Mississippi College- and Career-Readiness Standards for Mathematics Scaffolding Document

First Grade

GRADE 1

Operations and Algebraic Thinking

Represent and solve problems involving addition and subtraction	Major

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.[2] [2] See Glossary, Table 1.	**Desired Student Performance**		
	A student should know	**A student should understand**	**A student should be able to do**
	• The numbers 1-20. • The symbols used when writing addition and subtraction equations (+, -, =). • How to represent addition equations. • How to represent subtraction equations. • How to solve addition and subtraction word problems within 10 using objects or drawings.	• Strategies for adding within 20. (ex: counting on, making 10, decomposing a number leading to 10, using the relationship between addition and subtraction, and creating easier, equivalent facts). • Strategies for subtracting within 20. (same as above) • A symbol can represent an unknown number. • There is more than one strategy that can be used to solve a word problem (using objects, drawings, and equations). • How to make sense of a problem.	• Solve addition and subtraction word problems within 20. • Solve addition and subtraction facts with unknowns in all positions. • Use various strategies to solve for unknowns in word problems (using objects, drawing, and equations). • Use symbols for unknown numbers in number sentences. • Compare equations with unknowns. • Model with mathematics to solve and justify word problem.

GRADE 1

Operations and Algebraic Thinking

Represent and solve problems involving addition and subtraction	Major

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.	**Desired Student Performance**		
	A student should know	**A student should understand**	**A student should be able to do**
	- The numbers 1-20. - Strategies for solving addition word problems within 10. - How to represent an addition number sentence. - The symbols used when writing addition number sentences (+, =). - How to represent addition with mental images, drawing, sounds, etc… - Fluently add within 5. - Part and whole relationships.	- There can be more than 2 addends (parts) when adding. - There is more than 1 strategy that can be used to solve a word problem (using objects, drawings, equations). - A symbol can be used in a number sentence to represent an unknown number. - The associative property of addition to find easier facts when using more than 2 addends. - How to make sense of word problems. - How to check their answer for reasonableness.	- Add 3 numbers with a sum less than 20. - Use a strategy to solve word problems when adding 3 numbers with a sum less than 20 (using objects, drawings, and equations). - Apply the associative property of addition as a strategy. - Write an equation using a symbol to represent an unknown number in a problem. - Model with mathematics to solve and justify answer.

GRADE 1

Operations and Algebraic Thinking

Understand and apply properties of operations and the relationship between addition and subtraction	Major

1.OA.3 Apply properties of operations as strategies to add and subtract.[2] *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 number cans be added to make a ten, so 2+6+4 = 2+10=12. (Associative property of addition.)* [2] Students need not use formal terms for these properties.	**Desired Student Performance**		
	A student should know • The numbers 1-20. • How to represent an addition number sentence. • How to represent a subtraction number sentence. • Addition and subtraction facts within 10. • How to apply strategies for addition and subtraction facts. • Decomposing numbers.	**A student should understand** • Numbers do not have to be added in the order of the number sentence. • Strategies for adding within 20 (e.g. making a 10). • Compensation or manipulating numbers so that they are "friendlier" to add and subtract.	**A student should be able to do** • Add within 20 using various strategies. • Recognize and apply the commutative property when adding. • Recognize and apply the associative property when adding. • Look for and make use of structure (e.g. 7+3=3+7).

GRADE 1

Operations and Algebraic Thinking

Understand and apply properties of operations and the relationship between addition and subtraction	Major

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.*	**Desired Student Performance**		
	A student should know	**A student should understand**	**A student should be able to do**
	• How to represent a subtraction number sentence. • Addition facts within 20. • Strategies for addition within 20. • "Counting on" to find the difference.	• The inverse relationship between addition and subtraction (ex: 2+3=5 and 5-3=2). • How to look for patterns in the structure of numbers (e.g. How to compose 10 using 8 and another part). • Using a symbol for an unknown number.	• Use addition strategies to solve subtraction number sentences (ex: counting on, making a ten, etc.). • Represent an unknown subtraction number sentence as an unknown addition number sentence (ex: 10-2=? as 2+?=10).

