Grade 3 Mathematics Curriculum Guide

Grade Level/Course Title: Grade 3	**Trimester 1**	**Academic Year:** 2017-2018

Grade Level Mathematics Focus:
In Grade 3, instructional time should focus on four critical areas: (1) developing understanding of multiplication and division and strategies for multiplication and division within 100; (2) developing understanding of fractions, especially unit fractions (fractions with numerator 1); (3) developing understanding of the structure of rectangular arrays and of area; and (4) describing and analyzing two-dimensional shapes.

Essential Questions: 1. How can students use place value understanding, properties of operations, and the relationship between addition and subtraction to fluently add and subtract within 1000?
Suggestions: All word problems should utilize the 3 Read Word Problem Strategies and have a visual representation of the problem. Integrate math language all day to show its importance. Use manipulatives regularly. Use the mental math strategies from Addition and Subtraction Strategies K-7(see hyperlink under Resources) when teaching**.** Have them build an equation, draw the equation and then write a problem for the equation. Use SBAC practice problems and Math Talk writing frames daily.

Time Frame	Standard	Standard Description	Content	Resources
(Aug.-Sept.) **Chapter 1:** **Place Value** **(Approx.** **15 days)**	3.NBT.1	Use place value understanding to round whole numbers to the nearest 10 or 100.	• Decomposition by place value • Decomposition of whole numbers by addition • Using decomposition to add and subtract whole numbers • Using open number lines to represent multi-digit addition and subtraction • Using bar models to add and subtract multi-digit numbers • Inverse relationship between addition and subtraction • Commutative and associative properties of addition	**Chapter 1 – Place Value (6 Lessons)** 1-1: Place Value Through Thousands 1-2: Compare Numbers 1-3: Order Numbers 1-4: Round to the Nearest Ten 1-5: Round to the Nearest Hundred 1-6: Problem-Solving Investigation: Use the Four-Step Plan Online suggestions if needed (Click on them to preview) Rounding to the Nearest 100 and 1,000 [IMT] Rounding to 50 or 500 [IMT] Rounding to the Nearest Ten and Hundred [IMT] Addition/Subtraction Strategies K-7 Plotting Numbers on a Number Line [L] Comparing Numbers on a Number Line [L] Searching for Tens [L] Rounding and Estimating [L] Even and Odd: A Conceptual Understanding [L] Adding By Finding Tens [L] Adding and Subtracting Within 100 [L] Adding Whole Numbers — Multiple Algorithms [L] Number Line Subtraction [L] Whole Number Operations [CP]] Decomposing Word Problems [L]
	3.NBT.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.		

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Grade Level Mathematics Focus:
In Grade 3, instructional time should focus on four critical areas: (1) developing understanding of multiplication and division and strategies for multiplication and division within 100; (2) developing understanding of fractions, especially unit fractions (fractions with numerator 1); (3) developing understanding of the structure of rectangular arrays and of area; and (4) describing and analyzing two-dimensional shapes.

Essential Questions: See page 1
Suggestions: Use My Math games and songs online. Have students turn to a partner and explain a problem, define a math term, decide what operation is necessary in a word problem, etc. Use manipulatives often. Mark appropriate previewed external sources with sticky notes in your T.E. Have students walk the perimeter of the playground.

Time Frame	Standard	Standard Description	Content	Resources
(Sept.-Oct.) **Chapter 2:** **Addition** **(Approx.** **13 days)**	3.NBT.1	Use place value understanding to round whole numbers to the nearest 10 or 100.	• Decomposition by place value • Decomposition of whole numbers by addition • Using decomposition to add and subtract whole numbers • Using open number lines to represent multi-digit addition and subtraction • Using bar models to add and subtract multi-digit numbers • Inverse relationship between addition and subtraction • Commutative and associative properties of addition	**Chapter 2 – Addition (9 Lessons)** 2-1: Addition Properties 2-2: Patterns in the Addition Table 2-3: Addition Patterns 2-4: Add Mentally 2-5: Estimate Sums 2-6: Hands On: Use Models to Add 2-7: Add Three-Digit Numbers 2-8: Add Four-Digit Numbers 2-9: Problem-Solving Investigation: Reasonable Answers Making a ten [IMT] Classroom Supplies [IMT] Five Steps to Zero (G 3 Read Word Problem Strategy Multi-Step Word Problems [L] Comparing Expressions [L] Subtracting Whole Numbers — Multiple Methods [L] Parent Guide (English): Adding Whole Numbers — Multiple Methods Parent Guide (Spanish): Sumando Números Parent Guide (English): Subtracting Numbers — Multiple Methods Parent Guide (Spanish): Restando Números
	3.NBT.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.		

