Grade 1 Mathematics Curriculum Guide

Grade Level/Course Title: Grade 1			Trimester 1	Academic Year: 2015-2016

Grade Level Mathematics Focus:
In Grade 1, instructional time should focus on four critical areas: (1) developing understanding of addition, subtraction, and strategies for addition and subtraction within 20; (2) developing understanding of whole number relationships and place value, including grouping in tens and ones; (3) developing understanding of linear measurement and measuring lengths as iterating length units; and (4) reasoning about attributes of, and composing and decomposing geometric shapes.

Essential Questions for this Unit:
1. How can students develop strategies for adding and subtracting whole numbers based on their prior work with small numbers?
2. How can students use a variety of models, including discrete objects and length-based models (e.g., cubes connected to form lengths), to model add-to, take-from, put-together, take-apart, and compare situations to develop meaning for the operations of addition and subtraction, and to develop strategies to solve arithmetic problems with these operations?

Unit (Time)	Standard	Standard Description	Content	Resources
(Aug.-Nov.) **Unit 1:** **Addition and Subtraction** **(Approx. 50 days)**	1.OA.1	Use addition and subtraction within 20 to solve word problems involving situations of adding to, taking from, putting together, taking apart, and comparing, with unknowns in all positions, e.g., by using objects, drawings, and equations with a symbol for the unknown number to represent the problem.	• Counting forward and backward by ones • Write numbers to represent quantities • Compare numbers • Solve problems using a number line • Using bar models to solve problems • Review 5 + *n* (including on a ten-frame)	**Number Concepts and Strategies (15 days)** Lesson 1.1: Daily Routines Lesson 1.2: Investigating the Number Line Lesson 1.3: Tools for Doing Mathematics Lesson 1.4: Numbers Writing Practice Lesson 1.5: One More One Less Lesson 1.6: Comparing Numbers Lesson 1.7: Recording Tally Counts Lesson 1.9: The Calendar Teach explicitly and use throughout Unit 1 as needed for review: Subitizing [L] Decomposition [L] Bar Models [L] Number Lines [L] Ten Frames [L] Ten Frames [GMR] Side-by-side [L] Number Match [L] Number Books [CP] Book [L] Number Books 0 to 9 [L] Complements for Numbers to Ten
	1.OA.2	Solve word problems that call for addition of three whole numbers whose sum is less than or equal to 20, e.g., by using objects, drawings, and equations with a symbol for the unknown number to represent the problem.		
	1.OA.3	Apply properties of operations as strategies to add and subtract. Examples: If 8 + 3 = 11 is known, then 3 + 8 = 11 is also known. (Commutative property of addition.) To add 2 + 6 + 4, the second two numbers can be added to make a ten, so 2 + 6 + 4 = 2 + 10 = 12. (Associative property of addition.)		
	1.OA.4	Understand subtraction as an unknown-addend problem. For example, subtract 10 – 8 by finding the number that makes 10 when added to 8.		

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Essential Questions for this Unit: (continued from page 1)
3.   How can students understand connections between counting and addition and subtraction (e.g., adding two is the same as counting on two)?
4.   How can students use properties of addition to add whole numbers and to create and use increasingly sophisticated strategies based on these properties (e.g., "making tens") to solve addition and subtraction problems within 20?
5.   How can students, by comparing a variety of solution strategies, build their understanding of the relationship between addition and subtraction?