GRADE 1

Operations and Algebraic Thinking

Add and subtract within 20	Major

1.OA.5 Relate counting to addition and subtraction (e.g., by counting on 2 to add 2).	**Desired Student Performance**		
	A student should know	**A student should understand**	**A student should be able to do**
	• How to count to 100. • How to count forward starting at any number. • The relationship between counting numbers and quantities. • Addition and subtraction facts within 10. • Comparing numbers.	• "Counting on" (adding) results in a higher quantity. • "Counting back" (subtracting) results in a smaller quantity. • Addition is the same as "counting on." • Subtraction is the same as "counting back." • Modeling counting, addition, and subtraction (e.g. number lines)	• Start with any given number and count forward to add (within 20). • Start with any given number and count back to subtract (within 20). • Model "counting on" for addition and "counting back" for subtraction using a number line. • Understand and make use of the structure of the number system.

GRADE 1

Operations and Algebraic Thinking

Add and subtract within 20	Major

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., known 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).	**Desired Student Performance**		
	A student should know	**A student should understand**	**A student should be able to do**
	• Numbers 1-20. • Addition and subtraction facts within 10. • How to fluently add and subtract within 5. • How to decompose numbers less than 10 into pairs.	• The inverse relationship between addition and subtraction. • How to make a 10. • Common addition strategies (doubles, making 10, etc.) to apply to other facts. • How to reason with numbers abstractly and quantitatively. • The commutative property of addition to solve known facts. • The associative property of addition.	• Fluently add and subtract within 10. • Use strategies such as: "counting on," making 10, decomposing a number leading to 10, using inverse operations, and creating equivalent facts (ex. doubles +1) to solve addition and subtraction facts within 20. • Look for and make use of structure (ex. 7+3 is the same as 3+7).

GRADE 1

Operations and Algebraic Thinking

Work with addition and subtraction equations	Major

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.*	**Desired Student Performance**		
	A student should know	**A student should understand**	**A student should be able to do**
	• The word *equal* (and the equal symbol) means "the same" (ex. 3 = 3). • The meaning of "*true*" as being something that is correct. • The meaning of the word "*false*" as being something that is incorrect/wrong. • Numbers 1-20. • Addition and subtraction facts within 10.	• Number sentences can be written in different orders (ex. addition sentences can be written as 5+3=8 or as 8=3+5 and subtraction sentences can be written as 8-3=5 or as 8=5-3). • Just because there is an equal sign, doesn't mean a number sentence is true. • An equal sign can represent two equal equations (ex. 3+2=4+1).	• Understand the placement of the equal sign. • Solve addition and subtraction facts within 20. • Identify number sentences that are true. • Identify number sentences that are false. • Work with precision when solving addition and subtraction number sentences for accuracy. • Solve to find if equations are true or false.

GRADE 1

Operations and Algebraic Thinking

Work with addition and subtraction equations	Major

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=☐.	**Desired Student Performance**		
	A student should know	**A student should understand**	**A student should be able to do**
	• Numbers 1-20. • Addition and subtraction facts within 10. • The symbols used in number sentences (+, -, =). • Counting forward from a given number. • Comparing numbers. • For any number 1-9, find the number that makes 10 when added together.	• Strategies for solving addition and subtraction facts within 20. • The inverse relationship between addition and subtraction (3+5=8 and 8-5=3). • An unknown number can be represented using symbols in a number sentence. • An unknown number is a number that is not known. • Strategies for solving for an unknown number. • Number sentences are not all written with the problem first and the sum or difference last. • The meaning of "true."	• Solve for an unknown number in any position in an addition or subtraction equation within 20. • Apply the inverse operation to solve for an unknown number.