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Essential Questions:
1. How can students use place value understanding, properties of operations, and the relationship between addition and subtraction to fluently add and subtract within 1000?

Time Frame	Standard	Standard Description	Content	Resources
(Sept.-Oct.) **Chapter 3:** **Subtraction** **(Approx.** **15 days)**	3.NBT.1	Use place value understanding to round whole numbers to the nearest 10 or 100.	• Decomposition by place value • Decomposition of whole numbers by addition • Using decomposition to add and subtract whole numbers • Using open number lines to represent multi-digit addition and subtraction • Using bar models to add and subtract multi-digit numbers • Inverse relationship between addition and subtraction • Commutative and associative properties of addition	**Chapter 3 – Subtraction (7 Lessons)** 3-1: Subtract Mentally 3-2: Estimate Differences 3-3: Problem-Solving Investigation: Estimate or Exact Answer 3-4: Hands On: Subtract with Regrouping 3-5: Subtract Three-Digit Numbers 3-6: Subtract Four-Digit Numbers 3-7: Subtract Across Zeros SBAC Sample Questions Claim 1E: Place Value and Properties
	3.NBT.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.		

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Grade Level Mathematics Focus:
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Essential Questions:

1. How can students develop an understanding of the meanings of multiplication and division of whole numbers through activities and problems involving equal-sized groups, arrays, and area models; learning that multiplication is finding an unknown product, and division is finding an unknown factor in these situations?
2. How can students learn that for equal-sized group situations, division can require finding the unknown number of groups or the unknown group size?
3. How can students use properties of operations to calculate products of whole numbers, using increasingly sophisticated strategies based on these properties to solve multiplication and division problems involving single-digit factors?
4. How can students, by comparing a variety of solution strategies, learn the relationship between multiplication and division?

Time Frame	Standard	Standard Description	Content	Resources
(Oct.-Nov.) **Chapter 4:** **Understand Multiplication** **(Approx. 9 days)**	3.OA.1	Interpret products of whole numbers, e.g., interpret 5 × 7 as the total number of objects in 5 groups of 7 objects each. *For example, describe a context in which a total number of objects can be expressed as* 5 × 7*.*	• Equal-sized groups • Repeated addition • Arrays • Area Models • Commutative Property • Associative Property • Importance of place value when multiplying • Partial Products • Distributive Property • Using open number lines to represent multiplication • Using bar models to represent multiplication • Using decomposition to multiply (any decomposition and by place value)	**Chapter 4 – Understand Multiplication (6 Lessons)** 4-1: Hands On: Model Multiplication 4-2: Multiplication as Repeated Addition 4-3: Hands On: Multiply with Arrays 4-4: Arrays and Multiplication 4-5: Problem-Solving Investigation: Make a Table 4-6: Use Multiplication to Find Combinations Area Model Through The Grades [CP] Multiplication Fact Mastery Through Multiple Methods [L] Multiplication Facts Made Easy [L] Properties of multiplication [L] Fish Tanks [IMT] Markers in Boxes [IMT] SBAC Sample Questions Claim 1A: Multiplication and Division
	3.OA.2	Interpret whole-number quotients of whole numbers, e.g., interpret 56 ÷ 8 as the number of objects in each share when 56 objects are partitioned equally into 8 shares, or as a number of shares when 56 objects are partitioned into equal shares of 8 objects each. *For example, describe a context in which a number of shares or a number of groups can be expressed as 56÷8.*		
	3.OA.3	Use multiplication and division within 100 to solve word problems in situations involving equal groups, arrays, and measurement quantities, e.g., by using drawings and equations with a symbol for the unknown number to represent the problem.		
	3Ẁī.OA.4	Determine the unknown whole number in a multiplication or division equation relating three whole numbers. For example, determine the unknown number that makes the equation true in each of the equations 8 × ? = 48, 5 = __ ÷ 3, 6 × 6 = ?.		