Unit (Time)	Standard	Standard Description	Content	Resources
(Aug.-Nov.) **Unit 1:** **(Continued)** **Addition** **and** **Subtraction** **(Approx.** **50 days)**	1.OA.5	Relate counting to addition and subtraction (e.g., by counting on 2 to add 2).	• Counting forward and backward by ones • Write numbers to represent quantities • Compare numbers • Solve problems using a number line • Using bar models to solve problems • Review 5 + *n* (including on a ten-frame)	**Single Digit Addition and Subtraction (15 days)** Fluency to Five (or Ten) [L] Working with Unknowns [L] Exploring Equality [L] Lesson 1.11: Explorations Math Materials Lesson 1.13: Number Stories Lesson 1.14: Progress Check Use throughout Unit 1 as needed for review: Subitizing [L] Decomposition [L] Bar Models [L] Number Lines [L] Ten Frames [L] Ten Frames [GMR] Side-by-side [L] Number Match [L] Number Books [CP] Book [L] Number Books 0 to 9 [L] Complements for Numbers to Ten
	1.OA.6	Add and subtract within 20, demonstrating fluency for addition and subtraction within 10. Use strategies such as counting on; making ten (e.g., 8 + 6 = 8 + 2 + 4 = 10 + 4 = 14); decomposing a number leading to a ten (e.g., 13 – 4 = 13 – 3 – 1 = 10 – 1 = 9); using the relationship between addition and subtraction (e.g., knowing that 8 + 4 = 12, one knows 12 – 8 = 4); and creating equivalent but easier or known sums (e.g., adding 6 + 7 by creating the known equivalent 6 + 6 + 1 = 12 + 1 = 13).		
	1.OA.7	Understand the meaning of the equal sign, and determine if equations involving addition and subtraction are true or false. For example, which of the following equations are true and which are false? 6 = 6, 7 = 8 – 1, 5 + 2 = 2 + 5, 4 + 1 = 5 + 2.		
	1.OA.8	Determine the unknown whole number in an addition or subtraction equation relating three whole numbers. *For example, determine the unknown number that makes the equation true in each of the equations 8 + ? = 11, 5 = __ – 3, 6 + 6 = __.*		

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Essential Questions for this Unit:
1. How can students develop, discuss, and use efficient, accurate, and generalizable methods to add within 100 and subtract multiples of 10?
2. How can students compare whole numbers (at least to 100) to develop understanding of and solve problems involving their relative sizes?
3. How can students think of whole numbers between 10 and 100 in terms of tens and ones (especially recognizing the numbers 11 to 19 as composed of a ten and some ones)?
4. How can students, through activities that build number sense, understand the order of the counting numbers and their relative magnitudes?

Unit (Time)	Standard	Standard Description	Content	Resources
(Aug.-Nov.) **Unit 1:** **(Continued)** **Addition** **and** **Subtraction** **(Approx.** **50 days)**	1.NBT.1	Count to 120, starting at any number less than 120. In this range, read and write numerals and represent a number of objects with a written numeral.	• Decomposition of 2-digit whole numbers by tens and ones • Inverse relationship between addition and subtraction	**Two-Digit Numbers (10 days)** Number Books 10 to 20 [L] Lesson 2.1: Number Grids Hundreds Chart [GMR] Hundreds Chart (Alternative) [GMR] Lesson 2.3: Complements of 10 Lesson 2.11: Number Models Lesson 2.12: Subtraction Number Models Lesson 2.13: Number Stories Lesson 2.5: Analog Clocks (optional) Lesson 2.6: Telling Time to the Hour Lesson 2.7: Exploring Lengths, Straight Edges, and Dominos Tackling the Terrific Teens [L] Working with Teens [L] Use throughout Unit 1 as needed for review: Adding and Subtracting — Inverse Operations [L] Adding By Finding Tens [L] Fact Families [L] Complements for Numbers to Ten [L] Subtraction — Comparison Model [L] Sums of 10, 100, and 1,000 [L]
	1.NBT.2	Understand that the two digits of a two-digit number represent amounts of tens and ones. a. 10 can be thought of as a bundle of ten ones — called a "ten." b. The numbers from 11 to 19 are composed of a ten and one, two, three, four, five, six, seven, eight, or nine ones. c. The numbers 10, 20, 30, 40, 50, 60, 70, 80, 90 refer to one, two, three, four, five, six, seven, eight, or nine tens (and 0 ones).		
	1.NBT.3	Compare two two-digit numbers based on meanings of the tens and ones digits, recording the results of comparisons with the symbols >, =, and <.		

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Essential Questions for this Unit:
1. How can students develop, discuss, and use efficient, accurate, and generalizable methods to add within 100 and subtract multiples of 10?
2. How can students compare whole numbers (at least to 100) to develop understanding of and solve problems involving their relative sizes?
3. How can students think of whole numbers between 10 and 100 in terms of tens and ones (especially recognizing the numbers 11 to 19 as composed of a ten and some ones)?
4. How can students, through activities that build number sense, understand the order of the counting numbers and their relative magnitudes?