GRADE 1

Number and Operations in Base Ten

Extend the counting sequence	Major

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.	**Desired Student Performance**		
	A student should know	**A student should understand**	**A student should be able to do**
	• How to count to 100 by ones and tens. • Write numbers from 0-20. • That numbers represent quantities. • When reading the numbers 13-19, the ones is read first, but in 20-100, the tens is read first. • Counting forward from a given number. • The relationship between spoken words and written numerals (e.g. 5 is five).	• When counting on, you begin at a number one more than the previous or given number. • The counting sequence is never ending. • Representing a number of objects with a written number. • The structure of counting and sequence.	• Count to 120 starting at any number. • Read the numbers 0-120. • Write the numbers 0-120. • Write a number 0-120 to represent an amount of objects. • Represent a number of objects 0-120.

GRADE 1

Number and Operations in Base Ten

Understand place value	Major

1.NBT.2	Desired Student Performance		
Understand that the two digits of a two-digit number represent amounts of tens and ones. Understand the following as special cases: 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).	**A student should know** • A number represents a quantity. • Count the numbers 0-100. • Write the numbers 0-20. • When reading the numbers 13-19, the ones is read first, but in 20-100, the tens is read first. • How to compose and decompose numbers 11-19 into ten ones and some more ones.	**A student should understand** • The base-ten number system is composed of the numerals 0-9. • 10 ones units equals 1 ten. • The value of a number depends on the placement of a digit. (e.g. The 4's do not have the same value in 24 and 47). • When 2 digits are written together, they represent one number (e.g. 35 is not 3 and 5, but 35).	**A student should be able to do** • Identify the numbers in the tens and ones place in a two-digit number. • Determine the value of a numeral based on its placement in a two-digit number. • Model two-digit numbers. • Compose and decompose two-digit numbers.

GRADE 1

Number and Operations in Base Ten

Understand place value	Major

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 <.	**Desired Student Performance**		
	A student should know	**A student should understand**	**A student should be able to do**
	• A number represents a quantity. • The numbers 0-100. • How to compare two written numbers between 0 and 10. • When 2 numerals are written together, they represent 1 number (ex. 23 is not 2 and 3, but 23). • Identify whether the number of objects in one group is greater than, less than, or equal to the number of objects in another group.	• The value of a numeral is based on its placement in a two-digit number. • ">" is a symbol that means "greater than". • "<" is a symbol that means "less than". • "=" is a symbol that means "equal to" (same). • When comparing two-digit numbers with the same amount of tens, you must look at the value of the ones.	• Identify when one number is larger than another. • Verbally compare 2 two-digit numbers using the terms "greater than", "less than," and "equal to." • Use symbols (>, <, and =) to compare 2 two-digit numbers in written form.

GRADE 1

Number and Operations in Base Ten

Use place value understanding and properties of operations to add and subtract	Major

1.NBT.4	**Desired Student Performance**		

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.

Desired Student Performance

A student should know	A student should understand	A student should be able to do
• The numbers 0-100. • Strategies for solving basic addition facts within 20. • How to fluently add within 10. • How to count by 10's, starting with a number less than 120. • How to represent an addition number sentence using the + and = signs in the correct placement. • The sum is the whole and the addends are the parts.	• The value of a numeral is based on its placement in a two-digit number. • That when adding 2 numbers, the sum will be larger. • How to make sense of problems while solving them. • When adding two-digit numbers add tens with tens and ones with ones. • If the amount of added ones is more than 9, it will be necessary to compose another ten and add it to the remaining tens.	• Work with precision. • Model with mathematics using concrete models or drawings and strategies based on place value, properties of operations, and/or the relationship between addition and subtraction. • Justify the reasoning used to solve for the sum. • Add a two-digit number with a one-digit number. • Adds a two-digit number and a multiple of 10.