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Essential Questions:
1. How can students develop an understanding of the meanings of multiplication and division of whole numbers through activities and problems involving equal-sized groups, arrays, and area models; learning that multiplication is finding an unknown product, and division is finding an unknown factor in these situations?
2. How can students learn that for equal-sized group situations, division can require finding the unknown number of groups or the unknown group size?
3. How can students use properties of operations to calculate products of whole numbers, using increasingly sophisticated strategies based on these properties to solve multiplication and division problems involving single-digit factors?
4. How can students, by comparing a variety of solution strategies, learn the relationship between multiplication and division?

Time Frame	Standard	Standard Description	Content	Resources
(Nov.) **Chapter 5:** **Understand Division** **(Approx. 10 days)**	3.OA.5	Apply properties of operations as strategies to multiply and divide. *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.)*	• Equal-sized groups • Repeated addition • Arrays • Area Models • Commutative Property • Associative Property • Importance of place value when multiplying • Partial Products • Distributive Property • Using open number lines to represent multiplication • Using bar models to represent multiplication • Using decomposition to multiply (any decomposition and by place value)	**Chapter 5 – Understand Division (6 Lessons)** 5-1: Hands On: Model Division 5-2: Division as Equal Sharing 5-3: Relate Division and Subtraction 5-4: Hands On: Relate Division and Multiplication 5-5: Inverse Operations 5-6: Problem-Solving Investigation: Use Models Multiplying by Multiples of Ten [L] Decomposing Word Problems [L] Multi-Step Word Problems [L] Division Algorithms [L] Division — Divvy Out Greater Numbers [L] Two Interpretations of Division [IMT] Finding the unknown in a division equation [IMT] SBAC Sample Questions Claim 1B: Properties of Multiplication SBAC Sample Questions Claim 1C: Multiply and divide within 100
	3.OA.6	Understand division as an unknown-factor problem. *For example, find 32 ÷ 8 by finding the number that makes 32 when multiplied by 8.*		
	3.OA.7	Fluently multiply and divide within 100, using strategies such as the relationship between multiplication and division (e.g., knowing that 8 × 5 = 40, one knows 40 ÷ 5 = 8) or properties of operations. By the end of Grade 3, know from memory all products of two one-digit numbers.		

Grade 3 Mathematics Curriculum Guide

Grade Level/Course Title: Grade 3	**Trimester 2**	**Academic Year:** 2017-2018

Grade Level Mathematics Focus:
In Grade 3, instructional time should focus on four critical areas: (1) developing understanding of multiplication and division and strategies for multiplication and division within 100; (2) developing understanding of fractions, especially unit fractions (fractions with numerator 1); (3) developing understanding of the structure of rectangular arrays and of area; and (4) describing and analyzing two-dimensional shapes.

Essential Questions:
1. How can students develop an understanding of the meanings of multiplication and division of whole numbers through activities and problems involving equal-sized groups, arrays, and area models; learning that multiplication is finding an unknown product, and division is finding an unknown factor in these situations?
2. How can students learn that for equal-sized group situations, division can require finding the unknown number of groups or the unknown group size?
3. How can students use properties of operations to calculate products of whole numbers, using increasingly sophisticated strategies based on these properties to solve multiplication and division problems involving single-digit factors?
4. How can students, by comparing a variety of solution strategies, learn the relationship between multiplication and division?

Time Frame	Standard	Standard Description	Content	Resources
(Nov.-Dec.) **Chapter 6:** **Multiplication and Division Patterns** **(Approx. 13 days)**	3.OA.8	Solve two-step word 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.	• Equal-sized groups • Repeated addition • Arrays • Area Models • Commutative Property • Associative Property • Importance of place value when multiplying • Partial Products • Distributive Property • Using open number lines to represent multiplication • Using bar models to represent multiplication • Using decomposition to multiply (any decomposition and by place value)	**Chapter 6 – Multiplication and Division Patterns (9 Lessons)** 6-1: Patterns in the Multiplication Table 6-2: Multiply by 2 6-3: Divide by 2 6-4: Multiply by 5 6-5: Divide by 5 Teach together 6-6: Problem-Solving Investigation: Look for a Pattern 6-7: Multiply by 10 6-8: Multiples of 10 6-9: Divide by 10 Mastering the Multiplication Chart Through Student Talk [L] Base-10 Multiplication and Division Part I [L] Base-10 Multiplication and Division Part II [L] Multiplication Using the Distributive Property [L] Multiplication – One-Digit by Multi-Digit [L] Multiplication Selected Response Practice [L] Multiplying Whole Numbers – Generic Rectangle [L] Division — Multiple Representations [CP} SBAC Sample Questions Claim 1D: Four Operations
	3.OA.9	Identify arithmetic patterns (including patterns in the addition table or multiplication table), and explain them using properties of operations. *For example, observe that 4 times a number is always even, and explain why 4 times a number can be decomposed into two equal addends.*		
	3.NBT.3	Multiply one-digit whole numbers by multiples of 10 in the range 10–90 (e.g., 9 × 80, 5 × 60) using strategies based on place value and properties of operations.		