Unit (Time)	Standard	Standard Description	Content	Resources
(Aug.-Nov.) Unit 1: (Continued) Addition and Subtraction (Approx. 50 days)	1.NBT.4	Add within 100, including adding a two-digit number and a one-digit number, and adding a two-digit number and a multiple of 10, using concrete models or drawings and strategies based on place value, properties of operations, and/or the relationship between addition and subtraction; relate the strategy to a written method and explain the reasoning used. Understand that in adding two-digit numbers, one adds tens and tens, ones and ones; and sometimes it is necessary to compose a ten.	• Decomposition of 2-digit whole numbers by tens and ones • Inverse relationship between addition and subtraction	**Intro to Two-Digit Addition and Subtraction (10 days)** Adding and Subtracting Within 100 [L] (Option: Lessons 7.1-7.4) Lesson 3.1: Visual Patterns Lesson 3.2: Even and Odd Number Patterns Lesson 3.3: Number Grid Patterns Lesson 3.4: Exploring Number Patterns, Shapes and Patterns Lesson 3.5: Counting on the Number Line Lesson 3.6: Adding and Subtracting On the Number Line Lesson 3.14: Domino Addition Lesson 3.7: Telling Time to the Half-Hour Lesson 3.13: Data Day Adding and Subtracting — Inverse Operations [L] Adding By Finding Tens [L] Fact Families [L] Complements for Numbers to Ten [L] Subtraction — Comparison Model [L] Sums of 10, 100, and 1,000 [L] Working with Teens [L] **BENCHMARK 1 (Unit 1)**
	1.NBT.5	Given a two-digit number, mentally find 10 more or 10 less than the number, without having to count; explain the reasoning used.		
	1.NBT.6	Subtract multiples of 10 in the range 10-90 from multiples of 10 in the range 10-90 (positive or zero differences), using concrete models or drawings and strategies based on place value, properties of operations, and/or the relationship between addition and subtraction; relate the strategy to a written method and explain the reasoning used.		

Grade 1 Mathematics Curriculum Guide

Grade Level/Course Title: Grade 1	Trimester 2	Academic Year: 2015-2016

Grade Level Mathematics Focus:
In Grade 1, instructional time should focus on four critical areas: (1) developing understanding of addition, subtraction, and strategies for addition and subtraction within 20; (2) developing understanding of whole number relationships and place value, including grouping in tens and ones; (3) developing understanding of linear measurement and measuring lengths as iterating length units; and (4) reasoning about attributes of, and composing and decomposing geometric shapes.

Essential Questions for this Unit:
1. How can students develop, discuss, and use efficient, accurate, and generalizable methods to add within 100 and subtract multiples of 10?
2. How can students compare whole numbers (at least to 100) to develop understanding of and solve problems involving their relative sizes?
3. How can students think of whole numbers between 10 and 100 in terms of tens and ones (especially recognizing the numbers 11 to 19 as composed of a ten and some ones)?
4. How can students, through activities that build number sense, understand the order of the counting numbers and their relative magnitudes?

Unit (Time)	Standard	Standard Description	Content	Resources
(Nov.-Feb.) **Unit 2:** **More Addition and Subtraction** **(Approx. 36 days)**	1.NBT.4	Add within 100, including adding a two-digit number and a one-digit number, and adding a two-digit number and a multiple of 10, using concrete models or drawings and strategies based on place value, properties of operations, and/or the relationship between addition and subtraction; relate the strategy to a written method and explain the reasoning used. Understand that in adding two-digit numbers, one adds tens and tens, ones and ones; and sometimes it is necessary to compose a ten.	• Using decomposition of 2-digit whole numbers by tens and ones to add and subtract • Inverse relationship between addition and subtraction • Using open number lines to add and subtract • Using bar models to add and subtract	**Extending Two-Digit Addition and Subtraction (20 days)** Adding and Subtracting Within 100 [L] (Option: Do Lesson 9.2 and 9.4) Lesson 5.1: Place Value 10's and 1's Lesson 5.3: Greater Than, Less Than Lesson 5.5: Animal Weights, Adding 2-Digit Number Sense Lesson 5.6: More Than Less Than Number Stories Lesson 5.7: Comparison Number Stories Lesson 5.8: Solving Number Stories Lesson 5.9: Dice Sums Lesson 5.10: Turn Around Facts Lesson 5.11: Easy Facts Lesson 5.12: "What's My Rule?" (optional) Lesson 5.13: Applying Rules (optional) Lesson 5.14: Progress Check (optional)
	1.NBT.5	Given a two-digit number, mentally find 10 more or 10 less than the number, without having to count; explain the reasoning used.		
	1.NBT.6	Subtract multiples of 10 in the range 10-90 from multiples of 10 in the range 10-90 (positive or zero differences), using concrete models or drawings and strategies based on place value, properties of operations, and/or the relationship between addition and subtraction; relate the strategy to a written method and explain the reasoning used.		