GRADE 1

Number and Operations in Base Ten

Use place value understanding and properties of operations to add and subtract	Major

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.	**Desired Student Performance**		
	A student should know	**A student should understand**	**A student should be able to do**
	• The numbers 0-120. • Count to 100 by 10s. • When adding on (counting on), the total will be a larger amount. • When subtracting (counting back), the difference in the numbers will be less than the original total.	• Mentally means "in your head" (without pencil/paper and other manipulatives including a hundreds chart). • When adding tens, the digit in the ones place doesn't change as there aren't any ones in 10 (identity property of addition). • When subtracting tens, the digit in the tens place doesn't change as there aren't any ones in 10 (identity property of subtraction).	• Make use of the structure of the number system. • Mentally add 10 more to a given number (without counting). • Mentally subtract 10 less from a given number (without counting). • Justify the reasoning used when mentally adding or subtracting 10 to a given number.

GRADE 1

Number and Operations in Base Ten

Use place value understanding and properties of operations to add and subtract	Major

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.	**Desired Student Performance**		
	A student should know	**A student should understand**	**A student should be able to do**
	• The numbers 0-100. • How to count by 10s to 100. • When subtracting, the difference in the numbers will be less than the total. • Compose and decompose numbers through 19. • Place-value system.	• When subtracting a multiple of ten, the digit in the ones place will not change as there are no ones in 10 (identity property of subtraction). • When subtracting a multiple of ten from a multiple of ten, it is easier to think of the tens as ones to subtract (ex: 80-30 could be worked as 8-3=5, so 80-30=50). • Subtraction as taking apart and taking from.	• Start with a multiple of ten and count back (thinking of each problem as 10 less). • Subtract a multiple of ten from a multiple of ten. • Use concrete models or drawings and strategies based on place value, properties of operations, and/or the relationship between addition and subtraction. • Look for and make use of structure of the place value system. • Justify the reasoning used when subtracting a multiple of 10 from a multiple of 10.

GRADE 1

Measurement and Data

Measure lengths indirectly and by iterating length units	Major

1.MD.1 Order three objects by length; compare the lengths of two objects indirectly by using a third object.	**Desired Student Performance**		
	A student should know	**A student should understand**	**A student should be able to do**
	• Length is a term used to describe how long an object is. • How to describe the length of an object. • Compare the length of 2 objects and describe the difference. (e.g. longer, smaller, more of, etc…) • Sorting and classifying objects.	• When comparing the length of objects, the objects should start at the same point (be lined up). • That length is maintained when objects are moved in different directions (ex: when a pencil is turned horizontally instead of vertically).	• Compare the length of three objects. • Order three objects based on length (ex. longest to shortest). • Use an object to compare the length of two other objects (ex: the pencil and book are longer than the crayon OR the pencil is longer than the crayon, but shorter than the book).

GRADE 1

Measurement and Data

Measure lengths indirectly and by iterating length units	Major

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.*	**Desired Student Performance**		
	A student should know	**A student should understand**	**A student should be able to do**
	• Length is a term used to describe how long an object is. • When measuring the length of an object, the length spans from one end to the opposite end. • How to describe the length of an object.	• Length can be measured in different units. • When using an object to measure length, there cannot be any gaps or overlays in the measurement. • When measuring the length of an object, the unit must remain constant throughout the measurement. • The numerical length of an object can change depending upon the size of the unit being used to measure	• Use a smaller unit to measure the length of an object by laying multiple copies of the unit onto the object. • Measure the length of objects using nonstandard measurement units in whole units. • Measure with precision. • Select appropriate tools strategically.

GRADE 1

Measurement and Data

Tell and write time	Additional

1.MD.3 Tell and write time in hours and half-hours using analog and digital clocks.	Desired Student Performance		
	A student should know	**A student should understand**	**A student should be able to do**
	• The difference in an analog and digital clock. • How to count by 5s from 0-60. • Write the numbers 0-30. • Halves. • Whole.	• An analog clock is a continuation of time (a circular number line). • 60 minutes equals 1 hour. • The "short hand" tells the number of hours on an analog clock. The "long hand" tells the number of minutes on an analog clock. • The numbers on an analog clock represent hours and minutes. A colon is used to separate the hour from the minutes when writing time. • On a digital clock the numbers on the left of the colon are hours and to the right of the colon are minutes.	• Tell time in hours using a digital and analog clock. • Write time in hours using a digital and analog clock. • Tell time in half-hours using a digital and analog clock. • Write time in half-hours using a digital and analog clock. • Use the terminology "o'clock" when describing a time in hours.