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In Grade 3, instructional time should focus on four critical areas: (1) developing understanding of multiplication and division and strategies for multiplication and division within 100; (2) developing understanding of fractions, especially unit fractions (fractions with numerator 1); (3) developing understanding of the structure of rectangular arrays and of area; and (4) describing and analyzing two-dimensional shapes.

Essential Questions:

1. How can students develop an understanding of the meanings of multiplication and division of whole numbers through activities and problems involving equal-sized groups, arrays, and area models; learning that multiplication is finding an unknown product, and division is finding an unknown factor in these situations?
2. How can students learn that for equal-sized group situations, division can require finding the unknown number of groups or the unknown group size?
3. How can students use properties of operations to calculate products of whole numbers, using increasingly sophisticated strategies based on these properties to solve multiplication and division problems involving single-digit factors?
4. How can students, by comparing a variety of solution strategies, learn the relationship between multiplication and division?

Time Frame	Standard	Standard Description	Content	Resources
(Jan.) **Chapter 7:** **Multiplication and Division** **(Approx. 11 days)**	3.OA.8	Solve two-step word 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.	• Equal-sized groups • Repeated addition • Arrays • Area Models • Commutative Property • Associative Property • Importance of place value when multiplying • Partial Products • Distributive Property • Using open number lines to represent multiplication • Using bar models to represent multiplication • Using decomposition to multiply (any decomposition and by place value)	**Chapter 7 – Multiplication and Division (8 Lessons)** 7-1: Multiply by 3 7-2: Divide by 3 } Teach together 7-3: Hands On: Double a Known Fact 7-4: Multiply by 4 7-5: Divide by 4 } Teach together 7-6: Problem-Solving Investigation: Extra or Missing Information 7-7: Multiply by 0 and 1 7-8: Divide with 0 and 1 } Teach together Mastering the Multiplication Chart Through Student Talk [L] Base-10 Multiplication and Division Part I [L] Base-10 Multiplication and Division Part II [L] Multiplication Using the Distributive Property [L] Multiplication – One-Digit by Multi-Digit [L] Multiplication Selected Response Practice [L] Multiplying Whole Numbers – Generic Rectangle [L] Division — Multiple Representations [CP] How Many Colored Pencils? [IMT]
	3.OA.9	Identify arithmetic patterns (including patterns in the addition table or multiplication table), and explain them using properties of operations. *For example, observe that 4 times a number is always even, and explain why 4 times a number can be decomposed into two equal addends.*		
	3.NBT.3	Multiply one-digit whole numbers by multiples of 10 in the range 10–90 (e.g., 9 × 80, 5 × 60) using strategies based on place value and properties of operations.		

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Essential Questions:
1. How can students develop an understanding of the meanings of multiplication and division of whole numbers through activities and problems involving equal-sized groups, arrays, and area models; learning that multiplication is finding an unknown product, and division is finding an unknown factor in these situations?
2. How can students learn that for equal-sized group situations, division can require finding the unknown number of groups or the unknown group size?
3. How can students use properties of operations to calculate products of whole numbers, using increasingly sophisticated strategies based on these properties to solve multiplication and division problems involving single-digit factors?
4. How can students, by comparing a variety of solution strategies, learn the relationship between multiplication and division?

