find Volume Using Unit Cubes **Math in Action:** 104-114
5.MD.C.3b	Understand that a solid figure which can be packed without gaps or overlaps using *n* unit cubes is said to have a volume of *n* cubic units.	**Lesson 1:** *Understand* Volume **Additional Content:** Lesson 2: Find Volume Using Unit Cubes **Math in Action:** 104-114
5.MD.C.4	Measure volume by counting unit cubes, using cubic centimeters, cubic inches, cubic feet, and improvised units.	**Lesson 2:** Find Volume Using Unit Cubes **Additional Content:** Lesson 1: *Understand* Volume **Math in Action:** 104-114
5.MD.C.5	Relate volume to the operations of multiplication and addition and solve-real world and mathematical problems involving volume of right rectangular prisms.	**Lesson 2:** Find Volume Using Unit Cubes **Lesson 3:** Find Volume Using Formulas **Additional Content:** Lesson 1: *Understand* Volume; Lesson 4: Multiply Multi-Digit Numbers; Lesson 5: Divide Multi-Digit Numbers **Math in Action:** 104-114

Tennessee Academic Standards for Mathematics Grade 5		i-Ready Classroom Mathematics Lessons Grade 5
5.MD.C.5a	Find the volume of a right rectangular prism with whole-number side lengths by packing it with unit cubes and show that the volume is the same as would be found by multiplying the edge lengths, equivalently by multiplying the height by the area of the base. Represent whole-number products of three factors as volumes (*e.g., to represent the associative property of multiplication).*	**Lesson 2:** Find Volume Using Unit Cubes **Lesson 3:** Find Volume Using Formulas **Additional Content:** Lesson 4: Multiply Whole Numbers; Lesson 5: Divide Multi-Digit Numbers **Math in Action:** 104-114
5.MD.C.5b	Know and apply the formulas $V = l \times w \times h$ *and* $V = B \times h$ (where B represents the area of the base) for rectangular prisms with whole number edge lengths in the context of solving real-world and mathematical problems.	**Lesson 3:** Find Volume Using Formulas **Educator Note:** Formula for Volume **Math in Action:** 104-114
5.MD.C.5c	Recognize volume as additive. Find volumes of solid figures composed of two non-overlapping right rectangular prisms by adding the volumes of the non-overlapping parts, applying this technique to solve real-world problems.	**Lesson 3:** Find Volume Using Formulas **Math in Action:** 104-114
5.G	**Geometry (G)**	
5.G.A	Graph points on the coordinate plane to solve real-world and mathematical problems.	
5.G.A.1	Graph ordered pairs and label points using the first quadrant of the coordinate plane. Understand in the ordered pair that the first number indicates the horizontal distance traveled along the *x-axis* from the origin and the second number indicates the vertical distance traveled along the *y-axis* , with the convention that the names of the two axes and the coordinates correspond *(e.g., x-axis and xcoordinate, y-axis and y-coordinate)* .	**Lesson 31:** *Understand* the Coordinate Plane **Additional Content:** Lesson 32: Represent Problems in the Coordinate Plane **Math in Action:** 702-712

Tennessee Academic Standards for Mathematics Grade 5		i-Ready Classroom Mathematics Lessons Grade 5
5.G.A.2	Represent real-world and mathematical problems by graphing points in the first quadrant of the coordinate plane and interpret coordinate values of points in the context of the situation.	**Lesson 32:** Represent Problems in the Coordinate Plane **Additional Content**: Lesson 31: *Understand* the Coordinate Plane; Lesson 33: Analyze Patterns and Relationships **Math in Action:** 702-712
5.G.B	Classify two-dimensional figures into categories based on their properties.	
5.G.B.3	Classify two-dimensional figures in a hierarchy based on properties. Understand that attributes belonging to a category of two-dimensional figures also belong to all subcategories of that category. *For example, all rectangles have four right angles and squares are rectangles, so all squares have four right angles.*	**Lesson 28:** *Understand* Categories of Two-Dimensional Figures **Lesson 29**: Classify Two-Dimensional Figures **Math in Action:** 608-618