GRADE 1

Measurement and Data

Represent and interpret data	Supporting

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.	**Desired Student Performance**		
	A student should know	**A student should understand**	**A student should be able to do**
	• How to sort objects into given categories. • Count the number of objects in each category. • Order categories based on total number of objects in each category (ex. more/less). • Counting to answer "how many?" • Write numbers 0-100. • Use the vocabulary terms "more than", "less than", and "equal to". • Solve addition and subtraction word problems within 20.	• Categories are groups of "like objects". • Each category represents a separate set of data. • A number can be written to represent the amount of objects in each category. • "How many more" is the difference between two numbers.	• Organize objects into up to 3 categories. • Represent the data in each category. • Interpret the data in each category. • Ask questions about the data. • Answer questions about the categories (ex: how many in each category, how many objects in all, how many more, how many less).

GRADE 1

Geometry

Reason with shapes and their attributes	Additional

1.G.1	Desired Student Performance		
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.	**A student should know**	**A student should understand**	**A student should be able to do**
	• Identify squares, circles, triangles, rectangles, and hexagons. • Describe squares, circles, triangles, rectangles, and hexagons. • Attributes of squares, circles, triangles, rectangles, and hexagons. • Sort shapes based on attributes.	• A shape can change location and orientation without changing shape. • The difference in a defining attribute and a non-defining attribute. • A shape can change color and size and remain the same shape. • Descriptions of shapes.	• Draw a shape using given attributes. • Identify attributes of common shapes (ex: these are all triangles because they have 3 sides and are closed). • Build a shape using given attributes.

GRADE 1

Geometry

Reason with shapes and their attributes	Additional

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.[4] [4] Students do not need to learn formal names such as "right rectangular prism."	**Desired Student Performance**

A student should know	**A student should understand**	**A student should be able to do**
• Identify two-dimensional shapes (rectangles, squares, trapezoids, triangles, half-circles, and quarter-circles). • Identify three-dimensional shapes (cubes, right rectangular prisms, right rectangular cones, and right circular cylinders). • How to build and draw shapes. • Analyze and compare shapes of different sizes and orientations.	• The difference between a 2-dimensional and a 3-dimensional shape (a 2-dimensional shape is flat and a 3-dimensional shape has volume). • The attributes that compose shapes (e.g. a shape with 3 sides is a triangle). • Shapes can be put together to create new shapes (composed). • Shapes can be taken apart to create smaller shapes (decomposed).	• Compose a 2-D shape using other 2-D shapes (ex. two trapezoids can make a hexagon). • Compose a 3-D shape using other 3-D shapes (ex. two cubes can make a rectangular prism). • Decompose a 2-D shape into other 2-D shapes (ex. A hexagon can be broken into 6 triangles). • Decompose a 3-D shape into other 3-D shapes (ex. a rectangular prism can be broken into two cubes).

GRADE 1

Geometry

Reason with shapes and their attributes	Additional

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.	**Desired Student Performance**		
	A student should know	**A student should understand**	**A student should be able to do**
	• Identify a circle and a rectangle. • *Equal* means "the same amount". • Shapes can be decomposed into smaller shapes. • Model shapes.	• Circles and rectangles can be partitioned (divided) into equal parts. • Halves, fourths, quarters. • Partitioning shapes into smaller shares can create new shapes. • The more shares that a shape is partitioned into, the smaller the shares. • There can be more than one way to partition a shape into equal shares.	• Partition a circle or rectangle into two equal shares. • Describe the shares. • Describe the whole. • Model decomposing and explain the shares get smaller.