Time Frame	Standard	Standard Description	Content	Resources
(Jan.-Feb.) **Chapter 8:** **Apply Multiplication and Division** **(Approx. 13 days)**	3.OA.8	Solve two-step word 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.	• Equal-sized groups • Repeated addition • Arrays • Area Models • Commutative Property • Associative Property • Importance of place value when multiplying • Partial Products • Distributive Property • Using open number lines to represent multiplication • Using bar models to represent multiplication • Using decomposition to multiply (any decomposition and by place value)	**Chapter 8 – Apply Multiplication and Division (9 Lessons)** 8-1: Multiply by 6 8-2: Multiply by 7 8-3: Divide by 6 and 7 8-4: Multiply by 8 8-5: Multiply by 9 8-6: Divide by 8 and 9 8-7: Problem-Solving Investigation: Make an Organized List 8-8: Multiply by 11 and 12 8-9: Divide by 11 and 12 Mastering the Multiplication Chart Through Student Talk [L] Base-10 Multiplication and Division Part I [L] Base-10 Multiplication and Division Part II [L] Multiplication Using the Distributive Property [L] Multiplication – One-Digit by Multi-Digit [L] Multiplication Selected Response Practice [L] Multiplying Whole Numbers – Generic Rectangle [L] Division — Multiple Representations [CP}
	3.OA.9	Identify arithmetic patterns (including patterns in the addition table or multiplication table), and explain them using properties of operations. *For example, observe that 4 times a number is always even, and explain why 4 times a number can be decomposed into two equal addends.*		
	3.NBT.3	Multiply one-digit whole numbers by multiples of 10 in the range 10–90 (e.g., 9 × 80, 5 × 60) using strategies based on place value and properties of operations.		

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Essential Questions:

1. How can students develop an understanding of the meanings of multiplication and division of whole numbers through activities and problems involving equal-sized groups, arrays, and area models; learning that multiplication is finding an unknown product, and division is finding an unknown factor in these situations?
2. How can students learn that for equal-sized group situations, division can require finding the unknown number of groups or the unknown group size?
3. How can students use properties of operations to calculate products of whole numbers, using increasingly sophisticated strategies based on these properties to solve multiplication and division problems involving single-digit factors?
4. How can students, by comparing a variety of solution strategies, learn the relationship between multiplication and division?

Time Frame	Standard	Standard Description	Content	Resources
(Feb.) **Chapter 9:** **Properties and Equations** **(Approx. 13 days)**	3.OA.5	Apply properties of operations as strategies to multiply and divide. *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.)*	• Equal-sized groups • Repeated addition • Arrays • Area Models • Commutative Property • Associative Property • Importance of place value when multiplying • Partial Products • Distributive Property • Using open number lines to represent multiplication • Using bar models to represent multiplication • Using decomposition to multiply (any decomposition and by place value)	**Chapter 9 – Properties and Equations (9 Lessons)** 9-1: Hands On: Take Apart to Multiply 9-2: The Distributive Property 9-3: Hands On: Multiply Three Factors 9-4: The Associative Property 9-5: Write Expressions 9-6: Evaluate Expressions 9-7: Write Equations 9-8: Solve Two-Step Word Problems 9-9: Problem-Solving Investigation: Use Logical Reasoning Multiplication Using the Distributive Property [L] Patterns in the multiplication table [IMT]
	3.OA.8	Solve two-step word 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.		
	3.OA.9	Identify arithmetic patterns (including patterns in the addition table or multiplication table), and explain them using properties of operations. *For example, observe that 4 times a number is always even, and explain why 4 times a number can be decomposed into two equal addends.*		

Grade 3 Mathematics Curriculum Guide

Grade Level/Course Title: Grade 3	**Trimester 3**	**Academic Year:** 2017-2018

Grade Level Mathematics Focus:
In Grade 3, instructional time should focus on four critical areas: (1) developing understanding of multiplication and division and strategies for multiplication and division within 100; (2) developing understanding of fractions, especially unit fractions (fractions with numerator 1); (3) developing understanding of the structure of rectangular arrays and of area; and (4) describing and analyzing two-dimensional shapes.

Essential Questions:
1. How can students develop an understanding of fractions, beginning with unit fractions?
2. How can students view fractions in general as being built out of unit fractions, and use fractions along with visual fraction models to represent parts of a whole?
3. How can students understand that the size of a fractional part is relative to the size of the whole? For example, 1/2 of the paint in a small bucket could be less paint than 1/3 of the paint in a larger bucket, but 1/3 of a ribbon is longer than 1/5 of the same ribbon because when the ribbon is divided into 3 equal parts, the parts are longer than when the ribbon is divided into 5 equal parts.
4. How can students learn to use fractions to represent numbers equal to, less than, and greater than one?
5. How can students solve problems that involve comparing fractions by using visual fraction models and strategies based on noticing equal numerators or denominators?