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Essential Questions for this Unit:
1. How can students develop, discuss, and use efficient, accurate, and generalizable methods to add within 100 and subtract multiples of 10?
2. How can students compare whole numbers (at least to 100) to develop understanding of and solve problems involving their relative sizes?
3. How can students think of whole numbers between 10 and 100 in terms of tens and ones (especially recognizing the numbers 11 to 19 as composed of a ten and some ones)?
4. How can students, through activities that build number sense, understand the order of the counting numbers and their relative magnitudes?

Unit (Time)	Standard	Standard Description	Content	Resources
(Nov.-Feb.) **Unit 2:** **(Continued)** **More** **Addition** **and** **Subtraction** **(Approx.** **36 days)**	1.NBT.4	Add within 100, including adding a two-digit number and a one-digit number, and adding a two-digit number and a multiple of 10, using concrete models or drawings and strategies based on place value, properties of operations, and/or the relationship between addition and subtraction; relate the strategy to a written method and explain the reasoning used. Understand that in adding two-digit numbers, one adds tens and tens, ones and ones; and sometimes it is necessary to compose a ten.	• Using decomposition of 2-digit whole numbers by tens and ones to add and subtract • Inverse relationship between addition and subtraction • Using open number lines to add and subtract • Using bar models to add and subtract	**More Addition and Subtraction (16 days)** Adding and Subtracting Within 100 [L] Lesson 6.1: Addition/Subtraction Facts Table (optional) Lesson 6.2: Equivalent Names Lesson 6.3: Fact Families Fact Families [L] Lesson 6.4: Fact Triangles Lesson 6.5: Using Facts Table for Subtraction (optional) Lesson 6.7: Explorations Pattern Blocks, Addition Facts Triangles Lesson 6.8: Addition Facts Practice "What's My Rule" Lesson 6.10: Digital Clocks Lesson 6.11: Introduce *My Reference Book* (optional) Lesson 6.12: Data Landmarks Lesson 6.13: Progress Check
	1.NBT.5	Given a two-digit number, mentally find 10 more or 10 less than the number, without having to count; explain the reasoning used.		
	1.NBT.6	Subtract multiples of 10 in the range 10-90 from multiples of 10 in the range 10-90 (positive or zero differences), using concrete models or drawings and strategies based on place value, properties of operations, and/or the relationship between addition and subtraction; relate the strategy to a written method and explain the reasoning used.		

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Essential Questions for this Unit:
1.   How can students develop an understanding of the meaning and processes of measurement, including underlying concepts such as iterating (the mental activity of building up the length of an object with equal-sized units) and the transitivity principle for indirect measurement? (Students should apply the principle of transitivity of measurement to make indirect comparisons, but they need not use this technical term.)

Unit (Time)	Standard	Standard Description	Content	Resources
(Feb.) **Unit 3:** **Measurement** **(Approx.** **14 days)**	1.MD.1	Order three objects by length; compare the lengths of two objects indirectly by using a third object.	• Understanding how to measure lengths indirectly and by iterating lengths	**Measurement Concepts and Strategies (14 days)** Classify and Organize [L] Lesson 4.1: Math Message and Reading a Thermometer (optional or for science) Lesson 4.2: Nonstandard Linear Measures Lesson 4.3: Personal "Foot" & Standard "Foot" Lesson 4.7: Exploring Data, Shapes, and Base-10 Blocks Lesson 4.10 Number Scrolls Lesson 4.11: Introducing Fact Power Lesson 4.12: Good Fact Habits Measurement in the Primary Grades [L] Graphing in the Primary Grades [L] **BENCHMARK 2 (Units 2 through 3)**
	1.MD.2	Express the length of an object as a whole number of length units, by laying multiple copies of a shorter object (the length unit) end to end; understand that the length measurement of an object is the number of same-size length units that span it with no gaps or overlaps. *Limit to contexts where the object being measured is spanned by a whole number of length units with no gaps or overlaps.*		
	1.MD.3	Tell and write time in hours and half-hours using analog and digital clocks.		
	1.MD.4	Organize, represent, and interpret data with up to three categories; 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.		