Time Frame	Standard	Standard Description	Content	Resources
(Mar.) **Chapter 10:** **Fractions** **(Approx.** **12 days)** (Continues on next page)	3.NF.1	Understand a fraction 1/*b* as the quantity formed by 1 part when a whole is partitioned into *b* equal parts; understand a fraction *a*/*b* as the quantity formed by *a* parts of size 1/*b*.	• Meaning of numerator and denominator • Equivalent fractions • Equivalent forms of 1	**<u>Chapter 10 – Fractions (8 Lessons)</u>** 10-1: Unit Fractions 10-2: Part of a Whole 10-3: Part of a Set 10-4: Problem-Solving Investigation: Draw a Diagram 10-5: Hands On: Fractions on a Number Line 10-6: Equivalent Fractions 10-7: Fractions as One Whole 10-8: Compare Fractions Fractions and Partitioning Shapes [L] Number Lines, Fractions, and Bar Models [L] Halves, thirds, and sixths [IMT] Naming the Whole for a Fraction [IMT] Closest to 1/2 [IMT] Find 1 [IMT] Find 1/4 Starting from 1, Assessment Version [IMT] Find 1 Starting from 5/3, Assessment Variation [IMT] Find 2/3 [IMT]
	3.NF.2	Understand a fraction as a number on the number line; represent fractions on a number line diagram. a. 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 of the part based at 0 locates the number 1/b on the number line. b. Represent a fraction a/b on a number line diagram by marking off a lengths 1/b from 0. Recognize that the resulting interval has size a/b and that its endpoint locates the number a/b on the number line.		

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Essential Questions:
1. How can students develop an understanding of fractions, beginning with unit fractions?
2. How can students view fractions in general as being built out of unit fractions, and use fractions along with visual fraction models to represent parts of a whole?
3. How can students understand that the size of a fractional part is relative to the size of the whole? For example, 1/2 of the paint in a small bucket could be less paint than 1/3 of the paint in a larger bucket, but 1/3 of a ribbon is longer than 1/5 of the same ribbon because when the ribbon is divided into 3 equal parts, the parts are longer than when the ribbon is divided into 5 equal parts.
4. How can students learn to use fractions to represent numbers equal to, less than, and greater than one?
5. How can students solve problems that involve comparing fractions by using visual fraction models and strategies based on noticing equal numerators or denominators?

Time Frame	Standard	Standard Description	Content	Resources
(Jan.-Feb.) **Chapter 10: (Continued)** **Fractions**	3.NF.3	3. Explain equivalence of fractions in special cases, and compare fractions by reasoning about their size. a. Understand two fractions as equivalent (equal) if they are the same size, or the same point on a number line. b. Recognize and generate simple equivalent fractions, e.g., 1/2 = 2/4, 4/6 = 2/3). Explain why the fractions are equivalent, e.g., by using a visual fraction model. c. Express whole numbers as fractions, and recognize fractions that are equivalent to whole numbers. Examples: Express 3 in the form 3 = 3/1; recognize that 6/1 = 6; locate 4/4 and 1 at the same point of a number line diagram. d. 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. Record the results of comparisons with the symbols >, =, or <, and justify the conclusions, e.g., by using a visual fraction model.	• Meaning of numerator and denominator • Equivalent fractions • Equivalent forms of 1	**Chapter 10 – Fractions (continued)** Recognizing and Generating Equivalent Fractions [L] Comparing Fractions [L] Whole Numbers as Fractions [L] Problem solving: Bar models and number lines [L] Fractions — Ordering and Introduction to Adding/ Subtracting [L] Simplifying Fractions [CP] Find 7/4 starting from 1, Assessment Variation [IMT] Locating Fractions Greater than One on the Number Line [IMT] Locating Fractions Less than One on the Number Line [IMT] Which is Closer to 1? [IMT] Comparing Fractions [IMT] Comparing Fractions Game [IMT] Ordering Fractions [IMT] Snow Day [IMT] Jon and Charlie's Run [IMT] SBAC Sample Questions Claim 1F: Fractions

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Essential Questions:
1. How can students develop concepts of measurements in time and volume?
2. How can students develop understanding and skill in representing and analyzing data in bar graphs?

Time Frame	Standard	Standard Description	Content	Resources
(Mar.-Apr.) **Chapter 11:** **Measurement** **(Approx.** **10 days)**	3.MD.1	Tell and write time to the nearest minute and measure time intervals in minutes. Solve word problems involving addition and subtraction of time intervals in minutes, e.g., by representing the problem on a number line diagram.	• Time measurement • Volume measurement • Representing information in bar graphs • Analyzing data in bar graphs	**Chapter 11 – Measurement (7 Lessons)** 11-1: Hands On: Estimate and Measure Capacity 11-2: Solve Capacity Problems 11-3: Hands On: Estimate and Measure Mass 11-4: Solve Mass Problems 11-5: Tell Time to the Minute 11-6: Time Intervals 11-7: Problem-Solving Investigation: Work Backward Halves, thirds, and sixths [IMT] Dajuana's Homework [IMT] How Heavy? [IMT] Classroom Supplies [IMT] Time on a Number Line [L] Measurement [L] Integrated Science: Mathematical Analysis of Animal Data [L] Drops on a Penny [L] SBAC Sample Questions Claim 1G: Measurement
	3.MD.2	Measure and estimate liquid volumes and masses of objects using standard units of grams (g), kilograms (kg), and liters (l). Add, subtract, multiply, or divide to solve one-step word problems		
	3.MD.3	Draw a scaled picture graph 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 bar graphs. *For example, draw a bar graph in which each square in the bar graph might represent 5 pets.*		
	3.MD.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.		

Grade 3 Mathematics Curriculum Guide

Grade Level/Course Title: Grade 3	**Trimester 3**	**Academic Year:** 2017-2018

Grade Level Mathematics Focus:
In Grade 3, instructional time should focus on four critical areas: (1) developing understanding of multiplication and division and strategies for multiplication and division within 100; (2) developing understanding of fractions, especially unit fractions (fractions with numerator 1); (3) developing understanding of the structure of rectangular arrays and of area; and (4) describing and analyzing two-dimensional shapes.

Essential Questions:
1. How can students learn to recognize area as an attribute of two-dimensional regions?
2. How can students measure the area of a shape by finding the total number of same-size units of area required to cover the shape without gaps or overlaps, with a square with sides of unit length being the standard unit for measuring area?
3. How can students understand that rectangular arrays can be decomposed into identical rows or into identical columns?
4. How can students connect area to multiplication by decomposing rectangles into rectangular arrays of squares, and justify using multiplication to determine the area of a rectangle?

Time Frame	Standard	Standard Description	Content	Resources
(Apr.) **Chapter 12:** **Represent and Interpret Data** **(Approx. 12 days)**	3.MD.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.	• Concept of unit measurement • Relationship between area and multiplication	**Chapter 12 – Represent and Interpret Data (8 Lessons)** 12-1: Collect and Record Data 12-2: Draw Scaled Picture Graphs 12-3: Draw Scaled Bar Graphs 12-4: Relate Bar Graphs to Scaled Picture Graphs 12-5: Draw and Analyze Line Plots 12-6: Hands On: Measure to Halves and Fourths of an Inch 12-7: Collect and Display Measurement Data 12-8: Problem-Solving Investigation: Solve a Simpler Problem Line Plots [L] (Grades 3-5) Line Plots Using Measurement [L] (Review as needed) SBAC Sample Questions Claim 1H: Represent Data
	3.MD.5	Recognize area as an attribute of plane figures and understand concepts of area measurement. a. 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. b. 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.		
	3.MD.6	Measure areas by counting unit squares (square cm, square m, square in, square ft, and improvised units).		
	3.MD.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 exhibiting rectangles with the same perimeter and different areas or with the same area and different perimeters.		

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Essential Questions:
1. How can students learn to recognize area as an attribute of two-dimensional regions?
2. How can students measure the area of a shape by finding the total number of same-size units of area required to cover the shape without gaps or overlaps, with a square with sides of unit length being the standard unit for measuring area?
3. How can students understand that rectangular arrays can be decomposed into identical rows or into identical columns?
4. How can students connect area to multiplication by decomposing rectangles into rectangular arrays of squares, and justify using multiplication to determine the area of a rectangle?