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Grade Level/Course Title: Grade 1	Trimester 3	Academic Year: 2015-2016

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Essential Questions for this Unit:
1. How can students compose and decompose plane or solid figures (e.g., put two triangles together to make a quadrilateral) and build understanding of part-whole relationships as well as the properties of the original and composite shapes?
2. How can students, as they combine shapes, recognize them from different perspectives and orientations, describe their geometric attributes, and determine how they are alike and different, to develop the background for measurement and for initial understandings of properties such as congruence and symmetry?

Unit (Time)	Standard	Standard Description	Content	Resources
(March) Unit 4: Geometry (Approx. 12 days)	1.G.1	Distinguish between defining attributes (e.g., triangles are closed and three-sided) versus non-defining attributes (e.g., color, orientation, overall size); build and draw shapes to possess defining attributes.	• Attributes of two dimensional shapes • Decomposition and re-composition of two dimensional shapes • Congruence • Symmetry	**Shapes and Attributes (12 days)** Where's Shape-O? [L] Attributes of 3-D Shapes [L] Lesson 7.1: Attribute Rules Geometry and Justifying [L] Lesson 7.2: Explorations Attribute Design Fact Platters Lesson 7.3: Pattern Block and Template Shapes Lesson 7.4: Making Polygons Decomposing/Recomposing Geometric Shapes [L] Lesson 7.5: Spheres, Cylinders, Rectangle Prisms Lesson 7.6: Pyramids, Cones, and Cubes Lesson 7.7: Symmetry Lesson 7.8: Progress Check
	1.G.2	Compose two-dimensional shapes (rectangles, squares, trapezoids, triangles, half-circles, and quarter-circles) or three-dimensional shapes (cubes, right rectangular prisms, right circular cones, and right circular cylinders) to create a composite shape, and compose new shapes from the composite shape.		

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Essential Questions for this Unit:
1. How can students develop, discuss, and use efficient, accurate, and generalizable methods to add within 100 and subtract multiples of 10?
2. How can students compare whole numbers (at least to 100) to develop understanding of and solve problems involving their relative sizes?
3. How can students think of whole numbers between 10 and 100 in terms of tens and ones (especially recognizing the numbers 11 to 19 as composed of a ten and some ones)?
4. How can students, through activities that build number sense, understand the order of the counting numbers and their relative magnitudes?

Unit (Time)	Standard	Standard Description	Content	Resources
(April-June) Unit 5: Place Value and Fractions **(Approx.** **35 days)**	1.NBT.4	Add within 100, including adding a two-digit number and a one-digit number, and adding a two-digit number and a multiple of 10, using concrete models or drawings and strategies based on place value, properties of operations, and/or the relationship between addition and subtraction; relate the strategy to a written method and explain the reasoning used. Understand that in adding two-digit numbers, one adds tens and tens, ones and ones; and sometimes it is necessary to compose a ten.	• Decomposi-tion by place value as a strategy to add and subtract two digit numbers • Beginning understand-ing of fractional parts and wholes	**Extending Addition, Subtraction, and Place Value (20 days)** Adding Whole Numbers — Multiple Algorithms [L] Lesson 8.3: Place Value: 100's, 10's, and 1's Lesson 9.1: Tens and Ones Patterns on the Number Grid Lesson 9.2: Adding and Subtracting Tens Lesson 9.3: Number Grid Puzzles Lesson 9.4: Adding and Subtracting Two Digit Numbers Lesson 9.9: Progress Check Lesson 10.2: Review: Telling Time Lesson 10.3-10.4: Mental Arithmetic Using a Vending Machine Poster (opt.)
	1.NBT.5	Given a two-digit number, mentally find 10 more or 10 less than the number, without having to count; explain the reasoning used.		**Equal Shares, Fraction Introduction, and Review (15 days)** Partitioning Shapes [L]
	1.G.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 decomposing into more equal shares creates smaller shares.		Lesson 8.6: Equal Shares Lesson 8.7: Fractions Lesson 8.9: Explorations Fractional Parts and Addition Facts Lesson 9.6: Fractional Parts of the Whole Lesson 9.7: Comparing Fractions Lesson 10.5: Year End Geometry Review Lesson 10.7: Review: Place Value, Scrolls, and Number Grids **BENCHMARK 3 (Units 4 through 5)**