Time Frame	Standard	Standard Description	Content	Resources
(May) **Chapter 13:** **Perimeter and Area** **(Approx. 14 days)** (Continues on next page)	3.MD.7	Relate area to the operations of multiplication and addition. a. 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. b. 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. c. 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* × *b* and *a* × *c*. Use area models to represent the distributive property in mathematical reasoning. d. 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.	• Relationship between area and multiplication	**Chapter 13 – Perimeter and Area (10 Lessons)** 13-1: Hands On: Find Perimeter 13-2: Perimeter 13-3: Hands On: Understand Area 13-4: Measure Area 13-5: Hands On: Tile Rectangles to Find Area 13-6: Area of Rectangles 13-7: Hands On: Area and the Distributive Property 13-8: Area of Composite Figures 13-9: Area and Perimeter 13-10: Problem-Solving Investigation: Draw a Diagram Area and Perimeter — Decomposition [L] Discovering Area and Perimeter [L] Same Perimeter – Different Area [L] Same Area – Different Perimeter [L] Area of Complex Figures [L] Area of Complex Figures Foundations [L] Multiplication Using the Distributive Property [L] Area Model Through The Grades [CP] The Square Counting Shortcut [IMT] Finding the Area of Polygons [IMT] India's Bathroom Tiles [IMT]

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Grade Level/Course Title: Grade 3	**Trimester 3**	**Academic Year:** 2017-2018

Grade Level Mathematics Focus:
In Grade 3, instructional time should focus on four critical areas: (1) developing understanding of multiplication and division and strategies for multiplication and division within 100; (2) developing understanding of fractions, especially unit fractions (fractions with numerator 1); (3) developing understanding of the structure of rectangular arrays and of area; and (4) describing and analyzing two-dimensional shapes.

Essential Questions:
1. How can students learn to recognize area as an attribute of two-dimensional regions?
2. How can students measure the area of a shape by finding the total number of same-size units of area required to cover the shape without gaps or overlaps, with a square with sides of unit length being the standard unit for measuring area?
3. How can students understand that rectangular arrays can be decomposed into identical rows or into identical columns?
4. How can students connect area to multiplication by decomposing rectangles into rectangular arrays of squares, and justify using multiplication to determine the area of a rectangle?

Time Frame	Standard	Standard Description	Content	Resources
(May) **Chapter 13:** **(Continued)** **Perimeter and Area**	3.MD.7	Relate area to the operations of multiplication and addition. a. 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. b. 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. c. 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* × *b* and *a* × *c*. Use area models to represent the distributive property in mathematical reasoning. d. 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.	• Relationship between area and multiplication	**Chapter 13 – Perimeter and Area (10 Lessons)** Introducing the Distributive Property [IMT] Finding the Area of Polygons [IMT] Three Hidden Rectangles [IMT] Shapes and their Insides [IMT] SBAC Sample Questions Claim 1I: Geometric Measurement: Area SBAC Sample Questions Claim 1J: Geometric Measurement: Perimeter Integrated Science: Exploring Magnetism and Distance [L] Introduction to Magnetism and Electricity [L]

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In Grade 3, instructional time should focus on four critical areas: (1) developing understanding of multiplication and division and strategies for multiplication and division within 100; (2) developing understanding of fractions, especially unit fractions (fractions with numerator 1); (3) developing understanding of the structure of rectangular arrays and of area; and (4) describing and analyzing two-dimensional shapes.

Essential Questions:
1. How can students describe, analyze, and compare properties of two-dimensional shapes?
2. How can students compare and classify shapes by their sides and angles, and connect these with definitions of shapes?
3. How can students relate their fraction work to geometry by expressing the area of part of a shape as a unit fraction of the whole?

Time Frame	Standard	Standard Description	Content	Resources
(June) **Chapter 14:** **Geometry** **(Approx. 10 days)**	3.G.1	Understand that shapes in different categories (e.g., rhombuses, rectangles, and others) may share attributes (e.g., having four sides), and that the shared attributes can define a larger category (e.g., quadrilaterals). Recognize rhombuses, rectangles, and squares as examples of quadrilaterals, and draw examples of quadrilaterals that do not belong to any of these subcategories.	• Geometric attributes • Relationships among quadrilaterals • Concept of area	**Chapter 14 – Geometry (7 Lessons)** 14-1: Hands On: Angles 14-2: Polygons 14-3: Hands On: Triangles 14-4: Quadrilaterals 14-5: Shared Attributes of Quadrilaterals 14-6: Problem-Solving Investigation: Guess, Check, and Revise 14-7: Partition Shapes Quadrilaterals [CP] Fractions and Partitioning Shapes [L] Partitioning Shapes [L] Geometric pictures of one half [IMT] Representing Half of a Circle [IMT] Halves, thirds, and sixths [IMT] SBAC Sample Questions Claim 1K: Reason with shapes and their attributes
	3.G.2	Partition shapes into parts with equal areas. 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.*		